Waimakariri District Council

Utilities and Roading Committee

Agenda

Tuesday 25 February 2025 9am

Council Chambers 215 High Street Rangiora

Members:

Cr Joan Ward (Chairperson) Cr Robbie Brine Cr Niki Mealings Cr Philip Redmond Cr Paul Williams Mayor Dan Gordon (ex officio)



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A MEETING OF THE UTILITIES AND ROADING COMMITTEE WILL BE HELD IN THE COUNCIL CHAMBER, RANGIORA SERVICE CENTRE, 215 HIGH STREET, RANGIORA, ON TUESDAY 25 FEBRUARY 2025 AT 9AM.

Sarah Nichols GOVERNANCE MANAGER

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

BUSINESS

1 <u>APOLOGIES</u>

2 <u>CONFLICTS OF INTEREST</u>

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

3 CONFIRMATION OF MINUTES

3.1 <u>Minutes of the meeting of the Utilities and Roading Committee held on Tuesday,</u> <u>10 December 2024.</u>

RECOMMENDATION

THAT the Utilities and Roading Committee:

(a) **Confirms** the circulated Minutes of the meeting of the Utilities and Roading Committee held on 10 December 2024 as a true and accurate record.

3.2 Matters Arising (From Minutes)

3.3 <u>Notes of a Workshop of the Utilities and Roading Committee held on Tuesday</u> <u>10 December 2024</u>

RECOMMENDATION

THAT the Utilities and Roading Committee:

(a) **Receives** the circulated notes of the workshop of the Utilities and Roading Committee, held on 10 December 2024.

4 <u>DEPUTATION/PRESENTATIONS</u>

Nil.

Page No

11-21

22

5 <u>REPORTS</u>

5.1 <u>Rangiora Stormwater Annual Report 2023/24 and Monitoring Programme Report</u> 2023/24 – Sophie Allen (Water Environment Advisor)

23-111

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) Receives Report No. 250120008174.
- (b) Notes that the Rangiora Stormwater Management Plan 2025-2040 has been circulated to for consultation to Te Ngāi Tūāhuriri Rūnanga via Mahaanui Kurataiao Ltd, Rangiora Ashley Community Board, and the Waimakariri Water Zone Committee.

AND

THAT the Utilities and Roading Committee recommends:

THAT the Council:

(c) **Approves** the Rangiora Stormwater Management Plan 2025-2040 to be to be submitted to Environment Canterbury.

5.2 <u>Community Biodiversity Funding – ZIPA Recommendation 2.8 – Sophie Allen (Water</u> Environment Advisor)

112-119

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No 250115005245.
- (b) **Approves** the allocation of \$20,000 per annum (\$60,000 total) to the Waimakariri Biodiversity Trust for operational expenses from the existing 2024-27 Zone Implementation Programme Addendum (ZIPA) Operational expenditure budget.
- (c) **Notes** that an accountability review of achieved outcomes will be undertaken by WDC staff before the allocation of \$20,000 per annum for 2025-26 and 2026-27 is released to the Waimakariri Biodiversity Trust.
- (d) **Circulates** this report to the Waimakariri Water Zone Committee and Ngāi Tūāhuriri Rūnanga, at a WDC-Rūnanga Liaison meeting, for information.

5.3 <u>Zone Implementation Programme Addendum Budget 2025-2034 update –</u> <u>Sophie Allen (Water Environment Advisor)</u>

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 250210020464.
- (b) **Approves** the reallocation of the existing ZIPA budget 2025-34 to Recommendations as proposed in Table 1:

Table 1: Proposed reallocation of ZIPA budget.

ZIPA	Current	Proposed	Rationale
1.8 Review the presence and effects of barriers to indigenous and introduced fish	\$20,000 capex	\$15,000 capex	Fish passage budget has not been fully spent each year. More survey work is required to prioritise projects
1.14Minimisingwaterway managementandmaintenanceactivityeffects(Drainage MaintenanceManagementPlaninitiatives)	\$20,000 capex \$15,000 opex	\$10,000 capex \$5,000 opex	This project budget has not be fully spent each year
1.21 On-the-ground projects for Taranaki Stream	\$0	\$5,000 capex	For Taranaki Stream works (in addition to inanga spawning area works in a separate budget). A culturally significant waterway
1.24 Lees Valley and Upper Ashley Rakahuri River catchment focus	\$0 opex	\$15,000 opex	For the WDC-owned Forestdale Wetland, within the Ashley Rakahuri catchment. This wetland requires opex to implement the restoration plan above current Greenspace budget.
1.26 Improved stream health, Ngāi Tūāhuriri values, and improved recreational amenity in the North Waimakariri River tributaries.	\$10,000 capex \$15,000 opex	\$30,000 capex \$5,000 opex	For northern Waimakariri tributaries - such as continued planting for South Brook at Townsend Fields, and for partial support of the North Brook Trail planting, fencing and other costs
1.27 On-the-ground projects in the Cam Ruataniwha and Silverstream/Kaiapoi catchments	\$40,000 capex	\$30,000 capex	To be retargeted to mahinga kai projects, such as watercress improvement projects

- (c) **Notes** that a review of ZIPA budget allocation to ZIPA Recommendations is intended to be carried out again within 3 years, on an as required basis.
- (d) **Approves** reallocation of \$30,000 capex budget from the North Brook Trail culverts project (ZIPA Recommendation 1.26) to boulder cluster placement within the North Brook, South Brook and Middle Brook for the enhancement of habitat for kanakana (pouched lamprey), a mahinga kai species (also under ZIPA Recommendation 1.26).
- (e) **Circulates** this report to the Waimakariri Water Zone Committee and Ngāi Tūāhuriri Rūnanga at a WDC-Rūnanga meeting for information.

120-128

5.4 <u>Engineering Code of Practice Update – Stormwater Design Standards –</u> <u>Colin Roxburgh (Project Delivery Manager) and Kalley Simpson (3 Waters Manager)</u>

129-170

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 241203214710.
- (b) **Approves** the updated version (TRIM: 250220027876) of the Stormwater and Land Drainage section of the Engineering Code of Practice to be adopted.
- (c) **Approves** that the changes come into effect from the time that this report is adopted and apply to any new development applications that are received by the Council from that point in time onwards.
- (d) **Notes** the key changes proposed are to require that:
 - i. the primary stormwater system be designed for the 10% annual exceedance probability event (10 year ARI), rather than 20% annual exceedance probability event (5 year ARI),
 - ii. the secondary stormwater system be designed for the 1% annual exceedance probability event (100 year ARI), rather than 2% annual exceedance probability event (50 year ARI), and;
 - iii. providing more clarity on expectations regarding the level of modelling undertaken to demonstrate that stormwater neutrality for the specified design events is achieved.
- (e) **Notes** that some discretion may have to be applied to the proposed new requirements for multi-stage developments where the SMA sizing may have been dictated already at an earlier stage that is already built or consented, meaning that it might be difficult for future stages that discharge into that earlier stage to meet those new requirements, and that in these instances, such discretion shall only be granted with the approval of the General Manager Utilities and Roading and General Manager Planning, Regulation and Environment.
- (f) **Notes** that the proposed changes are intended to bring the Council in line with how the majority of other councils (where design standards were found) in the country manage stormwater for new developments, and in line with the key New Zealand Standard (NZS4404) for Land Development and Subdivision Infrastructure.
- (g) **Notes** that key developers and key consultants within the District will be made aware of the changes once adopted, as is normal practice when changes to the Engineering Code of Practice are made.

6 PORTFOLIO UPDATES

6.1 Roading – Councillor Philip Redmond

- 6.2 <u>Drainage, Stockwater and Three Waters (Drinking Water, Sewer and Stormwater) –</u> <u>Councillor Paul Williams</u>
- 6.3 Solid Waste- Councillor Robbie Brine
- 6.4 Transport Mayor Dan Gordon

7 MATTERS REFERRED FROM THE RANGIORA-ASHLEY COMMUNITY BOARD

7.1 <u>Approval to Install No Stopping Restrictions – South Belt – Kieran Straw (Civil</u> <u>Projects Team Leader) and Joanne McBride (Roading and Transportation Manager)</u>

The Rangiora-Ashley Community Board considered report Trim 241024185615 at its meeting held on 11 December 2024.

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Approves** the installation of no-stopping restrictions at the following locations, as a result of the planned minor improvement project:
 - i. Outside No. 99 South Belt (approximately 12m long)
 - ii. Outside No. 1 King Street (approximately 16m long)
- (b) **Approves** the installation of a right turn lane into King Street from South Belt as part of the project to install a pedestrian refuge island.
- (c) **Notes** that the installation of no stopping lines at this site equates to the loss of five on-street car parking spaces.
- (d) **Notes** that this pedestrian refuge, associated right turn bay, and no stopping was previously included in the now cancelled Rangiora Town Cycleway project, and that the design for this was previously endorsed by the Board, and approved by Council in November 2023.
- (e) **Notes** that there was general support for the refuge in South Belt as part of the now cancelled Rangiora Town Cycleway project, and the width of the refuge will accommodate cycles to future proof this pedestrian refuge crossing.

7.2 <u>Kippenberger Avenue – Approval of Bus Stop Locations – Kieran Straw (Civil</u> <u>Projects Team Leader) and Joanne McBride (Roading and Transportation Manager)</u>

The Rangiora-Ashley Community Board considered report Trim 241018181377 at its meeting held on 11 December 2024. The below recommendation differs to that in the report.

177-188

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Approves** the installation of a new Bus Stop on Kippenberger Avenue (eastbound) outside Lamb and Heyward Funeral Home.
- (b) **Approves** the installation of a new Bus Stop on Kippenberger Avenue (westbound) outside No. 91 / 93 Kippenberger Avenue.
- (c) **Approves** the installation of a new pedestrian refuge outside No. 107 Kippenberger Avenue for the purposes of accommodating a pedestrian crossing facility and the 18.0m of required no-stopping lines.
- (d) **Notes** that the impacted businesses and residents have been consulted on these locations and that they have no objection to the proposed works.
- (e) **Notes** that there is no change to the bus route as a result of this project.
- (f) **Notes** that Council staff have discussed the proposed locations with Environment Canterbury, who have no immediate objections.
- (g) **Notes** that two additional parking bays have been incorporated into the design on the northern side of Kippenberger Avenue, providing on-road parking bays for up to six additional vehicles.

171-176

- (h) **Notes** that an additional three street trees are to be installed after minor path design changes are made which are not reflected on the provided plans following discussions with Greenspace.
- (i) **Notes** that the eastbound bus stop (recommendation a) will be considered as part of the project works and utilised as car parking until a final decision is made on the future of Route 97.
- (j) **Notes** that the westbound bus stop (recommendation b) will not be constructed as part of the project works and will only be constructed once the future of Route 97 is known.
- (k) **Notes** that the implementation of the bus stops is subject to Environment Canterbury's continuation of Route 97 (or subsequent public transport services along Kippenberger Avenue) following the upcoming review.

7.3 <u>Kippenberger Underpass – Joanne McBride (Roading and Transportation Manager)</u> and Jennifer McSloy (Development Manager)

The Rangiora-Ashley Community Board considered report Trim 240527085141 at its meeting held on 11 December 2024.

189-206

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Approves** the decommissioning of the underpass located at Kippenberger Avenue, approximately 24m east of Devlin Avenue.
- (b) **Approves** staff proceeding to seek pricing from three contractors to decommission the underpass.
- (c) **Notes** the estimated cost of decommissioning is \$100,000.
- (d) **Notes** the works would be funded out of the Subdivision Contributions budget. That budget is forecast to be overspent in this financial year (Trim 240717116901); however, the long-term average is within budget, and often, projects anticipated by the budget do not occur due to developer delays. If it is not possible to undertake the project this financial year, it will be completed in summer 2025/26.
- (e) **Notes** the works at the southern side of the underpass for the benefit of the developer will be paid for by them.
- (f) **Notes** staff presented on this topic to the Utilities and Roading Committee on 15 October 2024.
- (g) **Notes** staff will engage with the lease holder to formalise a deed of surrender.

8 MATTERS REFERRED FROM THE KAIAPOI-TUAHIWI COMMUNITY BOARD

8.1 <u>Charles Street – Approval of the Scheme Design and Proposed Relocation of a</u> <u>Mobility Park – Kieran Straw (Civil Projects Team Leader), Joanne McBride (Roading</u> <u>and Transportation Manager) and Duncan Roxborough (Strategic and Special</u> <u>Projects Manager)</u>

The Kaiapoi-Tuahiwi Community Board considered report Trim 240819138236 at its meeting held on 17 February 2025.

207-215

RECOMMENDATION

THAT the Utilities and Roading Committee:

- (a) **Approves** the proposed Charles Street Scheme Design as per Trim: 250114004447.
- (b) **Approves** the implementation of 6m of no-stopping, between the relocated NZ post entrance, and the existing angle parking, noting that there is insufficient space to accommodate an on-road parking space in this location.
- (c) **Notes** that the revised design retains the existing angle parking, and that the footpath width has increased, and the width of the central painted median is reduced to accommodate the wider footpath area.

9 QUESTIONS UNDER STANDING ORDERS

10 URGENT GENERAL BUSINESS

11 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:

- 9.1 Confirmation of Public Excluded Minutes from 10 December 2024.
- 9.2 Contract 24/61 Kerb and Channel Renewals 2024/2025 Tender Evaluation and Contract Award Report.

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:

CLOSED MEETING

See Public Excluded Agenda (separate document)

ltem No.	Subject	Reason for excluding the public	Grounds for excluding the public.
9.1	Confirmation of Public Excluded Minutes from 10 December 2024	Good reason to withhold exists under Section 7	To enable any local authority holding the information to carry on, without prejudice or disadvantage, commercial activities LGOIMA 7(2)(h).

9.2	Contract 24/61 – Kerb and Chennel Renewals 2024/2025 Tender Evaluation and Contract Award Report	Good reason to withhold exists under Section 7	To protect the privacy of natural persons and enable the local authority to carry on without prejudice or disadvantage, negotiations (including commercial and industrial) negotiations and maintain legal professional privilege. LGOIMA Section 7 (2)(a), (g) and (i).
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OPEN MEETING

NEXT MEETING

The next meeting of the Utilities and Roading Committee will be held on Tuesday 18 March 2025 at 9am.

MINUTES OF A MEETING OF THE UTILITIES AND ROADING COMMITTEE HELD IN THE COUNCIL CHAMBER, RANGIORA SERVICE CENTRE, 215 HIGH STREET, RANGIORA, ON TUESDAY 10 DECEMBER 2024, AT 1PM.

PRESENT

Councillors P Redmond (Chairperson), R Brine, N Mealings, J Ward and P Williams.

IN ATTENDANCE

Deputy Mayor Atkinson, Councillors Fulton and Goldsworthy.

J Millward (Chief Executive), C Brown (General Manager Community and Recreation), J McBride (Roading and Transport Manager), K Simpson (3 Waters Manager), C Roxburgh (Project Delivery Manager), J Recker (Stormwater and Waterways Manager), S Allen (Water Environment Advisor), L Cardenas Corrales (3 Waters Compliance Officer), T Kunkel (Governance Team Leader) and C Fowler-Jenkins (Governance Support Officer).

1 <u>APPOINTMENT OF COMMITTEE CHAIRPERSON</u>

At the commencement of the meeting, the Governance Team Leader, T Kunkel advised that Councillor J Ward would be unable to act as Chair for today's meeting of the Utilities and Roading Committee. Therefore, in terms of Section 14.2 of the Standing Orders, the Committee needed to elect an acting Chairperson for the meeting.

T Kunkel called for nominations for Chairperson.

Moved: P Williams

Seconded: J Ward

THAT the Utilities and Roading Committee:

(a) **Appoints** Councillor P Redmond to act as Chairperson of the Committee meeting held on 10 December 2024.

CARRIED

Councillor Redmond assumed the position of Chair for the duration of the meeting.

2 <u>APOLOGIES</u>

Moved: Councillor Redmond Councillor Williams

THAT the Utilities and Roading Committee:

(a) **Receives and sustains** an apology for absence from Mayor Gordon.

CARRIED

3 <u>CONFLICTS OF INTEREST</u>

There were no conflicts declared.

4 CONFIRMATION OF MINUTES

4.1 <u>Minutes of the meeting of the Utilities and Roading Committee held on Tuesday,</u> <u>19 November 2024.</u>

Moved: Councillor Ward Seconded: Councillor Williams

THAT the Utilities and Roading Committee:

(a) **Confirms** the circulated Minutes of the meeting of the Utilities and Roading Committee held on 19 November 2024 as a true and accurate record.

CARRIED

4.2 <u>Matters Arising (From Minutes)</u> There were no matters arising.

5 <u>DEPUTATION/PRESENTATIONS</u> Nil.

6 <u>REPORTS</u>

6.1 <u>School Cycle Skills Education Programme "Cycle Sense</u>" – J McBride (Roading and Transport Manager) and P Daly (Road Safety Coordinator/Journey Planner)

J McBride updated the Committee on the delivery of the Cycle Skills Education Programme in the Waimakariri District. In the 2023/24 financial year, training was delivered to 752 primary school students in 22 schools across the district by the North Canterbury Sports and Recreation Trust. She explained the training was delivered to year six students because that was the age when children were starting to use roads on their own. The cost of the training per student was \$148.44.

Councillor Fulton asked if there would be a review of the operational delivery of the programme to ascertain whether they would still be able to deliver the bulk of the programme even with the cutbacks. J McBride explained that the Council would not be able to continue to deliver the current extensive programme due to the funding cuts; it would be scaled back to potentially just in-school training.

Councillor Fulton enquired if, in the past, there had been any on-road training for motorised vehicles. J McBride noted that it was not part of this programme because this was aimed at year six students who were starting to get out on the road.

Moved: Councillor Ward Seconded: Councillor Mealings

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 241127209580.
- (b) **Notes** that Cycle Sense is an established Cycle Skills Education Programme being delivered in schools in the Waimakariri District.
- (c) **Notes** that training has been delivered to 752 Year six students across 22 schools over the last 12 months.
- (d) **Notes** that there are no other similar training programmes on offer or available through other agencies at this time.
- (e) **Notes** that the current contract will run until 30 June 2025 at a scaled-back scope.
- (f) **Notes** that the current budgets set through the Long-Term Plan allow for the continuation of scaled-back cycle skills training in schools to the value of \$60,000.
- (g) **Circulate** this report to Community Boards for their information.

CARRIED

Councillor Ward supported the motion and commented that the Cycle Skills Education Programme was an invaluable education programme for the district. It would be interesting to see how the programme would be implemented over the next six months to June 2025.

Councillor Mealings noted that these changes to the Cycle Skills Education Programme had been well discussed. She believed that it was important to teach children cycle skills, and the proposed changes would enable the Council to stretch out funding to continue to deliver this programme, therefore, she supported the motion.

Councillor Redmond also supported the motion as he thought it was an excellent programme that should continue. He noted that there have been a number of cutbacks in the road safety area by the Central Government; however, he hoped that the Cycle Skills Education Programme would continue after June 2025.

6.2 <u>Herbicide Update and Usage by Council and Contractors in 2023/24 – S Allen (Water</u> Environment Advisor)

S Allen spoke to the report, noting it summarised herbicide usage by the Council and its contractors in public areas and/or areas that were beside waterways during the 2023/24 financial year. This included areas in the Work Programmes for maintaining rural drainage, stockwater races, public green spaces such as parks, stormwater management areas, and the road reserve. The Council's herbicide usage and recommendations for improvements would be reported annually to the Utilities and Roading and the Community and Recreation Committees. This annual report would also review important updates in relevant herbicide research, as well as reassessments and approvals of herbicides and their additives under the Environmental Protection Authority (EPA).

Councillor Redmond suggested an additional recommendation under (d) to 'investigate alternative options for weed control'.

Councillor Williams commented that he was under the impression that the Council did not spray over water. S Allen explained that in the 2023/24 financial year, only one Council contractor sprayed a stockwater race; there was not any spraying over water from the other contractors including rural drainage which was dry drains. The Council's Herbicide Spray Management Plan consent CRC120402 clearly sets out that spraying over water could be undertaken.

Councillor Williams remarked that both he and rural drainage groups believed that the Council did not spray over water therefore he was surprised to learn that the Council does sprayed over water, suggesting this information was hidden from the public. S Allen noted spraying over water was targeting emergent weeds which was a permitted activity when consented. The Council had held a consent for this type of spraying since 2012 and they did notify the public when they were spraying.

Councillor Williams referenced the list of sprays used and queried a particular brand, enquiring if the Council was actively looking at more friendly herbicides and how often the list of sprays were reviewed. S Allen explained about the active ingredients and what is suitable for different environments. K Simpson commented that as part of the Council's operating practice it consider not only how well or effective a particular spray is but also what spray is used. Staff were always reviewing the use of herbicides and making sure it followed best practice.

Councillor Williams again queried the spraying on water and it was clarified by staff that although emergent weeds were sprayed, because of their position in the waterway it is classed as spraying over water and therefore a consented activity.

Deputy Mayor Atkinson asked how Councillors were able to provide input into what happens going forward. S Allen noted the Committee was able to make a recommendation as to what herbicides could be used and the areas of spraying.

Moved: Councillor Redmond Seconded: Councillor Williams

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 241111199427.
- (b) **Notes** that herbicide use is minimised where possible for Council operations and only used where deemed necessary by Council staff and contractors. Other (i.e. mechanical) weed control options are used where they are deemed more appropriate.
- (c) **Notes** the herbicides and their use are as approved by the Environmental Protection Authority (EPA).
- (d) **Notes** the report recommendations:
 - (i) <u>Recommendation 1:</u> Prepare annual herbicide usage reports following a standard format and scope as outlined in this report.

- (ii) <u>Recommendation 2</u>: Instruct staff to update the Herbicide Spray Management Plan for consent CRC120402 for best practice and schedule of locations where the consent applies.
- (iii) <u>Recommendation 3:</u> Monitor the Environmental Protection Authority for relevant reassessments, reviews or approval changes of herbicides and additives used. Specifically, it analyses the proposed Environmental Protection Authority (EPA) review of Polyoxyethylene Amine (POEA) surfactants used with herbicides when published for recommended actions.
- (iv) <u>Recommendation 4</u>: Note updates to relevant peer-reviewed research on the health and environmental effects of herbicides and common additives that WDC uses.
- (v) <u>Recommendation 5:</u> Detail the option on the Council's website to join the 'No Spray' register for properties that do not wish for herbicide spraying on their berms in order to make this option more accessible to all.
- (vi) <u>Recommendation 6</u>: Create a Council website page of Frequently Asked Questions (FAQs) regarding herbicide usage.
- (vii) <u>Recommendation 7:</u> Extend the scope of the Council's Roading Team 'No Spray' register to possibly include other areas that border private property such as Council reserves and stormwater management areas, if the private property owner agrees appropriate alternative management. Potentially incorporate the 'No Spray' register information maintained by the contractor for the stockwater races.
- (viii) <u>Recommendation 8:</u> Require that the minimum level of qualification for any person (WDC staff and contractors) undertaking herbicide application is a Growsafe Basic Certificate.
- (ix) <u>Recommendation 9:</u> Investigate alternative options for weed control, including spraying over water.
- (e) **Notes** that spraying over water by Council and its contractors is very limited, with a preference for mechanical maintenance for rural drains and stockwater races. If spraying is carried out, it is following consent CRC120402 and glyphosate 360 is applied for this. No diquat has been used by the Council in the 2023/24 financial year, although permitted by CRC120402.
- (f) **Notes** that the budgets in the 2024-34 Long Term Plan have been based on continuing to use herbicides, including glyphosate, for weed control, where deemed necessary by Council staff and contractors.
- (g) **Notes** that the Environmental Protection Authority decided not to review the herbicide glyphosate in 2024, as there was insufficient evidence that an update was required from the previous review conducted in 2016.
- (h) **Notes** the planned review of polyoxyethylene amine (POEA) surfactants commonly used with herbicides by the Environmental Protection Authority due to claims that these surfactants should be restricted.
- (i) **Circulates** this report to Community Boards, Drainage Advisory Groups and the Waimakariri Water Zone Committee.

CARRIED

Councillor Redmond commented that the Council had not been hiding its use of herbicides. Before the Council could manage an issue, it needed to have the data that it was receiving and noted that the Council was using a very small quantity of chemicals. He supported the recommendations to improve our practices going forward and was supportive of the motion.

Councillor Williams also supported the motion, noting that he was not against the spraying of herbicides in general; however, he did not support spraying over water. He would like to see more friendly alternatives to herbicides being investigated and what the cost of the more environmentally friendly sprays would be.

Deputy Mayor Atkinson commented that the Council was always willing to try to improve its practices. He noted with concern that the Environmental Protection Authority had not done a study on glyphosate-based products since 2012, which results were only released in 2016. The results were now eight years outdated, with Waimakariri District's substantial growth, particularly around waterways, new data was required.

Councillor Mealings thanked staff for the report. She noted the use of herbicide was of great interest to the public, and she, therefore, supported information being published on the Council's website. It was important to have that information easily and readily available so people could make the choice for themselves whether they wanted chemicals sprayed on their properties was the best outcome. Councillor Mealings supported the motion.

In his right of reply, Councillor Redmond noted that this related to the Council, not the private user. The Council needed to adopt the best practices that the recommendations would facilitate.

6.3 Rangiora Stormwater Annual Report 2023/24 and Monitoring Programme Report 2023/24 – J Recker (Stormwater and Waterways Manager) and L Cardenas Corrales (3 waters Compliance Officer)

L Cardenas Corrales summarised the following key findings of the Rangiora Stormwater Annual Report 2023/24 and Monitoring Programme Report 2023/24:

- The monitoring results.
- The results from wet weather sampling.
- The results from dry weather sampling.
- Recommendations from the Rangiora Stormwater Annual Report and Monitoring Programme 2023-2024.
- All recommendations issued in 2022/23 had either been implemented or were in the process of being implemented

Councillor Redmond asked if the Stormwater Management Plan that was being prepared would address the contaminant exceedances and how to mitigate some of the other contaminants. J Recker noted that the plan would address any budget requirements and define a process for prioritising stormwater water improvement projects.

Councillor Williams sought clarity on how long it took for the process of the sampling done by the Council. L Cardenas Corrales noted that sampling took around one week, depending on the laboratory being used.

Councillor Williams further questioned the timeframe for following up on non-compliant test results. L Cardenas Corrales advised that the Council currently did not have the capacity to carry out additional testing immediately; however, it was a practice that staff were planning on implementing.

Responding to a question from Councillor Mealings, L Cardenas Corrales explained that the main reason for the high ecological value of the Cam River was that it did not flow through the middle of a town; it was, therefore, an exceptionally healthy stream.

Councillor Mealings enquired why the report only covered the Rangiora area. L Cardenas Corrales explained that Rangiora's Stormwater Discharge Consent was the first to be approved in May 2021. Similar consents had been approved for Kaiapoi, Woodend and Oxford in 2024, and comparable reports for these areas would be submitted to the Committee during 2025.

Councillor Fulton questioned whether it was possible to benchmark the differences in contamination in dry and wet years. L Cardenas Corrales reported that there seemed to be an increase in contaminants over time.

Councillor Fulton asked whether there were plans to minimise discharge points into waterways. K Simpson explained there were 13 discharge points within Rangiora. The newer development in Rangiora had stormwater management areas and treatment in place; however, there were older areas that were untreated. Staff needed to establish where the discharge points were, what was causing the contaminants and how to address the problems.

Moved: Councillor Williams

Seconded: Councillor Redmond

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THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 241113201107.
- (b) **Notes** that compliant results were achieved during wet weather events for total suspended solids in all urban waterways and total ammoniacal nitrogen; likewise, guideline values were met during dry weather sampling as an indicator of stream health components including values for dissolved oxygen, temperature, pH, total ammoniacal nitrogen and total suspended solids in all urban waterways.
- (c) Notes that there were exceedances (non-compliances) during wet weather events of dissolved copper and dissolved zinc in some Rangiora waterways, and dissolved reactive phosphorus and *E. coli* in all Rangiora waterways, except Cam River; and during dry weather sampling guidelines were exceeded for conductivity (South Brook and No. 7 Drain), dissolved inorganic nitrogen and *E. coli*, with the last two also specifically showing exceeding results at three sites, two in South Brook and one in No. 7 Drain.
- (d) Notes that trend analysis this year identifies an increasing trend for dissolved zinc in the North Brook (at Lilybrook Park), Middle Brook (at Bush Street) and in the North Drain (at Coldstream Road); an increase trend for dissolved copper in the Middle Brook (at Bush Street); a decrease trend of dissolved zinc in the South Brook (at Railway Road) and decrease trends at South Brook Pond C for dissolved copper and total suspended solids.
- (e) **Notes** the follow-up investigations and further improvements summarised in section 4.3 of the report will be carried out by 3 Waters staff under existing budgets in 2024- 25.
- (f) **Notes** that a Rangiora Stormwater Management Plan 2025-2040 is currently being drafted as required by CRC184601, which addresses exceedances and incorporates improvements presented in these reports.
- (g) **Circulate** these reports to the Waimakariri Water Zone Committee and all Community Boards.

CARRIED

Councillor Williams commended staff for the work done. He thought it was important to do more testing to find out where the contaminants were coming from.

Councillor Redmond commented that the report was encouraging, and that the Council was looking forward to the future from an environmental point of view. He was intrigued about the Marina Street sweeping to see if it had an effect on reducing contaminants. Councillor Fulton looked forward to studying the Stormwater Management Plans for the other areas in the district.

7 PORTFOLIO UPDATES

7.1 Roading – Councillor Philip Redmond

The construction season was in full swing, and work had been carried out around the district. The focus over the next two weeks would be on getting all sites tidied up and as much traffic management removed as possible prior to Christmas.

Focus areas for staff:

- The resealing programme was in full swing.
- Mowing was continuing around the district as Christmas nears.
- The high winds overnight on 8 December 2024 took down a number of trees and toppled a pivot irrigator. One tree fell on the Christmas Road Bridge.
- o Urgent pavement repairs were being carried out ahead of Christmas.
- The Tram Road and Fernside Road Pavement Rehabilitation works were completed.

 Work was planned to start in early January 2025 to carry out pavement rehabilitation on Plasketts Road in the area around Egans Road. Traffic management requirements were currently being worked through, and communications would follow.

Capital Works:

- o The Ellis Road Seal Extension work was completed.
- Riverside Road Seal Extension tender had been awarded and the works were planned to start mid-January. An information notice was currently being prepared for the residents.
- The Kerb and Renewal Contract was currently out to tender, closing on 18 December 2024.

Other works:

- The Street Light Maintenance Contract had been tendered, with tenders closing on 27 November 2024. Two tenders were received. The tender evaluation was currently underway.
- New trunk main was being installed on East Belt. A closure was currently in place between Coldstream Road and Wales Street. This closure would be moving south from 10 December 2024. This had been agreed in conjunction with the school, as the school term would be complete from this date.
- KiwiRail and the New Zealand Transport Agency had some work planned around the Lineside Road Rail Crossing. This would be carried out as night work early in January 2025. A detour could be in place via Flaxton Road / Skewbridge Road / Ohoka Road.
- Over the last two weeks, an automated inspection of a number of our sealed networks was completed as part of a national testing regime. This inspection captures roughness, rutting, texture, cracking and geometry on the sealed road network. This survey involved a vehicle with special testing equipment driving around the network. Arterial and collector roads were surveyed annually. Local roads were surveyed over a two-year cycle.

Events:

- Oxford Santa Parade Sunday 15 December 2024.
- Muscle Car Madness 25 and 26 January 2025.
- Coast to Coast 7 and 8 February 2025.

Funding:

- Further funding opportunities for Low Cost Low Risk Projects and Setting of Speed Limits have been announced by the New Zealand Transport Agency.
- The Low-Cost Low-Risk funding would be prioritised for projects which have resilience, economic growth and productivity or reduce the whole-of-life cost benefits.
- Setting of Speed Limits Funding related to the requirement for setting variable speed limits around schools.
- Applications for both closed on 25 February 2025.

Setting of Speed Management Rule

- No Regional Speed Management Plans.
- Variable speed limits outside all schools.
- Speed restrictions on specified roads to be reversed by 1 July 2025.
- o No specified roads in the Waimakariri District; therefore, no changes.
- Rule-specific public consultation and cost-benefit requirements which did not apply to schools.
- \circ $\;$ Less flexibility to respond to community requests for lower speeds.
- Variable speeds outside schools.
- Two categories: Category One Urban schools 30km/h and Category Two 60km/h or less.
- $\circ~$ Maximum time allowed for variable speeds was 45 minutes at the start and end of the school day.
- Category Two schools were allowed a 600 metre zone (300 metres on each side) of the main school gate – i.e. roads with a permanent speed limit of 100km/h.

- Category One schools allowed for a 300 metre zone (150 metres on each side) of school gates. Area under restriction could wrap around corners allowing students to crossroads within the 150 metre zone.
- o Each school would need to be dealt with individually to achieve the best results.

Councillor Mealings asked if there were going to be road rehabilitation works on Mill Road, Ohoka, in early 2025. J McBride noted that it was planned but it would not be done until after the Plasketts Road works.

7.2 <u>Drainage, Stockwater and Three Waters (Drinking Water, Sewer and Stormwater) –</u> <u>Councillor Paul Williams</u>

Councillor Williams attended the Mandeville Resurgence bus trip with the Ohoka Mandeville Rural Drainage Advisory Group to see Stage One and Stage Two plans. He thought it was one of the best trips he had been on, with a reasonable amount of debate occurring. He was disappointed with it being pointed out that it was happening when the Council had only agreed to put it out to consultation. The big debate was almost unanimous of the Mandeville Ohoka Rural Drainage Advisory Group that Stage One was possibly not the right answer for that situation and the Council could spend a lot of money for little gain. The Drainage Group had implied that No 10 Road was the quickest and the easiest and possibly even the best value, cheapest way to go through. He remarked it would be interesting what happens in the consultation because he knows himself that the Mandeville side; some people wanted the Mandeville upgrade to get rid of water but some of those people did not want their swales bigger because when there was water in them it could create problems for children drowning so there is still a lot of debate to happen.

Deputy Mayor Atkinson noted that he had received calls from a couple of members from the Drainage Group questioning the fact that it was a very biased trip by Councillors pushing certain ways and asking leading questions. He asked Councillor Williams if that was something he saw. Councillor Williams thought that it was biased because it had been continuous on the Drainage Group on what was happening. A lot of the Drainage Group members were very concerned, particularly the Ohoka members of all the extra water that was going to be accumulated on this Mandeville Stage One upgrade was going to hit the Ohoka Stream and Kaiapoi quicker than what it used to be before. He noted that yes there was a lot of bias on that including from himself as well. He thought it was wrong that Stage One, there were some prominent questions that needed to be answered on the situation. He thought quite a lot of it had been biased and it was very biased particularly on the staff side.

Councillor Fulton called for a point of order. He thought that was a pejorative statement on staff and would like to speak to that matter.

Councillor Redmond called the discussion to an end and to move on with the update portion of the meeting. He commented that there was a field trip and there were diverging views.

Deputy Mayor Atkinson called for a point of order again. He asked when were Councillors able to address the issue because the Committee has heard one view, and it is not the view that he has received from other people that have contacted him about the matter. Councillor Atkinson accepted that now is not the time, but enquired when is and he would like some time put aside to discuss the matter as he has had other views expressed to him. He noted that criticism of staff was not fair, and he did not accept it.

Councillor Redmond was not prepared to accept comments criticising staff and said the time to discuss the field trip views was not now.

K Simpson noted that it was a good meeting that staff had with the Ohoka Mandeville Drainage Advisory Group last week with robust discussion. He noted that Council had received a report in December setting out the engagement with the community around the Stage One works. He explained that would be undertaken in the new year and staff would be bringing a report back to the Council in May 2025 summarising all the feedback received from the community including feedback from the Ohoka Mandeville Drainage Advisory Group for the Council to make a decision.

Councillor Ward thought that Council had recommended unanimously 9/1 on proceeding positively with Stage One. She understood that was ambushed on the field trip by a Councillor.

Councillor Redmond stopped the discussion, stating that the matter will be debated when the information from the consultation comes to the Council in 2025. Although he did confirm that the Council had agreed to go out for consultation regarding Stage One.

• The Ashley water main was going well; the footpath was getting replaced in places. Staff member J McBride provided a brief update on the works.

7.3 Solid Waste- Councillor Robbie Brine

- Recycling bin audits
 - These had been ongoing for the last few months, and this was the last week for the audit team. Eco Educate had given out gold stickers to quite a few bins, in addition to a lot of 'educations', but were still finding a good number of bins with unacceptable items in them – from toilet seats and bags of nappies to food and drink in unwashed containers. However, we do seem to be making headway.
 - Eco Educate have also done sort-and-weigh audits of a number of school recycling bins, with variable results. Some had shown improvement, some not so much and a few were over the 10% contamination upper limit. Detailed reports of the audits were sent to all audited schools, and this resulted in new bookings for the contractor to go in and talk to caretakers, admin, and teaching staff as well as students in 2025.
 - Audits will begin again in January.
- Impacts of the strong winds on 8 December:
 - Some of the smaller poplars on the northern boundary of Southbrook transfer station were blown down, damaging the fence and taking the guttering off the waste oil shed. The Council employed a contractor to remove the trees and undertake repairs.
 - There was no observed damage at Oxford Transfer Station after the winds. However, the Council's contractor would need to do a clean-up of unsecured recycling materials that were scattered around the site.
 - The Council had a larger portacom installed at the back of the kiosk for site and collection staff to have their breaks in and for meetings. This was a temporary arrangement until the upgrades were completed, and the plan was to sell it once construction had been completed.
 - M Ball had asked Waste Management to do extra collections from the Cust rural recycling facility to make sure locals did not have any issues with the skips being too full over the holiday period.
- Attended the Transwaste Annual General Meeting no significant changes however looking at reducing the size of the Board. Gill Cox was standing down as Chairperson. The Committee acknowledged his work over the years.
- A member of the public had been critical of the Southbrook Transfer Station staff that did not assist them in unloading their trailer. However, staff could not help people unload their trailers as it was a health and safety hazard.

Councillor Cairns asked for an update in terms of since the bin audits had started if that had resulted in less contamination. Councillor Brine explained that it had, but there was still contamination.

7.4 Transport – Mayor Dan Gordon

Mayor Gordon was not present to provide an update.

8 QUESTIONS UNDER STANDING ORDERS

Nil.

9 URGENT GENERAL BUSINESS

Nil.

10 MATTERS TO BE CONSIDERED WITH THE PUBLIC EXCLUDED

Section 48, Local Government Official Information and Meetings Act 1987.

Moved: Councillor Redmond

Seconded: Councillor Ward

THAT the Utilities and Roading Committee:

- (a) Approves that 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), the public be excluded from the following parts of the proceedings of this meeting.
 - 9.1 Confirmation of Public Excluded Minutes from 19 November 2024.
 - 9.2 Contract 24/41 Rangiora Woodend Road Booster Main Stage 1 Tender Evaluation and Contract Award Report.
 - 9.3 Contract 24/60 Water Main Crossing Wales Street Rail Corridor Tender Evaluation and Contract Award Report
 - 9.4 West Eyreton UV Treatment Upgrade Tender Approval
 - 9.5 Contract 202480 309 High Street Demolition (Old Police Building) Report to Accept Invited Price.
- (b) Notes that 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:

ltem No.	Subject	Reason for excluding the public	Grounds for excluding the public.
9.1	Confirmation of Public Excluded Minutes from 19 November 2024	Good reason to withhold exists under Section 7	To enable any local authority holding the information to carry on, without prejudice or disadvantage, commercial activities LGOIMA 7(2)(h).
9.2	Contract 24/41 Rangiora Woodend Road Booster Main Stage 1 Tender Evaluation and Contract Award Report	Good reason to withhold exists under Section 7	To protect the privacy of natural persons and enable the local authority to carry on without prejudice or disadvantage, negotiations (including commercial and industrial) negotiations and maintain legal professional privilege. LGOIMA Section 7 (2)(a), (g) and (i).
9.3	Contract 24/60 Water Main Crossing Wales Street Rail Corridor Tender Evaluation and Contract Award Report	Good reason to withhold exists under Section 7	To protect the privacy of natural persons and enable the local authority to carry on without prejudice or disadvantage, negotiations (including commercial and industrial) negotiations and maintain legal professional privilege. LGOIMA Section 7 (2)(a), (g) and (i).
9.4	West Eyreton UV Treatment Upgrade – Tender Approval	Good reason to withhold exists under Section 7	To protect the privacy of natural persons and enable the local authority to carry on without prejudice or disadvantage, negotiations (including commercial and industrial) negotiations and maintain legal professional privilege. LGOIMA Section 7 (2)(a), (g) and (i).
9.5	Contract 202480 309 High Street Demolition (Old Police Building) Report to Accept Invited Price	Good reason to withhold exists under Section 7	To protect the privacy of natural persons and enable the local authority to carry on without prejudice or disadvantage, negotiations (including commercial and industrial) negotiations and maintain legal professional privilege. LGOIMA Section 7 (2)(a), (g) and (i).

CARRIED

CLOSED MEETING

The public excluded portion of the meeting commenced at 2:35pm and concluded at 2:42pm.

OPEN MEETING

NEXT MEETING

The next meeting of the Utilities and Roading Committee would be held on Tuesday 25 February 2025 at 9am in the Council Chambers.

THERE BEING NO FURTHER BUSINESS, THE MEETING CONCLUDED AT 3.01PM.

CONFIRMED

Chairperson Date

NOTES OF A WORKSHOP OF THE UTILITIES AND ROADING COMMITTEE HELD IN THE COUNCIL CHAMBERS, HIGH STREET, RANGIORA ON TUESDAY, 10 DECEMBER 2024, COMMENCING AT 2:42PM.

PRESENT

Councillors P Redmond (Chairperson), N Mealings, J Ward and P Williams.

IN ATTENDANCE

Councillors Fulton and Goldsworthy.

J Millward (Chief Executive), J McBride (Roading and Transport Manager), K Simpson (3 Waters Manager), C Roxburgh (Project Delivery Manager), J Recker (Stormwater and Waterways Manager), S Allen (Water Environment Advisor), L Cardenas Corrales (3 Waters Compliance Officer) and C Fowler-Jenkins (Governance Support Officer).

1. Engineering Code of Practice – Review of Stormwater Design Standards

Presenter:	C Roxburgh (Project Delivery Manager)
Trim ref:	241213222132

Questions/ Issues/ Observations:

• Immediate Legal Effect had been done before with the District Plan Review. Were staff envisaging people that were already in the system would be dealt with under the current requirements, but the new applications would be dealt with under the new rules?

Yes, Council could not impose people already in the system with the new rules.

• Was this the Code of Practice that had been adopted across the Country?

The New Zealand standard for subdivisional land development was a nation wide guide and every Council had their local Code of Practice which had more detail. The New Zealand standard put out recommendations to any Council.

• Was it worthwhile if there was an existing developer coming back to Council to see what the cost would be for the Council to pay for an upgrade of pipes on a case by case basis?

When you made a change to design standards there was always going to be the issue of how it got implemented and became common practice. What Council needed to be doing if there were any developments that were in chain, staff should be working with developers taking those opportunities when it made sense to upgrade them.

THERE BEING NO FURTHER BUSINESS THE WORKSHOP CONCLUDED AT 3:01PM.

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	EXT-04-385/250124011270
REPORT TO:	UTILITIES AND ROADING COMMITTEE
DATE OF MEETING:	25 February 2025
AUTHOR(S):	Sophie Allen – Water Environment Advisor
SUBJECT:	Rangiora Stormwater Management Plan 2025-40 draft for approval
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager Chief Executive

1. <u>SUMMARY</u>

- 1.1. This report presents the Rangiora Stormwater Management Plan (SMP) 2025-2040 seeking approval from Council to submit to Environment Canterbury. The preparation and implementation of a SMP is required under CRC184601, the Rangiora stormwater network discharge consent.
- 1.2. The SMP seeks to achieve the receiving environment objectives set in Condition 8 of consent CRC184601; including mitigation of downstream flooding of dwellings, scour and erosion (8a and b); improving stormwater quality (8c), and protecting wāhi tapu, wāhi taonga and mahinga kai species and habitat (8d and e). Prioritised projects for the SMP focus primarily on the objective 8c for improved stormwater quality, as this is the area where the need is greatest, however there are other projects that seek to meet the other receiving environment objectives.
- 1.3. Water quality monitoring results from Rangiora baseline monitoring in 2014-17 and 2021-24 under consent CRC184601 show non-compliance for several contaminants. Stormwater improvement projects are required to be implemented to achieve this compliance.
- 1.4. A key component of the SMP is an assessment of treatment and source control options to create an action work programme (Section 8) for operational work, and capital projects (Section 9) that are costed at a high-level. Developed areas where there is no significant attenuation or treatment are the Middle Brook, the Newnham Street industrial area of the North Brook and the majority of the North Drain. In the SMP, these areas are therefore proposed for capital projects. A placeholder budget for these stormwater quality improvements of \$9.8 million is in the current Long Term Plan 2024-34.
- 1.5. Consultation with Te Ngāi Tūāhuriri Rūnanga via Mahaanui Kurataiao Ltd, the Rangiora Ashley Community Board and the Waimakariri Water Zone Committee has taken place regarding the draft Rangiora Stormwater Management Plan.

Attachments:

- i. Rangiora Stormwater Management Plan 2025-2040 (Version 1.1) 250130015113
- ii. Te Ngāi Tūāhuriri Rūnanga Position Statement: Rangiora Stormwater Management Plan - 241120204733

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2. <u>RECOMMENDATION</u>

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 250120008174.
- (b) **Notes** that the Rangiora Stormwater Management Plan 2025-2040 has been circulated to for consultation to Te Ngāi Tūāhuriri Rūnanga via Mahaanui Kurataiao Ltd, Rangiora Ashley Community Board, and the Waimakariri Water Zone Committee.

AND

THAT the Utilities and Roading Committee recommends:

THAT the Council:

(c) **Approves** the Rangiora Stormwater Management Plan 2025-2040 to be to be submitted to Environment Canterbury.

3. BACKGROUND

- 3.1. Rangiora stormwater discharges primarily to the Cam River Ruataniwha catchment, with some discharges also to the Ashley Rakahuri River (via North Drain) and Cust River (via No.7 Drain).
- 3.2. The duration of the SMP is from 2025-2040, as 2040 was stated in the CRC184601 consent application as the date by which the Council intends to meet the Land and Water Regional Plan limits.
- 3.3. There was an SMP drafted in 2001 for Rangiora. This was focussed on managing stormwater quantity and flood control. It has been largely implemented. An Interim SMP for Rangiora was drafted for the application for consent CRC184601 (TRIM 171206132761).
- 3.4. The SMP 2025-2040 has been developed primarily 'in-house' by Council staff by the 3 Waters team and the Network Planning team (Project Delivery Unit) with expertise from other teams where required.
- 3.5. The SMP 2025-2040 will be revised as required and fully reviewed at least every five years.

4. ISSUES AND OPTIONS

Objectives of the SMP

4.1. Receiving Environment Objectives are set out in Condition 8 of CRC184601, which are the objectives for the Rangiora SMP.

The consent holder shall use best practicable options to achieve the following:

- (a) Avoid stormwater that is discharging from the reticulated stormwater system from entering any dwelling house located downstream of any network discharge point during any duration two percent Annual Exceedance Probability rainfall event; and
- (b) Avoid stormwater that is discharging from the reticulated stormwater system from causing erosion or scour of any receiving or downstream waterway, or causing damage to any downstream infrastructure; and
- (c) The receiving environment objectives for management of stormwater discharge quality and which measure the associated effects on receiving waterways set out in Schedule 1 to consent CRC184601; and

- (d) The protection and culturally appropriate treatment of wāhi tapu and wāhi taonga habitats and sites (if or where identified by Te Ngāi Tūāhuriri Rūnanga) and cultural items or artefacts; and
- (e) The management of stormwater discharges in a manner that protects and enhances mahinga kai species of value to Te Ngāi Tūāhuriri Rūnanga, and enhances mahinga kai areas.

Focus on stormwater quality improvement

- 4.2. There has been previous work on prevention of downstream flooding, scour and erosion, such as projects from the Rangiora SMP in 2001 and flood recovery work after the 2014 flood event. As CRC184601 is the first stormwater network discharge consent to be issued for Rangiora (granted in May 2021), the Rangiora SMP focuses primarily on stormwater quality improvement projects to be compliance with contaminant levels set in Schedule 1 and the Rangiora Stormwater Monitoring Programme which forms part of the consent.
- 4.3. Water quality monitoring from 2021-2023 shows that there are exceedances of compliance limits, particularly during wet weather. Waterway values have been affected in Rangiora from urbanisation and industrial activities, which has in turn had an impact on mahinga kai practices. Ecological health of waterways has also been shown to be affected by urbanisation using fine sediment and macro-invertebrate indices.

Capital works and retrofitting

- 4.4. Current stormwater treatment in Rangiora consists primarily of wet and dry ponds, infiltration basins, and constructed wetlands, with some proprietary devices also installed. The majority of Rangiora township has existing infrastructure, such as basins, that provide attenuation and/or some form of treatment. However, there are developed areas where there is no significant attenuation or treatment, for example in the Middle Brook, parts of the South Brook, the Newnham Street industrial area of the North Brook and the majority of the North Drain. In the SMP, these areas are therefore proposed for capital projects from the existing \$9.8m budget in the 2024-34 Long Term Plan.
- 4.5. Some catchment areas that were developed in the past without stormwater infrastructure are suitable for retrofitting treatment solutions before reaching the receiving environment. However other catchments have fewer practicable opportunities to treat with wet or dry basins or constructed wetlands, primarily due to constraints with space and high groundwater levels. For these areas source controls will be more important. Risk assessment in the SMP found the North Brook and Middle Brook to be high risk subcatchment, and the North Drain and No. 7 Drain as medium risk sub-catchments.
- 4.6. The SMP proposes to carry out investigations for options for retrofitting stormwater treatment in all of the North Drain, and parts of the Middle Brook, North Brook as the best solution to achieve improved water quality outcomes.

Consultation

- 4.7. Te Ngāi Tūāhuriri Rūnanga (via Mahaanui Kurataiao Ltd) has been consulted regarding the SMP, with a work programme within Section 8 (Action Work Programme) of the SMP particularly in relation to consent conditions 8 (d) and (e) detailed above (Attachment ii)
- 4.8. The position of Ngāi Tūāhuriri Rūnanga, as mana whenua of the takiwā, is that they do not support or oppose this Rangiora Stormwater Management Plan.

4.9. Consultation with the Waimakariri Water Zone Committee (WWZC) and Rangiora Ashley Community Board was carried out at their 3 February 2025 and 12 February 2025 meetings respectively. The WWZC and RACB sought clarification of some points, and were supportive of the SMP as drafted. There was one minor edit to the SMP to clarify the roles of writers and reviewers of the Plan.

Implications for Community Wellbeing

- 4.10. There are wider implications on community wellbeing by the issues and options that are the subject matter of this report. A Rangiora Stormwater Management Plan enables improved stormwater and mahinga kai quality, and nuisance flooding improvements downstream of the township.
- 4.11. The Management Team has reviewed this report and support the recommendations.

5. <u>COMMUNITY VIEWS</u>

5.1. Mana whenua

Te Ngāi Tūāhuriri hapū are likely to be affected by, and have an interest in the subject matter of this report. WDC staff carried out consultation with Te Ngāi Tūāhuriri Rūnanga for the SMP via Mahaanui Kurataiao Ltd. A position statement was received on 19 November 2024 (see Attachment ii).

5.2. Groups and Organisations

There are specific groups and organisations likely to be affected by, or to have an interest in the subject matter of this report such as environmental organisations.

5.3. Wider Community

The wider community is likely to be affected by and to have an interest in the subject matter of this report, to improve waterways within and below Rangiora township.

6. OTHER IMPLICATIONS AND RISK MANAGEMENT

6.1. Financial Implications

There are no financial implications of the decisions sought by this report. A placeholder budget of \$9.8 million capital expenditure is currently in the Long Term Plan 2024-34 for stormwater improvements in Rangiora, which is allocated by the SMP.

Additional budget for stormwater improvements in Rangiora is expected to be required beyond the 10-year period of the Long Term Plan 2024-2034 up until 2040 (the end of the SMP), however no costing has been specified in the SMP. When the SMP is reviewed within 5 years, additional budget costs for the period 2034-2040 will be considered.

6.2. Sustainability and Climate Change Impacts

The recommendations in this report do have sustainability and/or climate change impacts. The waterways of Rangiora and downstream will provide a healthier environment for indigenous biodiversity, mahinga kai, amenity and recreation.

6.3. Risk Management

There are no specific risks arising from the adoption of the recommendations in this report. This report is for information only.

6.4. Health and Safety

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

7. <u>CONTEXT</u>

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

Resource Management Act (1991) – under which Environment Canterbury has issued consent CRC184601.

7.3. Consistency with Community Outcomes

The Council's community outcomes are relevant to the actions arising from recommendations in this report, particularly provision of a 'healthy and sustainable environment for all' through healthier waterways in Rangiora.

7.4. Authorising Delegations

The Utilities and Roading Committee holds the delegation to recommend that the Rangiora SMP 2025-40 is submitted to Council for approval.



CRC184601 Rangiora Stormwater Management Plan 2025-40

Prepared by Waimakariri District Council 18 December 2024



Prepared for:	Kalley Simpson	3 Waters Manager	
Prepared by:		Sophie Allen Kirtina Ismail Janet Fraser	Water Environment Advisor Waterways Engineer Infrastructure Planner
Reviewed by:		Chris Bacon Jason Recker	Network Planning Team Leader Stormwater and Waterways Manager
Approved by: on behalf of W	aimakariri District Cou	Gerard Cleary	Manager Utilities and Roading

 Published:
 18 December 2024

 File / Record Number:
 EXT-04-385 / 230803118230

Version Number	Prepared By	Comments	Date
1	Sophie Allen, Kirtina Ismail, Janet Fraser	Submitted to MKL for review	September 2024
1.1	Sophie Allen, Kirtina Ismail	Incorporated recommendations from Te Ngāi Tūāhuriri Rūnanga	December 2024

1. Executive Summary

A Stormwater Management Plan (SMP) for Rangiora township is required by the Stormwater Network Discharge Consent CRC184601. Its purpose is to reduce the adverse effects of stormwater discharges on surface water quality and quantity, wāhi tapu, wāhi taonga, as well as protect and enhance mahinga kai.

This SMP sets out methods the Council will implement to meet the consent objectives set out in condition (8), which requires the Council to use 'best practicable options' to achieve specified water quantity and water quality outcomes.

Rangiora stormwater discharges primarily to the Cam River Ruataniwha catchment, with some discharges also to the Ashley Rakahuri River and Cust River.

Most developed areas are adequately protected from flooding by the drainage network. There has been previous work on prevention of downstream flooding, scour and erosion. This has included projects from the Rangiora SMP in 2001 and flood recovery work after the 2014 flood event. Therefore, this SMP focuses primarily on stormwater quality improvement projects. Water quality monitoring from 2021-2023 shows that there are exceedances of compliance targets, particularly during wet weather. Waterway values have been affected in Rangiora from urbanisation and industrial activities, which has in turn had an impact on mahinga kai practices. Ecological health of waterways has also been shown to be affected by urbanisation using fine sediment and macro-invertebrate indices.

The position of Ngāi Tūāhuriri Rūnanga, as mana whenua of the takiwā, is that they do not support or oppose this Rangiora Stormwater Management Plan. Stormwater management in Rangiora is expressed in the Mahaanui Iwi Management Plan (IMP) (2013) objective that states *'the discharge of contaminants is discontinued, and all existing direct discharges of contaminants to water are eliminated.'*

Current stormwater treatment in Rangiora consists primarily of wet and dry ponds, infiltration basins, and constructed wetlands, with some proprietary devices also installed. The majority of Rangiora township has existing infrastructure, such as basins, that provide attenuation and/or some form of treatment. However, there are developed areas where there is no significant attenuation or treatment, for example, the Middle Brook sub-catchment, parts of the South Brook, the Newnham Street industrial area of the North Brook and the majority of the North Drain sub-catchment.

Some catchment areas that were developed in the past without stormwater infrastructure are suitable for retrofitting treatment solutions before reaching the receiving environment. However other catchments have fewer practicable opportunities to treat with wet or dry basins or constructed wetlands, primarily due to constraints with space and high groundwater levels. For these areas source controls will be more important. Risk assessment in this SMP found the North Brook and Middle Brook to be high risk sub-catchment, and the North Drain and No. 7 Drain as medium risk sub-catchments.

This SMP proposes to carry out investigations for options for retrofitting stormwater treatment in all of the North Drain, and parts of the Middle Brook, North Brook catchments, as the best solution to achieve improved water quality outcomes.

Stormwater from new developments is required to be attenuated and treated to meet the Waimakariri District Council (WDC) Engineering Code of Practice (ECoP), with the Waterways Wetland and Drainage Guide (Christchurch City Council) and TP10 (by Auckland Regional Council, replaced by GD01 - Auckland Council) recognised as best practice guidance documents for treatment.

WDC proposes an adaptive management approach to stormwater management, where this SMP will be revised annually and reviewed every 5 years. This allows for progress checks of monitoring against the consent objectives, adaptation and learning as well as the adoption of emerging technologies.

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1.3. List of Abbreviations

AEP	Annual Exceedance Probability
ARI	Annual Return Interval
ASPM	Average Score Per Metric
BMP	Best Management Practice
CLM	Contaminant Load Model
CLWRP	Canterbury Land and Water Regional Plan
CWMS	Canterbury Water Management Strategy
DIN	Dissolved Inorganic Nitrogen
DRP	Dissolved Reactive Phosphorus
ECoP	Engineering Code of Practice
GIS	Geographic Information System
GPT	Gross Pollutant Trap
HAIL	Hazardous Activities and Industries List
IMP	Iwi Management Plan
LGA	Local Government Act
LLUR	Listed Land Use Register
MfE	Ministry for the Environment
MKL	Mahaanui Kurataiao Ltd
MOU	Memorandum of Understanding
NPS-FM	National Policy Statement for Freshwater Management
NTCSA	Ngāi Tahu Claims Settlement Act
ODP	Outline Development Plan
РАН	Polycyclic Aromatic Hydrocarbon
PCG	Project Control Group
PIM	Project Information Memorandum
QMCI	Quantitative Macroinvertebrate Community Index
RCP	Representative Concentration Pathway
RMA	Resource Management Act
RUSM	Rangiora Urban Stormwater Model
SMA	Stormwater Management Area
SMP	Stormwater Management Plan
SQEP	Suitably Qualified Environmental Practitioner
SSMP	Site-specific Stormwater Management Plan
TAN	Total Ammoniacal Nitrogen
TSS	Total Suspended Solids
TRoNT	Te Rūnanga o Ngāi Tahu
WDC	Waimakariri District Council
WSD	Water Sensitive Design
WWDG	Waterways, Wetland and Drainage Guide (Christchurch
	City Council, updated 2012)
ZIPA	Zone Implementation Programme Addendum

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2. Introduction

On 7 May 2021 the Waimakariri District Council was granted consent CRC184601 to discharge stormwater and water treatment chemicals into land and to surface water by Environment Canterbury, for a period of 24 years, effective from 7 May 2021 to 30 June 2045.

Condition 9 of the consent requires that before 1 January 2025, a Stormwater Management Plan (SMP) shall be prepared, and from 1 January 2025, be maintained and implemented for the duration of the consent. The purpose of the SMP is to detail the options to manage the stormwater discharges authorised by CRC184601 so that the receiving environment objectives and targets set out in condition (8) of the consent will be met.

2.1. Receiving Environment Objectives of CRC184601

Waimakariri District Council (WDC) shall use best practicable options to achieve the following receiving environment objectives as stated in Condition 8 of the Rangiora Stormwater Network Discharge Consent:

- 8(a) Avoid stormwater that is discharging from the reticulated stormwater system from entering any dwelling house located downstream of any network discharge point during any duration two percent Annual Exceedance Probability rainfall event; and
- 8(b) Avoid stormwater that is discharging from the reticulated stormwater system from causing erosion or scour of any receiving or downstream waterway, or causing damage to any downstream infrastructure; and
- 8(c) The receiving environment objectives for management of stormwater discharge quality and which measure the associated effects on receiving waterways set out in Schedule 1 of CRC184601; and
- 8(d) The protection and culturally appropriate treatment of wāhi tapu and wāhi taonga habitats and sites (if or where identified by Te Ngāi Tūāhuriri Rūnanga) and cultural items or artefacts; and
- 8(e) The management of stormwater discharges in a manner that protects and enhances mahinga kai species of value to Te Ngāi Tūāhuriri Rūnanga, and enhances mahinga kai areas.

2.2. Requirements of this SMP

This SMP is required under Condition 9 of the Rangiora Stormwater Network Discharge Consent CRC184061 to include:

- **2.2.1.** Details of the current status of stormwater quality improvement measures implemented within the catchment (see Section 3.6);
- **2.2.2.** A description of the understanding of the overall effects the existing discharge is having on the receiving environment (see Section 4.2);
- **2.2.3.** A description of the catchment areas covered by the SMP that are developed at the time of writing the SMP (see Section 3.3), and an assessment of what additional development is anticipated in the Rangiora township prior to the next review of the SMP (see Section 3.4.4);
- **2.2.4.** Details of the outcome of investigations undertaken into water quality or water quantity (see Sections 4.1, 4.2), and any investigations that are proposed to occur to inform future SMP decisions and implementation and (see Section 8);
- **2.2.5.** Details of the contaminant load model (CLM) developed for the township, including outcomes of the modelling (see Section 3.5.3 and Appendix C);

- **2.2.6.** Details of measures that will be used to manage discharges of stormwater authorised by CRC184601 (see Section 6);
- **2.2.7.** Details of the management of stormwater from sites requiring or that will require a pollution prevention plan and / or from sites involving the use, storage or disposal of hazardous substances (see Section 6.1);
- **2.2.8.** A description of funding available for stormwater improvement projects proposed over the next ten years and how these funds will be allocated among the prioritised highest risk areas within the Rangiora township (see Section 9);
- **2.2.9.** Methods that will be used to:
- Maintain compliance with the water quantity limits and requirements in condition (8)(a) and (b) (see Section 6.1.1);
- Work toward achieving the limits and targets in the monitoring programme "urban impact" sections, as required by condition 8(c), including:
 - A detailed description of the adaptive management approach that will be implemented, and how decisions will be made (see Sections 7 and 11);
 - Reflecting the outcomes of the CLM developed (see Section 8);
 - Consideration of innovative technologies, including trials which have been undertaken (Sections 7.3.2 and 8);
 - Implementation of source controls (Sections 6.2 and 8);
 - The use of sustainable urban design in sub-catchments (see Section 6.3); and
 - Considering the feasibility/practicability of retrofitting existing catchments (Sections 7 and 8).
- Progress toward meeting the objectives and values of Ngāi Tūāhuriri as set out in condition 8(d) and (e) (Sections 7, 8 and 9); and
- Implement the measures set out in condition (14) of CRC184601 (Sections 2.4.5. and 3.4.4);
- **2.2.10.** Requirements for appropriate disposal of contaminated material removed from stormwater basins in accordance with the requirements of CRC184601 to a disposal location authorised to receive that material (Appendix B).

2.3. Scope Exclusions

Effects of the discharge of stormwater to groundwater is not considered in this SMP, except for consideration of the maintenance of infiltration basins, such as replacement of filter media.

Flood risk from an Ashley Rakahuri River breakout scenario is out of scope of the Rangiora stormwater network discharge consent. The Ashley Rakahuri River is managed by Environment Canterbury for flood protection.

Contaminants from rural sources or from groundwater inflows into the Rangiora urban area are not considered for actions and projects under this SMP, as these contaminants are out of scope of the consent CRC184601.

2.4. Planning Requirements and Key Non-Statutory Documents

The following planning requirements, or other non-statutory documents are relevant to consider, to understand the context that the SMP operates within.

2.4.1. National Policy Statement for Freshwater Management (2020)

The National Policy Statement for Freshwater Management (NPS-FM) uses the concept of Te Mana o te Wai, that recognises that protecting the health of freshwater protects the health and well-being of the wider environment. As part of Te Mana o te Wai, the hierarchy of obligations prioritises the health and well-being of water bodies and freshwater ecosystems, over the health needs of people (such as drinking water), which is over the ability of people and communities to provide for their social, economic, and cultural well-being, for now and in the future.

2.4.2. Resource Management Act (RMA, 1991) and the Canterbury Land and Water Regional Plan (CLWRP)

Section 5 (Purpose), 6 (Matters of National Importance), 7 (Other Matters), and 8 (Te Tiriti o Waitangi) of the Resource Management Act 1991 prescribe what all persons exercising functions and powers under the Resource Management Act need to consider in relation to managing the use, development and protection of natural and physical resources. The CLWRP is the regional plan developed by Environment Canterbury under the RMA.

2.4.3. Waimakariri District Plan and Proposed District Plan

Stormwater is considered in Chapter 32 of the operative Waimakariri District Plan which states 'Stormwater conveyance and attenuation shall follow the natural drainage patterns of the site, utilising and enhancing naturally occurring indentations and low points for conveyance and attenuation. Stormwater detention basins should be located and sized to support logical staging of the development and assist with sediment control during construction.'

It is noted that WDC is currently reviewing its District Plan, via the Proposed District Plan process. The Proposed District Plan also considers stormwater, primarily in the Subdivision Chapter. In particular, this chapter sets out certain requirements and standards in relation to sustainable design and stormwater management (Policies SUB-P3 and SUB-P10) which is a change to the operative District Plan.

2.4.4. Mahaanui Iwi Management Plan (2013)

The Mahaanui Iwi Management Plan (IMP) is a written expression of kaitiakitanga, setting out how to achieve the protection of natural and physical resources according to Ngāi Tahu values, knowledge, and practices. The plan has the mandate of the six Papatipu Rūnanga, and is endorsed by Te Rūnanga o Ngāi Tahu, as the iwi authority.

2.4.5. WDC Engineering Code of Practice (ECoP) – (last updated July 2020)

The WDC ECoP provides controls to ensure that all developed infrastructure is, and will remain, fit for the intended life of the asset. The document sets out guidelines to assist developers and contractors to comply with the WDC District Plan, bylaws, policies and consents. For water quality, the ECoP refers to the guidelines in the Christchurch City Council Waterways Wetlands and Drainage Guide (2003, partly amended 2012) and the Auckland Regional Council guidelines TP10 (2003), which was updated by Auckland Council in the document GD01 (Cunningham *et al.* 2017).

2.4.6. Canterbury Water Management Strategy (CWMS)

The Canterbury Water Management Strategy provides a collaborative framework to help manage the multiple demands on freshwater resources in the Canterbury region. This includes the control of discharges.

3. Catchment and Network Overview

3.1. Catchment Background

Rangiora is an urban town with a population of approximately 20,000 people. It is located some 8km north of the Waimakariri River, 1km south of the Ashley River and about 6km from the coast. It is bisected by three major spring-fed streams (the 'Three Brooks' - North Brook, Middle Brook, and South Brook) and their tributaries, traversing the lower half of the Rangiora urban area (Figure 1).

Figure 1 indicates the layout of the Rangiora urban drainage network and shows the natural fall of the land. It shows the location of the network in relation to the location of nearby towns, and the Ashley Rakahuri, Kaiapoi and Waimakariri Rivers.

In summary, this SMP has considered stormwater effects on five natural streams (receiving environments) within the Rangiora urban limits; North Brook, Middle Brook, South Brook, South South Brook, and the No. 7 Drain. Most of these streams are spring-fed with yearly baseflow and are generally considered to have high ecological and cultural values. The North Drain is also considered within this SMP, with discharge to the Ashley Rakahuri River (the receiving environment) beyond the urban limits.

3.1.1. Cam Ruataniwha catchment

The Rangiora urban stormwater network predominantly discharges to the three brooks, which form part of the extended tributaries of the Cam River (Ruataniwha) catchment. The Cam River flows into the Kaiapoi and Waimakariri Rivers.

In the eastern part, the town centre is drained by the Railway Stream, with spring-fed base flow emerging at its lower end where it drains into the Kowhai Ave Stream and then into the North Brook mainstem. Both the Railway Stream and the North Brook primarily flow into Io Io Whenua (North Brook ponds) before re-joining a North Brook mainstem baseflow downstream. The principal purpose of these ponds is to attenuate flows and reduce the amount of sediment entering the river systems from stormwater runoff from the town. The Newnham Street industrial area stormwater flows along Boys Road into the North Brook, without passing through Io Io Whenua (North Brook Ponds), with some flows in large rain events also potentially flowing into the Middle Brook catchment.

At Southbrook Park there are smaller ponds that cater for the Green Street catchment. There is also a small pump station (on Rowse St) in the Green Street catchment that provides a groundwater base flow to the upper reaches of the Middle Brook for ecological purposes.

3.1.2. North Drain

The northern part of the town is served by the ephemeral "North Drain" which discharges directly to the Ashley Rakahuri River. A long, grassed swale area provides some infiltration and an unquantified amount of treatment of the flow prior to discharge to the Ashley Rakahuri River.

3.1.3. No. 7 Drain

When the Southbrook industrial area was further developed in 2011 the upper section of the South-South Brook was diverted to the south. This diversion resulted in the upper part of the South-South Brook becoming part of the No.7 Drain (flowing to the Cust Main Drain) catchment, with the lower section of the South-South Brook continuing as part of the Cam River catchment.

3.1.4. Discharge to Ground

There are significant areas to the north of Rangiora that discharge to ground, particularly the north-west subdivisions of Westpark and Arlington. The recent development of the Bellgrove area in the Northeast of Rangiora discharges to ground, except in a 1 in 50-year storm event or above, during which, this area will discharge stormwater into the headwaters of the Cam River itself. Similarly, future development of Bellgrove further stages to the north-east of Rangiora are also proposed to discharge stormwater to ground, with discharge to the headwaters of the Taranaki Stream, in a 1 in 50-year storm event.

3.1.5. Stormwater exclusion

In addition to the main natural streams there are also several smaller tributary waterways. For example, Kōura (Crayfish) Creek is a spring-fed creek draining to the North Brook, originating above North Brook Road, with high ecological values. The area surrounding this creek is within the Rangiora urban area. To preserve the ecological values of this creek none of the stormwater from the development is discharged into the creek.



Figure 1: Rangiora network location plan.

3.2. The Receiving Environment

Stormwater discharge from Rangiora is primarily to the Cam River Ruataniwha catchment, with some discharge to the Cust and Ashley Rakahuri Rivers.

3.2.1. Cam River Ruataniwha

The Cam River Ruataniwha originates as spring-fed tributaries on the plains to the west of Rangiora (South Brook) or within Rangiora township itself (Middle Brook, North Brook, and Cam River headwaters). The Cam River Ruataniwha flows to the Kaiapoi River then the Waimakariri River before entering the sea.

The macrofauna species in the Cam River Ruataniwha catchment include¹:

- Tuna / Longfin eel (Anguilla dieffenbachii) and shortfin eel (Anguilla australis)
- Pātiki / Black Flounder (*Rhombosolea retiarii*)
- Inanga (Galaxias maculatus) a whitebait species
- Toitoi / Common Bully (*Gobiomorphus cotidianus*), Upland Bully (*Gobiomorphus breviceps*), Giant Bully (*Gobiomorphus gobioides*)
- Common smelt (*retropinna retropinna*)
- Yellow-eyed mullet (*Aldrichetta forsteri*)
- Kanakana / pouched lamprey (Geotria australis)
- Brown trout (Salmo trutta) An introduced sport fish
- Kākahi / freshwater mussels (Echyridella menziesi)
- Freshwater shrimp (Paratya curvirostris)
- Wai koura / freshwater crayfish (Paranephrops zealandicus)

There is a historical (1946) record for the Canterbury mudfish (*Neochanna burrowsius*), however this species is no longer known to be present in this catchment.

Parts of the South Brook, North Brook, Cam River mainstem and Kōura (Crayfish) Creek are mapped as areas of Critical Habitat for Indigenous Species under Plan Change 7 of the CLWRP (Figure 2). This is likely to be due to the presence of species such as wai kōura / freshwater crayfish (*Paranephrops zealandicus*) which is ranked as "At Risk- Declining" and kanakana / pouched lamprey (*Geotria australis*) which is "Nationally Vulnerable".

The presence of larval and juvenile kanakana at multiple sites in 2023 ecological surveys indicates kanakana are likely to be spawning in the South Brook, and potentially wider Cam River catchment (Boffa Miskell, 2024). Wai koura are also known to be present in the South Brook, North Brook and its tributaries through WDC staff observations.

¹ source: New Zealand Freshwater Fish Database and WDC staff observations

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Figure 2: Critical habitat for indigenous species shown in orange (source: CLWRP)

3.2.2. Cust River (No.7 Drain)

The Cust River originates on the plains near Oxford. In the lower reaches the river has been diverted into a channel, often called the Cust Main Drain. The No.7 Drain, which receives stormwater from Rangiora, is one of the drainage channels flowing into the Cust River that was constructed to drain wetland areas in the 19th century.

Macrofauna species in the Cust River catchment include²:

- Tuna / Longfin eel (Anguilla dieffenbachii) and shortfin eel (Anguilla australis)
- Pātiki / Black Flounder (Rhombosolea retiarii)
- Inanga (Galaxias maculatus) a whitebait species
- Toitoi / Common Bully (*Gobiomorphus cotidianus*), Upland Bully (*Gobiomorphus breviceps*), Giant Bully (*Gobiomorphus gobioides*), Bluegill Bully (*Gobiomorphus hubbsi*), Redfin Bully (*Gobiomorphus huttoni*)
- Yellow-eyed mullet (Aldrichetta forsteri)
- Kanakana / pouched lamprey (Geotria australis) one record from 1998 only
- Brown trout (*Salmo trutta*), Chinook Salmon (*Oncorhynchus tshawytscha*), Rainbow Trout (*Oncorhynchus mykiss*)– Introduced sport fish
- Kākahi / freshwater mussels (Echyridella menziesi)
- Freshwater shrimp (Paratya curvirostris)
- Panoko / Torrentfish (Cheimarrichthys fosteri)

² Source: New Zealand Freshwater Fish Database

There is one undated record for the Canterbury mudfish (*Neochanna burrowsius*), however this species is no longer known to be present in this catchment.

3.2.3. Ashley Rakahuri River

The Ashley Rakahuri River originates in the Puketeraki Range, which are the foothills to the west of Lees Valley, that then passes through a gorge before coming a braided river on the plains. The Ashley Rakahuri estuary (Te Aka Aka) is a large estuarine area that is a wāhi taonga for tāngata whenua (Mahaanui IMP, Jolly *et al.* 2013).

Macrofauna species in the Ashley Rakahuri catchment include³:

- Tuna / Longfin eel (Anguilla dieffenbachii) and shortfin eel (Anguilla australis)
- Pātiki / Black Flounder (*Rhombosolea retiarii*)
- Inanga (Galaxias maculatus) a whitebait species
- Toitoi / Common Bully (Gobiomorphus cotidianus), Upland Bully (Gobiomorphus breviceps), Giant Bully (Gobiomorphus gobioides)
- Common smelt (*Retropinna retropinna*)
- Yellow-eyed mullet (Aldrichetta forsteri)
- Kanakana / pouched lamprey (Geotria australis)
- Brown trout An introduced sport fish (Salmo trutta)
- Kākahi / freshwater mussels (Echyridella menziesi)
- Freshwater shrimp (Paratya curvirostris)
- Bluegill Bully (Gobiomorphus hubbsi)
- Estuarine triplefin (*Grahamina sp.*)
- Panoko / Torrentfish (Cheimarrichthys fosteri)
- Canterbury galaxias (Galaxias vulgaris)
- Koaro (Galaxias brevipinnis)

3.3. Rangiora Sub-catchments

A combined area of 3,050 Ha contributes to the Rangiora stormwater catchment area and includes both urban and rural areas. A crucial objective of the SMP is to meet established consent limits for water quality within the receiving waterways. In line with this objective, sub-catchments for the purpose of the SMP were defined based on where the waterway intersects the urban limit (see sub-catchment delineation points shown on Figure 3). These locations were selected to, as best possible, align with the existing sampling locations outlined in the Rangiora Stormwater Monitoring Programme. This intentional overlap facilitates efficient and coordinated ongoing monitoring efforts, enabling:

Clear identification of areas exceeding consent limits.

By correlating water quality data with specific discharge points from each sub-catchment, the SMP identifies areas within the urban landscape where targeted interventions can be implemented to work towards improvements needed to meet established consent limits for discharge.

Assisted in identifying gaps in sampling locations.

Alignment with sampling locations also provided a clear indication of additional sample points to be considered for ongoing monitoring.

Effective tracking of progress towards compliance.

³ Source: New Zealand Freshwater Fish Database and WDC staff personal observations

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Using aligned sampling locations allows for consistent data collection and analysis, providing a clear picture of progress made towards achieving compliance with water quality consent limits and other water quality objectives.

Streamlined data interpretation and resource allocation.

Aligning boundary definition of sub-catchments and sampling points simplifies data analysis and interpretation, helping to guide resource allocation and improvement efforts within the SMP, ensuring resources are directed towards areas with the greatest impact on achieving consent limits.

This strategic coordination between the SMP and the CRC184601 Stormwater Monitoring Programme fosters a data-driven approach to stormwater management, ultimately leading to improved water quality within the receiving waterway ensuring steps towards achieving established consent limits.

The following seven sub-catchments, one of which is categorised as areas with discharges to ground, were identified within the Rangiora township, listed below and presented in Figure 3. Total catchment areas for each of these catchments are shown in Table 1.

- 1. North Brook
- 2. South Brook
- 3. Middle Brook
- 4. North Drain
- 5. No. 7 Drain
- 6. South South Brook;
- 7. Areas that discharge to ground.

Table 1: Total area of each sub-catchment

Sub-catchment	Area (ha)
Discharge to Ground	300
Middle Brook	75
No. 7 Drain	295
North Drain	97
North Brook	594
South South Brook	30
South Brook	1463

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Figure 3: Rangiora SMP sub-catchments.

3.4. Sub-catchment Characteristics

Characterisation of each sub-catchment within the township was undertaken, encompassing the following:

- land-use classifications (residential, industrial, rural, and commercial);
- soil properties and infiltration rates;
- groundwater levels;
- existing stormwater infrastructure, and;
- projected growth areas within Rangiora.

This spatial analysis, documented through comprehensive mapping, provided a valuable foundation for understanding the unique hydrological behaviour of each sub-catchment.

These factors included land use, stormwater drainage and infrastructure, groundwater levels, soil conditions, and future growth areas. The spatial analysis also identified locations with existing treatment facilities, highlighting areas lacking necessary stormwater management controls. This comprehensive mapping exercise provided a detailed overview of each sub-catchment's unique characteristics which leads to informed decision making for this SMP. This information was critical in:

- Identifying high-risk areas within the township. Locations with specific land uses or inadequate treatment that led to increased runoff and contributed to high contaminant generation (further discussed in Section 3.5).
- Analysing the capacity of existing infrastructure and identifying potential flood prone areas or upgrade needs.
- Best Management Practices (BMP) selection. Choosing appropriate BMPs considering specific subcatchment constraints and opportunities.
- Prioritisation of projects. Improved project implementation plans resources are directed towards highest risk areas and or projects that would that provide the most significant impact (i.e. poor water quality, directed efforts for areas particularly vulnerable to flooding, highlighted areas where existing treatment systems are lacking in performance and efficiency).

By employing this approach, the plan ensures effective and adaptable stormwater management practices are implemented across the diverse sub-catchments within the township. This ultimately translates to a more efficient and cost-effective method for managing stormwater within Rangiora. Additionally, this characterization allows for future flexibility and adaptability in the face of changing land-use patterns or evolving environmental regulations. By understanding the baseline conditions and potential challenges of each sub-catchment, the plan can readily be updated and refined to maintain optimal stormwater management practices for the township.

3.4.1. Rangiora Drainage Network and Infrastructure

The discharge of stormwater from the Rangiora urban stormwater network is via the following combination of key infrastructure:

- Kerb and channel, sumps, manholes and pipes
- Passive treatment devices such as swales
- Open drains (naturalised and boxed)
- Dry ponds
- Wet ponds
- Wetlands
- Discharges to ground such as infiltration trenches/soakage basins

The town centre is drained by the Railway Stream, with a spring-fed base flow. First flush from the Railway Stream and the North Brook discharge into the Io Io Whenua (North Brook Ponds) before re-joining the North Brook downstream. The principal purpose of these ponds is to attenuate flows and reduce the amount of sediment entering the downstream river systems from stormwater runoff from the town.

At Southbrook Park there are smaller ponds that cater for the Green Street catchment. There is also a small pump station in the Green Street catchment that provides a base flow of spring water to the upper reaches of the Middle Brook, for ecological purposes.

In the northwest of the township, stormwater runoff is discharged directly to ground. Runoff from urban areas is conveyed via various combinations of infrastructure such as kerb and channel, sumps, manholes and pipes into swales or soakage systems such as soak pits or infiltration basins to be discharged into ground.

All the basins within the network provide a water quantity function of managing flows, reducing / maintaining flow peaks, managing flood water levels and reducing erosion. In addition, some of these basins are also designed as infiltration/first flush basins which, in addition to attenuating flows, are designed to treat stormwater discharges by discharging contaminants to land and filtering contaminants across grass or vegetation.

The Rangiora stormwater network infrastructure and points where stormwater runoff exits the urban boundary of Rangiora are shown in Figure 4.

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Figure 4: Rangiora stormwater drainage network and infrastructure

3.4.1. Land Use

The spatial distribution of various land use types was identified within each sub-catchment and quantified (Figure 5 and Table 2). This data provides insights into potential types and loads of contaminant generation from runoff based on land use activities. Three main land use types were mapped: rural, business (which include both commercial and industrial sites) and residential zones.



Figure 5: Land Use Zones for Rangiora

Table 2: Land use distribution (%) by sub-catchment.

Note that due to rounding, percentages do not always equal 100%.

Catchmont	Business		Reside	ential	Rural	
Catchinent	Percentage	На	Percentage	На	Percentage	На
Discharge to						
Ground	1%	2	58%	173	42%	125
No 7 Drain	27%	79	0%	0	73%	217
North Drain	0%	0	99%	96	1%	1
Middle Brook	0%	0	99%	75	0%	0
North Brook	8%	45	63%	374	29%	175
South Brook	1%	8	17%	244	83%	1210
South South Brook	83%	25	0%	0	17%	5

Conclusions drawn from the mapping of land use areas are:

Business zones (industrial and commercial) areas are concentrated.

Business zones within the township are largely located in only three of the seven sub-catchments: North Brook; which includes the entire Rangiora Central Business District (CBD) and some industrial areas, the No. 7 Drain, and South Brook; with a small portion within the areas that Discharge to Ground (2 Ha) and South Brook (8 Ha).

Industrial and commercial land use activities are recognized as significant sources of pollutants which contain high contaminant load generating activities. Overall, in terms of total area (ha), business zones make up only 6% of land use over the seven sub-catchments. The concentration of industrial and commercial land use being mainly within three sub-catchments leverages economies of scale, allowing for the implementation of treatment measures at a more efficient and cost-effective level. Focusing on treating similar contaminants in concentrated areas avoids logistical and financial challenges associated with scattered treatment across diverse industrial and commercial areas, thus allowing for more effective implementation of necessary treatment measures at a sub-catchment level.

A large portion of overall land use within Rangiora sub-catchments is rural.

Almost all sub-catchments contain areas with rural land use (overall 61% of land use area (Ha) across the seven sub-catchments are zoned as rural), with the exception of Middle Brook and North Drain (1 Ha). South Brook contains the largest amount of rural land use (83%), followed by No.7 Drain (73%), with North Brook and area that discharge to ground consisting of less than 50% of rural area.

While removing total suspended solids (TSS) effectively addresses common urban pollutants, rural run-off poses a distinct challenge due to its prevalence of dissolved contaminants like ammonia, dissolved inorganic nitrogen, and dissolved reactive phosphorus. Rural areas that are not within the reticulated service area of WDC are excluded from the scope of the SMP. Having said that, it is recognised that these dissolved contaminants stemming from rural activities have an impact on overall receiving environment water quality. Source control methods (in line with BMP) and community education are valuable mechanisms that can be utilised to approach mitigation of stormwater pollution from rural areas.

Residential areas are predominant.

Overall, 34% of land use area (Ha) across the seven sub-catchments are zoned as residential. All catchments contain residential areas, except for No.7 Drain and South South Brook. North Drain and Middle Brook has 99% of total area zoned as residential but are the smallest in terms of total area for residential zones within a sub-catchment (96 and 75 Ha respectively). North Brook on the other hand has the largest residential zone in terms of area, 374 Ha which is approximately 63% of land use within the sub-catchment. This indicates the need for a diverse range and sub-catchment specific stormwater management solutions across the catchments, considering the varying densities, size of catchment areas and contaminant concentrations.

Discharge is mostly to ground in the north-west.

In the north, northeast and northwest of Rangiora, land use is predominantly either rural or residential and the soil composition is ideal for stormwater to be disposed of into ground. In more recent builds of subdivisions in this area, a dwelling may have an individual soakpit to dispose of roof water. Runoff from roadways and other impervious areas are normally discharged to a treatment basin before discharging to ground. Secondary flow is sometimes discharged to ground, however overland flow paths are always required to carry the full secondary flow overland to the receiving waterways.

Currently, in Rangiora, most of the northwestern subdivisions dispose of stormwater to ground; these include The Oaks, Arlington, Chesterfield Place, Covan Mews, Enverton Drive and River Road subdivisions.

3.4.2. Soil Drainage Conditions

The distribution of soil drainage capacity across the sub-catchments (Figure 6) was mapped, highlighting their influence on infiltration capacity and potential runoff generation. Understanding this characteristic is crucial for selecting and designing effective stormwater treatment (infiltration-based solutions) and flood mitigation and water quantity storage strategies.



Figure 6: Soil Drainage capacity across sub-catchments within Rangiora

Sub-Catchment	Very Low	Low	Medium	High	Very High	Unknown
Discharge to Ground	0%	0%	4%	74%	20%	2%
No 7 Drain	6%	90%	0%	5%	0%	0%
North Drain	0%	0%	0%	89%	11%	0%
Middle Brook	61%	39%	0%	0%	0%	0%
North Brook	22%	20%	33%	22%	0%	2%
South Brook	0%	24%	19%	30%	21%	6%
South South Brook	0%	100%	0%	0%	0%	0%

 Table 3: Soil drainage capacity distribution (%) by sub-catchment.

 Note that due to rounding, percentages do not always equal 100%.

The modelling infiltration information is extracted from Manaaki Whenua (Landcare Research), who use a scale of 1-5 to classify the drainage capacity of the soil (or infiltration capacity). A classification number of 1 indicates a soil with low infiltration rates, a 5 indicates a soil with high infiltration rates.

Areas to the north, northwest and northeast of the township have excellent to good soil drainage (ranked high and highest). The North Drain sub-catchment is almost entirely within the "high" soil drainage classification. Towards the middle of the township, soil drainage is average and continues to decline towards the south of Rangiora, with the No.7 Drain catchment in the south being classified mostly with low soil drainage. South Brook, North Brook and Middle Brook catchment areas have varying levels of soil drainage.

For new developments, geotechnical investigations are undertaken during which infiltration tests are undertaken to determine if there is sufficient infiltration capacity at the site for the required runoff volumes. It is a requirement for WDC Engineers to review any information provided via the Land Development team, who will make recommendations regarding any such proposals via the consenting process for any new subdivisions.

As the infiltration capacity of the soil deteriorates over time, the WDC normally requires that a subdivision has soakage solutions are able to convey a 5-year Annual Return Interval (ARI) but constructed to convey a 50-year ARI. This allows the infiltration system to deteriorate to a level still meeting a 5-year ARI storm before being renewed.

Some sub-catchments exhibit a single, consistent soil drainage classification, while others display variations in infiltration capacity across the area. Due to the varying soil drainage characteristics across different sub-catchments within the township, a multipronged approach incorporating diverse strategies and tailored solutions will likely be more effective than relying on a single, uniform approach for managing water quantity runoff and stormwater treatment throughout Rangiora.

3.4.3. Groundwater

Groundwater levels in Rangiora range from high (less than 1m depth, to greater than 3.0m (Figure 7). Depth shown are an average and vary seasonally.



Figure 7: Depth to groundwater for sub-catchments within Rangiora

Sub Catchments	High <1m	Moderate 1-3m	Low >3m
Discharge to Ground	1%	11%	88%
No 7 Drain	78%	22%	0%
North Drain	0%	0%	100%
Middle Brook	100%	0%	0%
North Brook	52%	11%	37%
South Brook	12%	21%	67%
South South Brook	4%	96%	1%

Table 4: Depth to groundwater (%) for sub-catchments within Rangiora.
Note that due to rounding, percentages do not always equal 100%.

Discharge to Ground areas and the North Drain catchment in majority are classified as having "Low" groundwater levels (i.e. depth to groundwater more than 3m); which makes infiltration or soakage systems an ideal stormwater management solution for these areas. On the other hand, Middle Brook and No.7 Drain land area is largely as having high groundwater levels (i.e depth to groundwater at less than 1m). Areas of the South Brook catchment within the urban limits are a mixture of 'High"," Moderate and "Low" groundwater. South South Brook land area is in majority classified as "Moderate" (between 1 and 3m). Other sub-catchments have varying levels of depth to groundwater across the catchment area.

The impacts of stormwater runoff on groundwater and its connections to urban infrastructure are complex and multifaceted. This is a relatively new and evolving area of discussion within the industry. Understanding groundwater levels plays a pivotal role in effective stormwater management providing key information that informs the following key factors:

Flood Risk Vulnerability

During heavy rainfall, high groundwater levels can prevent infiltration, leading to increased surface runoff and potentially contributing to flooding. Understanding groundwater dynamics helps assess areas susceptible to flooding due to interactions with surface water, informing decisions and selection of preventive measures.

Suitability of Stormwater Treatment Systems

Different treatment systems rely on various mechanisms to manage stormwater. Infiltration-based systems like infiltration basins or dry ponds require permeable soils and sufficient space below the water table for infiltration. Conversely, solutions like wetlands or wet ponds, that require a permanent water level to function are most suitable for soil conditions with low permeability and are more appropriate for areas with high groundwater levels. Mapping groundwater levels helps identify suitable locations for these systems and inform design, preventing potential issues like ponding, oversaturation, and potential groundwater contamination.

Groundwater Interaction and Quality

Stormwater can interact with groundwater, potentially impacting its quality. If contaminated runoff infiltrates into shallow aquifers, it can endanger drinking water sources. Mapping groundwater levels and flow direction helps assess this risk and inform the selection of treatment systems.

The groundwater levels beneath Rangiora are also illustrated on the Environment Canterbury online GIS viewer (Canterbury Maps) which shows groundwater depth contour lines and shows that the area of the network consent application overlies an unconfined or semi-confined aquifer.

In 2004 MWH Ltd conducted an investigation into the Rangiora groundwater water supply and the capacity of the Ashley River aquifer; (see *Rangiora Water Supply Issues and Options* report, TRIM 040614097). These backup drinking water sources for Rangiora from the Ashley River are not considered to be

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significantly impacted by the interaction with surface water due their depth, which is 8.8m and 13.7m for the Ayers Street wells and 22.9m and 19.5m for the Dudley Park wells.

3.4.4. Growth Areas

Possible growth areas of Rangiora have been derived from census data shown in Figure 8. Note that these growth areas are indicative only. They are subject to change, depending on the outcome of the Proposed District Plan zoning process and other factors.



Figure 8: Projected growth areas within Rangiora

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 Table 5: Projected growth area distribution (%) by sub-catchment.

 Note that due to rounding, percentages do not always equal 100%.

		0-3	3-10	10-20	20-30	30-50	>50 years	
Sub-Catchment	Existing	Years	Years	Years	Years	Years		Rural
Discharge to Ground	57%	7%	0%	11%	5%	2%	20%	0%
No 7 Drain	22%	9%	0%	5%	0%	0%	0%	65%
North Drain	99%	1%	0%	0%	0%	0%	0%	0%
Middle Brook	99%	0%	0%	0%	0%	1%	0%	0%
North Brook	73%	0%	0%	3%	3%	14%	4%	3%
South Brook	11%	1%	1%	1%	3%	1%	4%	77%
South South Brook	100%	0%	0%	0%	0%	0%	0%	0%

Table 6: Projected growth area distribution (Ha) by sub-catchment

		0-3	3-10	10-20	20-30	30-50	
Discharge to Ground	Existing	Years	Years	Years	Years	Years	Rural
Discharge to Ground	169	20	0	32	14	5	1
No 7 Drain	64	26	0	13	0	0	192
North Drain	96	1	0	0	0	0	0
Middle Brook	75	0	0	0	0	0	0
North Brook	431	2	0	17	16	84	21
South Brook	167	19	10	21	41	20	1126
South South Brook	0	0	0	0	0	0	0

Figure 8 predicts urban growth within the Rangiora catchment area to be concentrated in the south, southeast, north-east and west of the township over the next 10 years. Over this period, the No.7 Drain, South Brook and the Discharge to Ground areas are anticipated to have the most growth and new development in terms of area (Ha).

It is important to take into consideration that the Council requires all new (or greenfield) developments to have their own SMA in the ECoP. This requires developers to consider flood capacity and projected flows in the downstream network and receiving environments when designing their stormwater systems. This requires attenuation of peak flows and peak velocities to match pre-development levels (i.e. to achieve stormwater neutrality). The management of flow regimes to pre-development levels is intended to prevent any damage to structures downstream of the developments, including dwellings located near the lower Three Brooks or alongside the Cam River. Discharge to ground is also required where practicable.

Similarly, any new developments are required to implement stormwater treatment solutions, addressing urban pollutants and will be assessed for approval by the WDC to meet the provisions of Consent CRC184601, such as Condition 14. Land use consents issued by WDC require stormwater from new developments to be treated to meet the ECoP, with the Waterways, Wetlands and Drainage Guide (WWDG) (Christchurch City Council) and TP10 (replaced by GD01, Auckland Council) stated as best practice to follow. This is to ensure potential adverse impacts of the development on water quality in the downstream receiving environment are managed and mitigated close to source.

The following Outline Development Plan (ODP) maps have further detail on these future growth areas within Rangiora and can be found on the WDC website. These maps also include additional information on stormwater, land use, water, wastewater and greenspaces for the projected growth area.

Existing Outline Development Plans:

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- Northwest Rangiora Development Area <u>https://waimakariri.isoplan.co.nz/draft/rules/0/297/0/0/0/226</u>
- South Belt Development Area <u>https://waimakariri.isoplan.co.nz/draft/rules/0/296/0/0/0/226</u>
- Southbrook Development Area <u>https://waimakariri.isoplan.co.nz/draft/rules/0/278/0/0/0/226</u>
- North Rangiora Development Area <u>https://waimakariri.isoplan.co.nz/draft/rules/0/275/0/0/0/226</u>

Proposed District Plan Outline Development Plans:

- West Rangiora Development Area <u>https://waimakariri.isoplan.co.nz/draft/rules/0/224/0/0/0/226</u>
- North East Rangiora Development Area <u>https://waimakariri.isoplan.co.nz/draft/rules/0/225/0/0/0/226</u>
- South East Rangiora Development Area <u>https://waimakariri.isoplan.co.nz/draft/rules/0/290/0/0/226</u>

Some of these ODP areas are partially developed. If the associated stormwater discharges are already consented by Environment Canterbury the consent conditions will be transferred to the stormwater network consent CRC184601 at the same time at which the corresponding infrastructure is vested in the Council.

3.5. High Risk Areas within Rangiora Township

3.5.1. Approach

Maintaining healthy receiving environments requires effective stormwater management. This section outlines the methodology used to identify high risk areas within the township, allowing WDC to allocate resources towards priority areas that need improvement. Sub-catchments are prioritised based on determining the risk levels for each sub- catchment. High risk areas are determined by evaluating which sub-catchments pose the greatest potential for negative impact on the receiving environment.

3.5.2. Key factors

This assessment methodology assigns risk levels to six sub-catchments based on assessment against three key factors which have a high impact on stormwater quality:

a) Areas with existing treatment infrastructure versus untreated areas

Lack of existing treatment infrastructure is a significant risk as it allows contaminants to enter receiving environments without mitigation. Existing stormwater treatment infrastructure reduces the immediate need for significant investment as preexisting systems in place lowers the likelihood of contaminants exceeding trigger levels.

b) Land use composition

The type of land use is a key factor when determining the risk of that area having a negative impact on the downstream system. For example, areas dominated by business zones (industrial and commercial activities) are typically known sources of higher pollutant loads and more harmful contaminant types. Therefore, the type and extent of land use is a factor when determining the risk of a given area.

c) Water quality sampling results for dissolved copper and zinc

Water quality sampling is crucial for confirming potential issues highlighted by the methodology used to identify and rank elevated risk areas. The collected data from the Rangiora Stormwater Monitoring

Programme offers clear proof of stormwater quality issues; be it non-compliance with regulations, possibility of a spill event, or an indication of subpar performance of existing treatment systems. This data is instrumental in designing targeted improvement measures. By analysing this information, we can gain a deeper understanding of the problem areas and ensure that implemented solutions directly address the root causes (i.e upgrading existing treatment systems, implementing additional treatment measures and or review of maintenance practices and frequencies).

At present, water quality sampling results for dissolved copper and zinc from the identified discharge points are available for all sub-catchments (sampling years 2021 -2023). Sampling for 2024 had not been reported at the time of this SMP development, and therefore has been excluded. Ongoing monitoring over the next few years will highlight any emerging trends. This will not only enhance verification of current water quality but also potentially inform future adjustments to the monitoring program and risk assessment, ensuring an adaptive management approach to stormwater management.

Note: Factor B excluded rural areas of a sub-catchment. Factors B and C both excluded areas that discharge to ground.

3.5.3. Contaminant Load Modelling (CLM)

To complement the three factors for risk assessment, CLM was conducted for each catchment by the WDC Network Planning Team in 2022, using a CLM developed by Auckland Regional Council (see Appendix C for development of the CLM).

The model provided projections of contaminant loads in each sub-catchment area based on land use type and considers any existing treatment systems that are in place. Results of the CLM modelling for TSS, total zinc and total copper for each sub-catchment are shown in Table 7. The results (kg/year) from the CLM model, although not directly comparable to the water quality sampling results, are in line with the risk assessment that identifies South Brook as high risk based on the total loads (kg/yr).

The modelling results indicate that from all the sub-catchments contaminant loads from South Brook is within the three highest levels (shown in cells shaded red in Table 7) of contaminant loads contributing towards total zinc, total copper and TSS.

	Zn	Cu	TSS	Zn	Cu	TSS
Catchment	(kg/yr)	(kg/yr)	(kg/yr)	kg/ha/yr	kg/ha/yr	kg/ha/yr
North Drain	14.216	0.567	2230.598	0.426	0.017	66.816
North Brook	30.723	4.215	45356.895	0.121	0.017	178.870
South Brook	69.696	6.683	62921.095	0.048	0.005	43.053
Middle Brook	90.883	6.353	21014.035	1.213	0.085	280.453
South South Brook	8.685	1.676	1019.293	0.285	0.055	33.465
No. 7 Drain	53.995	8.740	16260.976	0.283	0.046	85.207

Table 7: CLM results for projected	contaminant loads at discharge	point for Rangiora sub-catchments

Note: Shading indicates areas of higher loads.

The outputs from the model are the total load in kilograms per year in each catchment. Alternatively, results are also presented in kilograms per hectare per year, where the large rural area of the South Brook catchment masks the higher loads from the developed area of the sub-catchment.

This CLM can be a useful tool to give indicative contaminant concentrations for scenarios and should not be interpreted as a precise measurement tool. Alongside sampling results, this model can be used to target

sources of contamination and the effectiveness of treatment devices. The output of the model is total copper and zinc per year, therefore direct comparison to CRC184601 water quality limits for dissolved copper and zinc in mg/L is not possible.

Overall, CLM provides a valuable tool for understanding the potential for pollution across Rangiora, even if it does not directly influence the risk assessment. Instead, it can help prioritise areas for further investigation, plan for future risks, and project effectiveness of contaminant concentration reductions for a proposed treatment system or treatment train.

By combining these factors with data-driven assessments, this methodology of assigning risk levels, allows a Project Control Group (PCG) to effectively prioritise funding and targeted improvement initiatives within Rangiora that will provide the most impact on water quality outcomes. This ensures that funds and resources are directed towards areas with the greatest need and enabling flexibility and adaptability to raise or reduce risk levels as needed, maximizing the overall environmental benefit of our stormwater management efforts.

3.5.4. Scoring criteria for each factor

Sub-catchments were assessed against each of the following factors, with scores between 1 to 5 applied to each factor based on the following criteria score bands:

Factor A – Water Quality

This factor was calculated as the percentage of water quality sampling results (dissolved zinc and dissolved copper only) during first flush rain events that were above CLWRP guideline value across the 2021 -2023 monitoring period for all sites in each sub-catchment. During this period a total of 3 sampling rounds were undertaken for each of the six sub-catchments. It is important to note that due to resourcing issues, for North Brook and South South Brook there was only two rounds of sampling undertaken (Q3 2021/2022) and (Q4 2022/2023).

Score	Zn and Cu % exceedances of total samples taken
1	= 0-20%
2	≥ 20-40%
3	≥ 40-60%
4	≥ 60-80%
5	≥ 80-100%

Table 8: Scoring criteria for water quality

Factor B - Untreated areas

Total area (in hectares) within a sub-catchment where stormwater runoff does not pass through a stormwater treatment system prior to discharging into a receiving environment.

Table 9: Scoring criteria for untreated areas

Score	Untreated Areas (Ha)
1	= 0-20 Ha
2	≥ 20-40 Ha
3	≥ 40-60 Ha
4	≥ 60-80 Ha
5	≥ 80-100 Ha

Factor C - Land use composition

The total amount of land use area (in hectares) within a catchment that consists of business zones (commercial or industrial activities).

Score	Business Zone Areas (Ha)
1	= 0-20 Ha
2	≥ 20-40 Ha
3	≥ 40-60 Ha
4	≥ 60-80 Ha
5	≥ 80-100 Ha

Table	10:	Scoring	criteria	for	land	use	composition
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3.5.5. Risk Classification

After assigning scores to each factor, the final score for every sub-catchment was determined by calculating the mean of the three factors, using equal weighting for each factor. Based on this average score, risk levels were categorized using the following classification:

Risk Classification

- Low Risk: Average score of 1-2
- Medium Risk: Average score of >2-3
- **High Risk**: Average score greater than >3-4
- Very High Risk: Average score >4-5

This classification system allows for a clear and systematic assessment of risk levels across the subcatchments based on the averaged factor scores.

3.5.6. Results

The following table displays the results of applying sections 3.5.4 and 3.5.5 above.

Sub-catchment	(A) Water quality sampling results	(B) Limited or No Treatment	(C) Land Use - Contains business zone	Average of all 3 factors (A, B & C)	Risk Level
North Drain	3	5	1	3.0	Medium
North Brook	5	2	3	3.3	High
South Brook	1	3	1	1.7	Low
Middle Brook	5	4	1	3.3	High
South South Brook	3	1	2	2.0	Low
No.7 Drain	2	1	4	2.3	Medium

Table 11: Risk levels for Rangiora sub-catchments

The result of the risk assessment identified the North Brook and Middle Brook as high risk sub-catchments, and the North Drain and No 7. Drain as medium risk. Therefore, these four catchments are the primary focus for implementing future stormwater improvement projects.

This approach leverages existing knowledge to verify the effectiveness of the scoring mechanism, ensuring that the prioritization matrix is not just theoretically sound, but also practically applicable.

Feedback was sought from the 3 Waters Manager on scores and was used in fine-tuning the prioritization matrix by adjusting the scoring mechanisms for greater accuracy and recalibration of criteria thresholds to better reflect real-world conditions. The process underscores the importance of incorporating diverse viewpoints in developing effective decision-making frameworks.

The Newnham Street Industrial area in the North Brook sub-catchment is a business zone with currently no treatment. It is a significant untreated area within Rangiora, and therefore is a specific area worthy of focus for stormwater improvement.

Although ecological values of the receiving environment are not evaluated within the risk assessment criteria, they are in line with the identification of the North Brook as a priority sub-catchment. The North Brook (including Kōura Creek tributary) along together with the South Brook have been mapped by Environment Canterbury as Critical Habitat for Indigenous Species (Figure 2). This was re-confirmed by recent ecological survey results (Boffa Miskell, 2024) which found threatened species kanakana (pouched lamprey, *Geotria australis*) in the South Brook, and wai kōura (freshwater crayfish, *Paranephrops zealandicus*) are present in both waterways.

The results from this assessment can be used to serve a dual purpose. While it effectively identifies priority areas that require focus, it also offers valuable insights into lower risk areas. By strategically allocating resources to these high and medium-risk areas, there is possibility to implement some smaller-scale projects aimed at further improving low risk areas to ultimately posing no risk where environmental outcomes are fully met. Conversely, these medium risk areas can be prevented from being escalated into high-risk ranked areas; by targeting areas with the potential for substantial improvement (even with existing treatment). This approach can potentially yield significant benefits for water quality. This risk assessment process is intended to be re-run for each review of this stormwater management plan to assess progress to downgrade catchments from high through to medium, low or no risk over time.

Sub-catchments that have existing treatment systems, but demonstrate poor water quality results could indicate potential issues such as:

Overwhelmed Systems

Treatment systems might be overwhelmed by the high volume or specific types of pollutants, leading to inefficient pollutant removal and non-compliance with environmental regulations.

- <u>Improper Functioning or inadequate systems</u> Existing systems may be malfunctioning due to wear and tear, improper design size, or lack of maintenance.
- <u>Mismatch of treatment system versus type of contaminant</u>
 The current treatment system in place does not target removal of dissolved metals, and therefore may require additional treatment measures.
- <u>Upstream Issues</u>
 In rare cases, temporary upstream events like spills or accidents could temporarily compromise water quality before reaching the treatment system.

One-off investigations could include additional water quality sampling into medium risk areas to understand root causes of poor performance of existing systems and or to determine the best solution for improvement measures, in addition to sampling for the Rangiora Stormwater Monitoring Programme.

This methodology for assessing risk provides a high-level overview of sub-catchment risk by employing a quantitative approach. Inclusion of CLM modelling data helps proactively identify potential issues even before they appear, allowing for pre-emptive planning. This method also highlights the need for further investigation into existing treatment systems that show poor performance. This could indicate a need for enhanced treatment, improved maintenance, need for improved source control, or even system remediation.

The limitation to this methodology is that it relies on readily available data and may oversimplify complex decisions that does not capture all intricacies of each sub-catchment. Despite attempts at objectivity, scoring systems can still be influenced by inconsistent interpretation of criteria across different evaluators. Therefore, this risk assessment is meant to highlight problem areas within the township at a high level, further site-specific assessments are necessary to refine the risk ranking and identify additional factors. More detailed assessments should be undertaken during the project prioritisation and implementation phase.

3.6. Current Status of Stormwater Quality Improvement Measures

This section provides an overview of the current stormwater quality improvement measures that are currently in place within Rangiora.

3.6.1. Existing Stormwater Treatment

The Rangiora stormwater network services all streets and properties within the developed urban limits (Figure 9). All new (greenfield) developments are required to consider the downstream network and receiving environments when designing their stormwater system. This is done so that the existing receiving waterways are protected. From a stormwater quantity perspective, this is commonly achieved through attenuating peak flows and peak velocities to match pre-development levels.

The majority of the Rangiora stormwater system enters either a retention or detention system consisting of either a wetland, dry pond, wet pond or infiltration swale/basin before being discharged to the receiving environment.

As well as providing attenuation, these systems also provide treatment. Refer to Section 6.3 for types of treatment.

Figure 9 provides an overview of areas that have existing treatment and areas that currently are "untreated" i.e. defined as not passing through a pond or a stormwater management area (SMA) (dry or wet pond, infiltration basin, or wetland) before discharge.

The majority of the Rangiora urban area has an existing pond or basin that provides attenuation and or treatment. There are several urban areas where there is no treatment: for example, all of the Middle Brook catchment and the majority of the North Drain Catchment.

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Figure 9: Treated and untreated areas within Rangiora sub-catchments.

Sub-Catchment							
	Untreated Urban		Treated	Urban	Rural %		
	%	На	%	На	%	На	
Discharge to Ground	1%	4	65%	194	34%	102	
No 7 Drain	0%	0	27%	79	73%	217	
North Drain	99%	96	0%	0	1%	1	
Middle Brook	100%	75	0%	0	0%	0	
North Brook	4%	23	67%	396	29%	175	
South Brook	3%	43	10%	153	87%	1266	
South South Brook	0%	0	83%	25	17%	5	

Table 12 Distribution of treated and untreated areas by sub-Catchment

There are over 23 stormwater basins (the number varies with definition), which are a combination of both wet and dry ponds within the Rangiora urban boundary. The catchment areas served by each of these systems are shown in Figure 10. These ponds aid in reducing/maintaining flow peaks, flood water levels and erosion within the receiving waters. Many of these ponds also function as first flush treatment basins which are primarily designed to treat stormwater discharge but also provide attenuation.

A schematic showing configuration of these systems is included in Appendix D of this report.

It should be noted that data used in mapping Figures 9 and 10 focuses on larger stormwater treatment and storage systems like basins, ponds, and wetlands. It excludes smaller features within the township, such as swales and specialised proprietary treatment devices. Previous studies that utilised this data were focused on water quantity analysis, therefore these smaller systems were omitted at the time, as their primary function is treatment of stormwater, not water quantity management.



Figure 10: Stormwater Ponds within Rangiora

A record and map of Enviropods or other similar catchpit filters such as the Littatrap across Rangiora is shown in Figure 11 below. Additionally, a record of other proprietary devices such as Stormfilters and soak pits are shown in Table 13 below. A preliminary gap analysis of existing treatment systems such as these proprietary systems revealed that there is some missing asset information. It is important to note that the figures showing records of these assets are not exhaustive. Further improvement on how asset data is recorded, mapped and maintained is needed; to ensure accurate and complete data registry of treatment systems installed within the township.



Figure 11: Location of catchpit filters within Rangiora (Littatraps and Enviropods)

Table 15. Record of proprietary devices in Rangiora di ban area.					
Asset Number	Asset	Asset Description			
SW026426	Cartridge Stormwater Filter System	95 Townsend Rd Rangiora			
SW011403	Gross Pollutant Trap (GPT)	Stormwater Chamber acting as GPT -366 Flaxton Rd			
SW014797	Arlington Park Soakpit System	Chamber 1 for Arlington Park Soakpit System- Epsom,			
		Drive Rangiora			
SW006611	Arlington Park Soakpit System	Chamber 2 for Arlington Park Soakpit System- Epsom,			
		Drive Rangiora			

Table 13: Record of proprietary devices in Rangiora urban area.

4. Issues

Issues analysis has been carried out to review the effect the existing stormwater discharge is having on the receiving environment. Some issues analysed for the Rangiora Interim SMP (2017, TRIM 171206132761) were found to not affect the receiving environment; namely negligible erosion and scour caused by discharges and effects on downstream private drinking water supplies.

4.1. Flooding and Network Capacity

The Rangiora urban stormwater network has a 20% Annual Exceedance Probability (AEP) level of service design standard (i.e. 1 in 5-year flood) that has generally been applied since 2000, however older parts of the network were often not designed to this level. In some cases, even if systems were designed to that level, as rainfall intensity projections have increased over time, they will not meet that level based on current rainfall forecasts. A specific capacity of 2% AEP (i.e. a 1 in 50-year flood) is provided for with secondary overland flow paths. The commercial town centre has a 10% AEP level of service design standard (i.e. a 1 in 10-year flood).

Rangiora flooding issues or challenges identified include:

- Excess rural flows entering the town, particularly during a period of high groundwater causing rural flows to overwhelm the urban network (such as during the June 2014 flood event)
- Poorly drained areas, particularly in the south-east of Rangiora, where this can lead to increased runoff for the network and poor soakage as there is little depth to groundwater.
- The southern part of Rangiora (including the Southbrook Industrial area), a strip to the west of the railway line, and small localised low points have been identified as having a significant flood risk in WDC natural hazard modelling for a 1 in 200-year flood event (localised and Ashley River Breakout models).
- Limited and undersized pipe network in older parts of the town where infrastructure was designed and constructed prior to adoption of the current design standards. This causes stormwater to flow over ground when the pipe system is full or not available.
- In general, increasing impervious areas, combined with more frequent heavy rainfall events.

The most recent run of the Rangiora Urban Stormwater Model (RUSM) in May 2024 (TRIM 240508073139) confirmed that water quantity issues where flooding of private property (i.e. outside of secondary flow paths) in a 1 in 50-year event are likely to occur are:

- Blackett Street / Central Business District North
- White Street / Kingsbury Avenue
- Blackett St West and White St North
- Watson Place
- Douglas Street
- West Belt Between Blackett Street and High Street

It is noted that this work was not to the level of detail to determine whether dwellings are at risk; only that private property is subject to flooding in these areas. Further detail would be required, including consideration of dwelling locations, and floor level, to understand this risk in more detail.

Climate Change has been factored into the RUSM using the 100-year Recommended Concentration Pathway scenario (RCP) 8.5 as adopted by WDC for flood modelling. This means that the model results discussed are conservative for current weather patterns, as they are based on rainfall intensities that are expected to occur approximately 100 years from now, with the impacts from climate change factored in.

Environment Canterbury is responsible for providing Ashley Rakahuri River flood protection works that protect the town from flooding events. The Ashley Rakahuri River is the only significant watercourse posing a direct threat to Rangiora township; however, this flood risk is out of scope of the Rangiora stormwater network discharge consent.

4.2. Water Quality

Stormwater runoff picks up contaminants from hard surfaces such as roads, carparks, industrial yards and certain building materials. Polluted stormwater that is discharged to the environment can put a strain on the health of our waterways. This can affect the aquatic ecosystem and how the community views and interacts with the waterways. Water quality guideline values (Appendix A) have been primarily set where an estimated 90% of aquatic species are protected, with increasing negative impacts on native species when these guidelines are exceeded.

The Rangiora Stormwater Monitoring Programme has 22 visual discharge inspection outlets in the stormwater network (6 of which are also sampled for Total Suspended Sediment). Thirteen sites are located in the receiving environment and are sampled for urban contaminants during first flush conditions, and there are 6 sites within waterways for stream health sampling during dry weather.

The following stormwater contaminant-related issues have been identified in Rangiora through the stormwater monitoring programme annual reports for CRC184601 (TRIM 230919146639 and 220512075696) and baseline sampling from 2014-2017:

- Guideline values in 2021-2023 were routinely exceeded for Dissolved Copper, Dissolved Zinc, Dissolved Reactive Phosphorus (DRP) and *E. coli*. during wet weather events in waterways that were sampled. Guideline values were not exceeded for Total Ammoniacal Nitrogen (TAN).
- Visual monitoring of stormwater outlets from 2021-23 generally does not raise any issues for hydrocarbons or smell. Sediment was occasionally noted to be visible during discharge outlets inspections. The discharge from Pond C (SMA on the corner of Flaxton and Fernside Road) into the No. 7 Drain however has once measured above the guideline value for TSS and is frequently above the *E. coli* guideline value.
- From 2021-2023 during dry weather "Stream Health" sampling in selected waterways, guideline values were not exceeded for TSS, pH, temperature, TAN, DRP, and dissolved oxygen. The exception was a low value at the North Brook at Lilybrook Park, that is thought to be due to low oxygen in groundwater inflows. Guideline values for Dissolved Inorganic Nitrogen (DIN) and *E. coli* were occasionally not met in the North Brook, Middle Brook, South Brook, or the No. 7 Drain.

Recommendations to address contaminants and actions for waterways have been included in the annual Rangiora Stormwater Monitoring Reports of 2021-22 and 2022-23 and incorporated where appropriate into this SMP. It is believed that some exceedances of *E. coli*, DRP and DIN, particularly for the South Brook and No. 7 Drain could be due to rural inputs, beyond the scope of the Consent CRC184601.

Macroinvertebrates are an important and commonly used measure of stream health. Invertebrate communities are in a degraded state throughout the spring-fed rivers in the Ashley Rakahuri and Cam River Ruataniwha catchments. Deposited fine sediment cover is high in all spring-fed streams in both catchments and is likely a key driver of poor ecosystem health and high macrophyte cover in these systems. In terms of recreational value, spring-fed rivers in the Ashley and Cam River / Ruataniwha catchments are unsuitable for primary contact recreation due to significant faecal contamination (Greer and Meredith 2017). Fine sediment and nutrients, such as nitrate and phosphorus in particular, are contaminants sourced from rural inputs as
well as Rangiora township urban sources, which could be from wastewater overflows or residential use of garden fertiliser for example.

In a stream health ecological and sediment contaminant investigation in December 2023, as part of the Rangiora Stormwater Monitoring Programme, Boffa Miskell Ltd (2024) found;

- Two sites of six monitored sites, (in the South Brook at Marsh Road, and the Middle Brook at Hegan Reserve) met the Quantitative Macroinvertebrate Community Index (QMCI) NPS-FM National Bottom-Line value, all other sites did not meet the National Bottom-Line. Average Score Per Metric (ASPM) scores were variable between the six sites, but only one (South Brook at Marsh Road), met the NPS-FM National Bottom-Line of ASPM > 0.3. All other sites did not meet the National Bottom-Line value.
- Fine sediment cover was high (exceeding the CLWRP guidelines) at all six sites surveys across key sub-catchments. Fine sediment cover means coarser substrates, like cobbles, are less available to aquatic biota (for grazing, egg laying, using as refugia), highlighting the need to stabilise eroding banks, using best practice stormwater treatment, and minimising intensive land-use change in the catchment to reduce inputs of fine sediments. Fine sediment depth and cover is particularly extensive in the South Brook catchment.
- Guidelines for in-stream sediment concentrations of copper, total polycyclic aromatic hydrocarbons (PAH), cadmium, chromium, BTEX, and nickel were met at all eight sites that were tested. Stream sediment contaminants exceed guideline values in the South South Brook at Lineside Road (for zinc, arsenic and mercury), Middle Brook at Gefkins Road (for zinc), and North Brook at Ward Park (for zinc and lead).
- Total macrophyte cover was above (i.e. did not meet) guidelines at two of the six monitoring sitesboth were sites in the North Brook.

Interim results from a WDC SMA sediment sampling investigation carried out from December 2023- May 2024 (unpublished data) found levels of:

- Total recoverable zinc were above guideline values in eight SMAs (of 25 SMAs sampled);
- Total petroleum hydrocarbons were above guideline values in nine SMAs (of 25 SMAs sampled); and
- Total recoverable copper, arsenic, mercury, lead, and chromium were above guideline values in one
 or two SMAs each of the 25 SMAs sampled. These were primarily SMAs with industrial/commercial
 land use, namely Pond C on the corner of Flaxton and Fernside Road (No. 7 Drain catchment), Pond
 A on Lineside Road (South South Brook sub-catchment) and Io Io Whenua Northbrook Ponds (North
 Brook sub-catchment).

A programme of further sampling investigations and recommendations for remedial action, such as soil disposal where required will be carried out, commencing in 2024-25.

4.2.1. Industrial Sites, Contaminated Sites and Hazardous Substances

Some industrial activities are a higher risk source of contaminants to stormwater such a heavy metals and hydrocarbons. Environment Canterbury maintains a Hazardous Activities and Industries List (HAIL), which identifies these types of land uses.

Many of the potentially contaminated sites located within the Rangiora Urban Limits have been identified in the Environment Canterbury Listed Land Use Register (LLUR) for areas where potentially hazardous activities are or have occurred previously. Types of LLUR sites in Rangiora are mainly industrial contaminant discharges

due to current land use or contaminated stormwater discharges due to past land use, and human effluent discharges (i.e. from private septic tanks).

4.3. Impacts on Wāhi Tapu, Wāhi Taonga, and Mahinga Kai

Stormwater infrastructure can create scour of downstream wāhi tapu or wāhi taonga sites such as urupā, modify habitat (i.e. to increase conveyance) with negative impacts on aquatic life, and also present fish passage barriers to migration upstream and/or downstream for migratory species. Stormwater infrastructure can also create restricted areas for access, so that mahinga kai practices are no longer able to be carried out.

Stormwater contaminant discharges can impact the survival of species so that they are less abundant and reduce the safety and quality of mahinga kai for consumption so that traditional collection areas are no longer available. Bioaccumulation of a contaminant could lead to restrictions in recommended consumption amounts.

4.4. Exacerbators of Issues

4.4.1. Urban Development and Construction

Urban development of new greenfield subdivisions or brownfield redevelopment, as well as during the construction phase (i.e. house-building) can lead to exacerbated contaminant release, such as sediment from poor erosion and sediment control. When constructed, these developments often result in a net increase in impervious surface area of a catchment, with higher peak flows during rain events to be managed by the stormwater infrastructure.

4.4.2. Poor Maintenance

Delayed or incorrect stormwater infrastructure maintenance can lead to blockages and flooding, erosion from higher peak flows and additional contaminant discharges, for example if filters of proprietary devices are not regularly serviced. Maintenance and minor works in the stormwater network can exacerbate issues if best practice is not followed, such as causing sediment disturbance and resuspension.

4.4.3. Climate Change

Climate change is an exacerbator of stormwater issues. Possible climate change effects predicted in the Waimakariri District that would likely affect Rangiora township include the following, as defined in the Zone Implementation Programme Addendum (ZIPA, Environment Canterbury 2018):

- Increase in the frequency, duration and severity of droughts causing increased stress on water resources and impacts on stream health.
- An increase in evapotranspiration with associated increase in groundwater abstraction, depending on rainfall.
- Further flow decreases in the Ashley Rakahuri River, increasing length and duration of dry reaches in the river and causing reduced flows in the spring-fed streams, such as has been noted in the North Brook and Cam River headwaters, (spring-fed waterways sustained by groundwater flow from the river).
- The potential for less winter rainfall with more rainfall in summer and autumn.

Higher intensity rainfall is also predicted, resulting in surpassing the capacity of the stormwater network and an increased risk of pluvial flooding. This type of high rainfall is associated with an increasing number and duration of atmospheric rivers.

As Rangiora is generally located at an elevation of approximately 20 to 40 metres above sea level it will not be affected by sea level rise and its streams will continue to be unaffected by tidal influence.

In terms of planning for the impacts of climate change, the Council requires that new infrastructure be built taking into account projections for increased rainfall intensities, in accordance with the RCP 8.5 scenario – a conservative (worst case) climate change scenarios involving increasing rainfall intensity and duration. This ensures that new infrastructure that is built is sized to take into account the impacts of climate change.

5. Mana Whenua Values

Ngāi Tahu are tangata whenua of the Canterbury region and hold ancestral and contemporary relationships with Canterbury. The contemporary structure of Ngāi Tahu is set down through the Te Rūnanga o Ngāi Tahu Act 1996 (TRONT Act). The TRONT Act and Ngāi Tahu Claims Settlement Act (NTCSA) 1998 sets the requirements for recognition of tāngata whenua in Canterbury. The TRONT Act (1996) and the NTCSA (1998) give recognition to the status of Papatipu Rūnanga as kaitiaki and mana whenua of the natural resources within their takiwā (boundaries). Each Papatipu Rūnanga has their own respective takiwā, and each is responsible for protecting the tribal interests in their respective takiwā, not only on their own behalf of their own hapū, but again on behalf of the entire tribe (Mahaanui Kurataiao Ltd, 2024). Ngāi Tūāhuriri Rūnanga hold mana whenua over Rangiora, as it is within their takiwā.

Natural resources – water (waterways, waipuna (springs), groundwater, wetlands); mahinga kai; indigenous flora and fauna; cultural landscapes and land - are taonga to mana whenua and they have concerns for activities potentially adversely affecting these taonga. These taonga are integral to the cultural identity of ngā rūnanga mana whenua and they have a kaitiaki responsibility to protect them. The policies for protection of taonga that are of high cultural significance to ngā rūnanga mana whenua are articulated in the Mahaanui IMP 2013 (Mahaanui Kurataiao Ltd, 2024).

The Mahaanui IMP details the cultural importance of the Ruataniwha and Cust River, which are part of the Waimakariri River catchment, and the Rakahuri (Ashley River) to tāngata whenua. The Waimakariri catchment was recognised for its cultural significance in the Ngāi Tahu Claims Settlement Act (1998). Objectives of the Mahaanui IMP (Jolly *et al.* 2013) include;

- Water quality and flows in the Waimakariri and its tributaries are improved to enable whānau and the wider community to have places they can go to swim and fish.
- The mauri and mahinga kai values of the Waimakariri and its tributaries and associated springs, wetlands and lagoons are protected and restored; mo tātou, ā, mo kā uri ā muri ake nei (for us and our children after us).

The Rakahuri (Ashley River), Waimakariri and Ruataniwha (Cam River) have continued to sustain Ngāi Tahu even after the land purchases in Canterbury (i.e. Kemps's Deed in 1948 and subsequent purchases), therefore there are strong mahinga kai associations with these waterways for Ngāi Tahu (IMP, 2013).

The position of Ngāi Tūāhuriri Rūnanga regarding stormwater management in Rangiora (Mahaanui Kurataiao Ltd, 2024) is that it 'neither supports, nor opposes, the Rangiora Stormwater Management Plan. Ngāi Tahu have traditionally strongly opposed the use of global consents for stormwater discharge. Stormwater run off from urban, industrial and rural environments can have significant effects on water quality and waterway health. Improving stormwater management requires on site, land-based solutions to stormwater disposal, alongside initiatives to reduce the presence of sediments and contaminants in stormwater, and reducing the volume of stormwater requiring treatment. Tāngata whenua have always supported discharge to land as an

alternative to discharge to water, given the natural ability of Papatūānuku to cleanse and filter contaminants from waste. However, support for discharge to land is provisional on appropriate management of the activity. Over-saturation and over-burdening of soils with stormwater discharges compromises the mauri of the land and can result in run off or seepage into groundwater and waterways in the area. Low impact development and low impact urban design are fundamental features of sustainable stormwater management.

The discharge of contaminants such as wastewater, stormwater or sediment to water, or to land where they may enter water, is culturally unacceptable. The effects of these discharge activities on tāngata whenua values may be significant despite the activity having only been assessed as having only minor ecological effects. It is critical that local authorities recognise that Ngāi Tahu concerns with discharges of contaminants to water extend beyond the existence of silent files or areas of cultural significance. Rather, these concerns are based on protecting the mauri of waterways, and the relationship of Ngāi Tahu to them. Clear limits are required for reducing and managing contaminants at the source, both in rural and urban environments, and for controlling those land use activities which pose the highest risk to water quality. For Ngāi Tahu, water quality is a measure of how well we are doing regarding land and water management and hāpua, coastal lakes and river mouth environments are the indicators. At the bottom of the catchment, the health of these environments reflects our progress in the wider catchment.'

The relevant policy sections of the Mahaanui IMP (2013) for Rangiora stormwater management were identified in the Cultural Impact Assessment for consent CRC184601 (Hullen 2017, TRIM 230824131017) as:

- Section 5.3 WAI MĀORI CHANGING THE WAY WATER IS VALUED
- Section 5.4 PAPATŪĀNUKU EARTHWORKS
- Section 5.5 TĀNE MAHUTA MAHINGA KAI
- Section 5.8 NGĀ TŪTOHU WHENUA RECOGNISING CULTURAL LANDSCAPES

The Cultural Impact Assessment for consent CRC184601 (2017, TRIM 230824131017) by Joseph Hullen for Mahaanui Kurataiao Ltd detailed mana whenua values that apply to stormwater management.

Mana Whenua Values for Rangiora Stormwater Management (Hullen, 2017 for MKL Ltd) Kaitiakitanga

Kaitiakitanga is an integral aspect of Rangatiratanga and entails an active exercise of authority in a manner beneficial to the resource in question. The rights and responsibilities of kaitiaki derive from mana whenua, and this has been reflected in the

definition of kaitiakitanga in the Resource Management Act 1991 where it is made clear that only tāngata whenua of an area are able to exercise kaitiakitanga. Traditionally speaking kaitiaki were spiritual guardians associated with particular resources and locations. Their essential function was to indicate the well being of their environment thereby warn local human guardians accordingly. Those that claim mana whenua have a responsibility to maintain natural and physical resources within their rohe and as such are considered kaitiaki. How to recognise and provide for Kaitiakitanga? Appropriate participation by tāngata whenua whether that be on any Board, Trust or Committee set up for the purpose of managing the natural or physical resources, and/or through "on the ground" maintenance and monitoring of those sites and resources within the project area affected by the activities presently under application.

Outcomes sought:

a.) Adoption of a Planting Plan that utilises plant species that would historically occur within the project area and that addresses:

i) Enhancement of Biodiversity;

ii) Protection of Cultural and Historic Values; and

iii) Protection of in stream values.

b.) Where necessary the engagement of members of Ngāi Tūāhuriri who are trained in the recognition of archaeological sites to monitor earthworks and assist the lead archaeologist.

c.) Consultation with Te Ngāi Tūāhuriri Rūnanga regarding the display and or storage of prehistoric artefacts located within the proposed Rangiora Stormwater Consent.

Mauri

In Māori thought all things are believed to have a mauri, or vital essence. It is this mauri which provides all living things and every place with a unique personality. The key to the traditional Māori view towards environmental issues is the importance of not altering a mauri to the extent that it is no longer recognisable.

How to recognise and provide for Mauri?

Appropriate input or involvement - whether in person or via plans and policies- in the management, maintenance and monitoring of culturally significant sites or resources affected by the activities presently under application. Outcomes sought:

a.) Adoption of a multi faceted approach to Water Sensitive Urban Design treatment methods.

Manaakitanga

A term to express love and the concepts of hospitality and mutual obligation. Manaakitanga defines the obligation of Tāngata Whenua towards their Manuhiri (guests) and, when exercised appropriately, enhances the mana of the hosts. Traditional expressions of manaakitanga require an ability to provide a selection of the local delicacies. There is an intimate and inextricably linked relationship between the values of manaakitanga, kaitiakitanga and Rangatiratanga, and without one it is very difficult to exercise another. The relative health and availability of mahinga kai is one of the principal means by which manaakitanga can be expressed. How to recognise and provide for Manaakitanga? Recognition of the value of mahinga kai within any relevant management plans or regimes established to manage the natural resources within or directly affected by the proposed project area. Provide for the ongoing sustainability of mahinga kai through the recognition of mauri.

Mahinga Kai

Mahinga kai are central to the traditional way of life for Ngāi Tahu. Highly organised seasonal timetables were followed to best utilise the resources available. The term mahinga kai, therefore, refers to the whole resource chain, from the mountain tops to the ocean floor. It encompasses social and education elements as well as the process of food gathering, including the way it is gathered, the place it is gathered from, and the actual resource itself. How to recognise and provide for Mahinga Kai? Appropriate input or involvement - whether in person or via plans and policies- in the management, maintenance and monitoring of culturally significant sites or resources affected by the activities presently under application.

Outcomes sought:

a.) Adoption of a Restoration Re-vegetation Planting Plan that utilises plant species that would historically occur within the project area and that addresses:

i) Enhancement of Biodiversity.

ii) Protection of Cultural and Historic Values.

iii) Protection of in stream values.

b.) Adoption of a multi faceted approach to Water Sensitive Urban Design treatment methods.

Wāhi Tapu/Wāhi Taonga and Urupā

In modern terms - in the Ngāi Tahu rohe - the term wāhi tapu refers to places held in reverence according to local tribal custom and history. Some wāhi tapu are important to the lwi while others are important to individual hapu or whānau. Of all wāhi tapu, urupa (burial sites) are considered to be the most significant.

How to recognise and provide for Wāhi Tapu/Wāhi Taonga and Urupā?

"It is important for Ngāi Tahu that wāhi tapu sites are protected from inappropriate activity; and there is continued access to such sites for Ngāi Tahu. Outcomes sought:

i.) Adoption of a Wāhi Taonga/Wāhi Tapu and Urupā Protocol.

6. Toolbox of Options

This section describes the current toolbox of options available to manage and mitigate the issues identified in Section 4. Tools available include regulatory and planning tools, site design and source control tools and stormwater treatment systems.

6.1. Regulatory and Planning Tools

Regulations are able to require best practice to be employed and restrict activities that have negative outcomes. Planning tools are useful for assessing and managing risk, such Pollution Prevention Plans or flood modelling. A number of such tools are currently used for Rangiora.

6.1.1. Network Stormwater Modelling

The Rangiora Urban Stormwater Model (RUSM) is the planning tool which determines if the Council is meeting water quantity outcomes of the network consent CRC184601, condition 8 a. The most recent run of the RUSM with a system performance analysis was in May 2024 (TRIM 240508073139). Prior to that, this model was last run in 2013 with a system performance analysis (TRIM 131112104705). The model is planned to be re-run at least every 5 years from 2024 to examine if stormwater network discharges have increased in volume, which could cause flooding of downstream dwellings or damage downstream infrastructure in a two percent AEP rainfall event. The model is also used to make recommendations to plan upgrades, where deficiencies are identified.

Climate Change has been factored into the RUSM using the Recommended Concentration Pathway scenario (RCP) 8.5 as adopted by WDC for flood modelling. This means conservative (worst case) climate change scenarios involving increasing rainfall intensity and duration are factored into model outputs.

6.1.2. Stormwater, Drainage and Watercourse Protection Bylaw (2024)

The Stormwater, Drainage and Watercourse Protection Bylaw (2024) is the legal mechanism enabling the Council to require and enforce actions of third parties discharging stormwater into the reticulated networks. The Bylaw provides the basis for the Council to control the quality and quantity of all discharges from private properties into its reticulated stormwater networks. It enables the Council to manage discharges from high and medium risk sites and construction activities and provides for Council approvals of pollution prevention and erosion and sediment control plans. High risk sites are defined in schedule 1A of the Bylaw; as sites where an activity is occurring that is described in the current version of the Canterbury Land and Water Regional Plan Schedule 3 *"Hazardous Industries and Activities List"* i.e. sites involving the use, storage or disposal of hazardous substances. A list of activities and sites that are considered medium risk are included in schedule 1B of the Bylaw. In general, heavy industrial sites, workshops and manufacturing and or processing plants are considered medium risk activities.

The Bylaw includes provision for Council to assume full control of all discharges from high risk sites into the reticulated networks from 1 January 2025. The review will align the Bylaw with Policy 4.16A of the CLWRP, which requires the Council to manage the quality of all discharges into and from the reticulated networks from 1 January 2025.

6.1.3. Pollution Prevention Plans

Pollution Prevention Plans are required by WDC for medium risk sites discharging into the reticulated stormwater networks. These plans are required to identify any potential contamination generating areas and or activities, provide the detail of how contaminants generated from activities on these sites are managed so that they do not discharge into the stormwater systems.

High risk activities are subject to additional requirements such as an approval of a Site-Specific Stormwater Management Plan (SSMP) as well as a Pollution Prevention Plan. The SSMP will cover details such as how hazardous substances on site are stored and managed and emergency storage and bunding for spill containment on site. In addition to this, high risk sites will require to obtain written discharge approval from the Council. The approval and installation of an on-site stormwater treatment system may also be required. These updated requirements tailor the approval process and documentation for high-risk site discharges to the degree of risk these pose to stormwater quality. The Pollution Prevention Plan requirements for mediumrisk sites are relatively less stringent. A link within the Bylaw is provided to the Council website where best practice information is available to support customers with navigating these new requirements and approval processes (which is required under the updated Bylaw from 1 January 2025).

There is a template available for developing a Pollution Prevention Plan (TRIM 220401049637).

6.1.4. Construction Phase Discharge Approvals

The Council can directly authorise construction phase discharges into its reticulated networks through its function as the reticulated network operator, under Rule 5.93A of the CLWRP. This means, with a network discharge consent in place, construction phase discharges into the reticulated networks do not require a separate Environment Canterbury consent if WDC approval is granted and its conditions complied with. The approval document includes an Erosion and Sediment Control Plan requirement together with other conditions to manage risks assessed specifically for each site.

A template titled *"Template Approvals Document Construction Phase Stormwater"* can be viewed at TRIM 221004171610.

6.1.5. ECoP and Development Consents

The Council authorises new subdivisions and site redevelopments as defined in its District Plan through requiring private property owners to obtain subdivision and / or land use consents from the Council to manage the effects of the activity. These consents include managing stormwater discharges into the reticulated networks.

The ECoP sets out stormwater system design standards that private property owners need to meet, when seeking to connect into or change a connection into the Council reticulated network. The ECoP standards will be applied and approved by the Council through the conditions of a resource consent, which also must give effect to conditions of the Rangiora network discharge consent CRC184601.

6.1.6. Building Sites Erosion and Sediment Control Inspections

The Council is working on a new process with staff who regularly visit development areas to include reporting of erosion and sediment control issues to 3 Waters staff on sites via the Snap Send Solve app. The legal basis for the Council staff to investigate and remedy any breach of TSS levels in stormwater discharges is established through the Stormwater Drainage and Watercourse Protection Bylaw (2024) which allows the Council to require all necessary action to manage discharges from private sites into the stormwater networks.

Following initial investigations a process is being set up to advise and educate the property owner / site manager on necessary improvements to erosion and sediment control methods on building sites to protect the downstream stormwater system and receiving environment. Education resources will be developed and disseminated by 3 Waters staff.

This approach may need to be followed up through Council issue of warnings and statutory notices to private property owners under the Bylaw.

6.1.7. MOU for High Risk Sites with Environment Canterbury / Exclusion of Sites

The Council may encounter ongoing non-cooperation of private property owners / site managers discharging unauthorised contaminants into the stormwater networks including non-compliance with Pollution Prevention Plans, Site-specific Stormwater Management Plans, Erosion and Sediment Control Plans or from discharges into the networks from contaminated sites. To address this situation a Memorandum of Understanding (MOU) has been developed with Environment Canterbury which sets out the process to exclude non-complying discharges from authorisation under CRC184601.

If excluded a private property site discharge would require a separate consent from Environment Canterbury. The MOU clarifies responsibilities of the Council and Environment Canterbury and determines circumstances when an exclusion can be sought.

The document is titled *"Memorandum of Understanding for Process for Exclusion from Stormwater Discharge Consent CRC184601 in Waimakariri District"* (see TRIM 230925149963).

A companion document, titled "Assessment Criteria for HAIL Sites from 1 January 2025" (see TRIM 230412051135) sets out the specific criteria for the Council to follow when determining the level of risk of the construction phase discharge of the medium or high risk site (HAIL site) discharge. This provides guidance about how the Council will manage the effects of the discharge into its network or alternatively when it should refer the discharge to Environment Canterbury for authorisation if there is deemed to be an unacceptable risk.

6.2. Site Design and Source Control Tools

A key approach to managing the impact of stormwater and effect of contaminants downstream is through prevention, before considering mitigation through treatment or regulation. Designers and asset managers should consider non-structural approaches to minimise the impacts of development and re-development on stormwater. Water sensitive design (WSD) concepts for site design of new developments in Rangiora should be encouraged. Some sub-catchments, particularly where treatment options are limited due to limited space and high groundwater levels (such as the Middle Brook, South Brook, No.7 Drain sub-catchments and parts of the North Brook sub-catchment) source control options are likely a preferable option for water quality improvements. Table 7 of the GD01 document by Auckland Council (Cunningham *et al.* 2017) provides a full list of site design and source control measures that are summarised below.

6.2.1. Site Design

Site design measures can include:

- Preserve and use existing site features during development (re-development) such as watercourses, springheads, depressions, floodplains, wetlands, vegetation and permeable areas that contribute to the current balance in the hydrological cycle.
- Reduce impervious surfaces with site design (such as to minimise driveways), and to provide pervious channels and surfaces and infiltration (e.g. grass swales).
- Configure lots to cluster housing so that developments are more pervious overall, and also with opportunities for common recreational areas, and existing hydrological channels can be retained.

• Minimise site disturbance to reduce compaction of soils from earthworks machinery through deliberate site design. Retain existing vegetation for its role in maximising infiltration and promoting evapotranspiration by planning incorporating natural site features. Keep topsoil and leaf litter to capture rainfall and slowly infiltrate it into the ground.

6.2.2. Source Control

Avoiding the use of a contaminant is a preferred option. If a contaminant is required for an activity, procedures should seek to control the release of contaminants or remove them before they come into contact with stormwater. Businesses should carry out self-audits to avoid and minimise any pollutants through an action plan, such as a PPP, Environmental Management Plan or Emergency Spill Response Plan.

Contaminant sources can be identified and physical works carried out to prevent contact with stormwater, such as bunding of storage areas for hazardous substances.

Management practices such as reviewing street sweeping procedures, refuelling, chemical handling, staff training, community education initiatives can minimise transfer of contaminants to stormwater.

National regulation is appropriate to reduce contaminants at source where local Bylaws would be ineffective, such as regulation of copper content in car brakes, and potentially restriction of building materials such as zinc and copper from roofing and cladding materials through the Building Code.

6.3. Stormwater Treatment Systems

This section outlines the various stormwater treatment methods and devices that are primarily used within Rangiora, types of contaminants that they target, and the selection process and considerations the Council will use when selecting a treatment system for a project.

6.3.1. Treatment Selection

This plan prioritises WSDs for treatment, also known as Low Impact Designs or Water Sensitive Urban Designs for stormwater treatment. WSDs are the preferred approach because they can offer multiple benefits beyond just treating and managing stormwater. They can enhance the landscape, provide ecological benefits, and align with community goals. Additionally, WSDs often offer broader advantages compared to proprietary treatment systems.

However, WSDs may not always be feasible due to limitations like space constraints, project budget, or specific site characteristics. In such cases, this plan will consider alternative treatment methods such as GPTs and filter media systems (such as the Stormfilter or Upflo Filter). These proprietary devices (and equivalents) will be evaluated when a WSD is not the most viable option due to project constraints.

The Christchurch City WWDG (2012) notes that in determining what is an appropriate stormwater treatment system for any catchment, it should be understood that whilst sediment is the primary contaminant during the early stages of any urban development, it becomes a lesser concern as urban developments mature. Chemical contaminants, however, do become more important as the intensity of urban contaminant sources (buildings, roads, vehicles, etc) increase. These chemical contaminants are either in dissolved form or bound to particulate matter, with bound contaminant concentrations being higher for fine particles than coarse particles (Christchurch City Council, 2012). Adsorption of contaminants onto the surface of suspended particles, sediment, organic matter, and vegetation, is a principal mechanism for removal of dissolved contaminants and contaminants bound to fine particulate matter (Leersnyder, H. 1993, as cited in Christchurch City Council, 2012).

Stormwater treatment system selection requires a site-specific approach. Each system should be sized and chosen based on the specific contaminants it needs to target for effective removal. Site constraints, characteristics, and potential downstream effects either during construction or post construction of the system should also be taken into account when selecting treatment systems. Additionally, the selection process should also consider any additional benefits that can be achieved such as flood control, erosion prevention, and habitat creation. The chosen system should ideally contribute to achieving these additional objectives where possible.

Even with BMPs in place, proposals should always place significant emphasis on controlling contaminants at their source and by protecting unmodified tracts of land (Christchurch City Council, 2012). Source control options are previously discussed in section 6.2.2 of the SMP.

WDC reference the following nationally accepted design guidelines and methodology when selecting a treatment system for a specific project:

- Waterways and Wetland Drainage Guide (WWDG) by Christchurch City Council (specifically this is selection steps are outlined in *Section 6.2 The Treatment System Selection Process* of the guide)
- Technical Publication No 10, Design Guideline Manual: Stormwater treatment devices by Auckland Regional Council, updated by Auckland Council to publication GD01 (Cunningham *et al.* 2017).

Design and implementation of stormwater treatment systems is a complex issue that can only be adequately addressed by considering whole catchments and seeking input from an experienced multi-disciplinary team (Christchurch City Council, 2012). The Christchurch City Council WWDG also states that key to effective treatment systems will be dependent upon catchment characteristics, good environmental design, and long-term operation and maintenance of the system. The SMP will need to balance effectiveness with long-term operational efficiency. While achieving desired water quality outcomes is paramount, consideration must also be given to:

- Lifecycle costs should be evaluated, encompassing initial investment, regular maintenance requirements, and potential for replacement parts;
- Access accessibility for ease of inspection and maintenance should also be weighed and are equally crucial to keep systems effective and efficient; and,
- Frequency of maintenance and inspection, and type and complexity of equipment needed for maintenance should also be considered.

6.3.2. Treatment Systems within Rangiora

The current Rangiora stormwater management system primarily relies on basins or ponds that are located downstream of a large catchment area (wetlands, dry ponds, wet ponds, or infiltration basins). These larger systems treat the bulk of the stormwater runoff before it is released into the receiving environment. Treatment is primarily targets coarser particles settling out in the basins, and contaminants that dissolved or attached to fine particular material become attached via adsorption to vegetation, sediment or organic matter.

In addition to these major systems, Rangiora also utilises smaller-scale treatment solutions in specific locations throughout the township. These smaller systems include small swales; shallow, vegetated channels that help filter pollutants and slow down runoff, and proprietary devices; manufactured treatment systems designed for specific purposes. Examples include GPTs which capture larger debris and sediment, vortex

separators which target total suspended solids, hydrocarbons and sediment, and filter media systems which remove finer particles in addition to dissolved metals and nutrients.

A brief overview of each of the commonly used devices are provided in the following sections below.

6.3.2.1. Infiltration Basins and Soakpits

An infiltration system captures stormwater runoff and allows runoff to soak or infiltrate back into ground over a period of time. These systems are suited for locations that have sufficient subsoil permeability. The primary function of an infiltration device is to meet retention requirements through the recharge of groundwater. Infiltration devices may form part of a suite, where full mitigation is not achievable due to soil infiltration rate limits (e.g. where retention volumes can be achieved but not detention volumes) (Auckland Council, 2017).

A wide variety of design options are available for infiltration devices which allow for multiple functions, in addition to groundwater recharge, to be added to the infiltration device (Cunningham *et al*, 2017). Within Rangiora the most common form of infiltration system used are infiltration basins and in some limited areas for smaller catchments, soakage pits (Rapid Infiltration Chambers). Infiltration basins are also often referred to as soil adsorption basins. They provide a storage area for stormwater from where it can pass at a predetermined rate through a filter bed designed to remove contaminants (such as hydrocarbons, suspended sediment and attached metals) (Christchurch City Council, 2012). The filtered runoff then percolates down to the water table or via an under drainage system to surface water or a soakage chamber (Christchurch City Council, 2012).

6.3.2.2. Stormwater Ponds

Ponds can effectively remove coarse to fine particles. The definition and descriptions of stormwater ponds under section 6.3.2.2 of this SMP are excerpts from the Auckland Regional Council Stormwater Treatment Devices Operation and Maintenance document TR053 (Healy *et al.* 2010).

Stormwater ponds remove sediments and other contaminants from stormwater before discharging to a receiving open water body or piped stormwater system. They provide a flood control and water treatment function as well as creating an aesthetically pleasing habitat that can be used by birds and aquatic life. Ponds have a long-life span if maintained correctly and are one of the most common stormwater treatment tools worldwide. Two types of ponds are generally recognised; wet ponds and dry ponds and both are described below.

• Wet Ponds

Wet ponds have a standing (permanent) pool of water and are permanent structures providing water quality treatment and flood protection. Wet ponds are usually "offline" i.e. not located within an existing watercourse.

• Dry Ponds

Dry ponds do not have a permanent pool of water but operate similarly to a wet pond by providing some water quality treatment but mostly flood protection. Dry ponds typically do not provide as much water quality improvement as wet ponds.

Within Rangiora dry and wet ponds are commonly used methods of stormwater treatment; however, they require a considerable land area. In Rangiora, wet ponds are generally used for catchments in areas of high

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groundwater levels. Dry ponds are primarily used in Rangiora for residential areas with sufficient depth to groundwater.



The components of a wet stormwater pond are identified in the figure below.

Figure 12: Typical components for a stormwater pond (Auckland Regional Council TR053, (Healy et al. 2010).

6.3.2.3. Wetlands

Wetlands have been used in some industrial areas of Rangiora. Pond C (corner of Flaxton and Fernside Road, No. 7 sub-catchment) and Pond A (Lineside Road, South South Brook sub-catchment) are examples of constructed wetlands in Rangiora. Constructed wetlands are a means of water treatment with robust effectiveness over a wide range of hydrological conditions, and potentially high landscape and ecological values (Christchurch City Council, 2012).

Auckland Regional Council TR053, (Healy *et al.* 2010) states that level of treatment and types of contaminants capable of being treated via wetlands; that constructed wetlands remove nitrogen, phosphates, sediments and heavy metals such as zinc and copper from stormwater run-off, as well as control the flow rates of stormwater. Pollutant removal is achieved by the settling out of sediment from the run-off and sticking to biofilms (layers of microorganisms that coat plants and other surfaces) in the water column. Additionally, dissolved nutrients are removed from stormwater by natural biological processes such as uptake by plant and microbial communities (see Figure 13).



Figure 13: General components of a banded bathymetry wetland (Auckland Council, GD01, 2017)

The following Figure 14 is taken from the Christchurch Waterways, Wetlands and Drainage Guide, (2012) and shows an example treatment train that utilises both a pond and wetland.



Figure 14: Example treatment train utilising a pond and wetland.

6.3.2.4. Grassed Swales and Filter Strips

Swales:

Swales are present in The Oaks subdivision in Rangiora, among other locations, to provide pre-treatment. Vegetated swales having gently sloping sides (typically flatter than 6H:1V) and flat longitudinal grades, are primary channels designed to intercept, convey, and provide inline primary treatment of stormwater (Christchurch City Council, 2012). Vegetation, either grass or other dense ground cover plants, slow the water flow to allow the water to filter through the vegetation and soil to remove pollutants including clay and silt (sediment), dissolved nutrients and metals (e.g. nitrogen, phosphorous and zinc) (Auckland Regional Council, 2010). Swales are commonly placed closed to point source and can act as conveyance to a secondary stormwater treatment system such as a larger infiltration basin or wetland. They can also function as a treatment system independently for a specific site and then conveyed to join the council network via pipes or directly to a receiving environment.

Filter Strips:

A key point of difference between swales and filter strips is that; where swales collect concentrated flow which is directed into the channel, a filter strip intercepts stormwater as distributed or sheet flow before they become concentrated and then distribute the flow evenly across the filter strip (Auckland Council, 2010). The filter strip reduces flow velocities, and a percentage of runoff may infiltrate back into ground.

Typical components of a grassed swale are shown the Figure 15 below, and is an excerpt from the Auckland Regional Council Technical Report 053 document (Healy *et al.* 2010):



Figure 15: General components of a swale (Auckland Council, 2010)

6.3.2.5. Rain gardens

Rain gardens were installed on East Belt in 2024, however are not commonly used in Rangiora. The following points are summarised from Christchurch City Council Rain Garden Design, Construction and Maintenance Manual, (2016); and provides an overview of design and function of a rain garden.

• Rain gardens (also known as bio-retention devices); are engineered gardens designed to harness the natural ability of vegetation and soils to treat stormwater.

- Treatment occurs through sedimentation, filtration, adsorption and uptake by vegetation and operate to reduce effects of stormwater volumes, peak flows and provide treatment.
- Stormwater tree pits can be considered a special type of rain garden that accommodates a large tree. The treatment mechanism and form is largely the same and most design, construction and maintenance aspects of rain gardens also apply to tree pits.
- The advantage of a rain garden, besides its primary function noted above, is that aesthetically they are pleasing and are a good option in city centres as it provides a natural feel to otherwise hard concrete structures.
- Rain gardens work by ponding stormwater in the planted area, which is then filtered through the soil mix and by plant roots. These absorb and filter contaminants before stormwater flows into surrounding ground, pipes, drains and onto final receiving environments.

The key components of a rain garden are shown in Figure 16 below.



Figure 16: Key components of a rain garden (Christchurch City Council, 2016)



Figure 17: Example of a rain garden (Christchurch City Council, 2016)

6.3.2.6. Proprietary Devices

Stormwater treatment can be achieved through a variety of devices designed and manufactured by specific companies. These proprietary treatment devices offer a pre-engineered solution for managing and treating stormwater runoff. Key characteristics of these devices is that they vary in terms of removal efficiencies, types of contaminants removed, costs, maintenance requirements and total catchment area served. Commonly used systems within Rangiora are:

Gross pollutant traps (such as LittaTraps, and Enviropods)

Designed as an easy low-cost solution for sites and environments that require the removal of sediments and gross pollutants and a reduction of particulate-bound heavy metals, and oils and grease from entering into the downstream stormwater or waterways.

Hydrodynamic separators (Vortex Separator)

Utilises hydrodynamic flow paths to separate out contaminants such as hydrocarbons, sediment and floatables. These systems can cater for larger catchment areas and flows.

Filter media systems (such as the StormFilter)

One of the widely used solutions in this space are the cartridge filter systems. These systems contain cartridges that are filled with a specific media mix (defers between manufacturers). Besides TSS, gross pollutants and hydrocarbon, these filter media systems can also target removal of nutrients, organics, and organic trapped bacteria. They are generally designed to treat only the first flush of a stormwater event and can remove contaminants both in particulate and dissolved form.

Another new type of engineered media system from Stormwater 360 includes the Filterra and Bioscape filters. The Bioscape filter is a new technology which resembles a rain garden, however contains high-flow engineered media so can achieve equivalent treatment in a much reduced space. These systems that can be designed and manufactured to various sizes to suit a range of catchment area. This system is a new technology that has been indicated recently will be installed by Christchurch City Council to treat selective urban areas in the proposed Avon Ōtakaro Stormwater Management Plan and is also a system that WDC is

considering trialling as a solution for stormwater quality improvement projects in areas with limited space for WSD solutions.

7. Project Implementation Framework

7.1. Introduction

One of the objectives for this SMP is to outline the framework used to prioritize and select projects that are to be implemented for stormwater improvement within Rangiora. This section outlines the simple and structured framework that was developed for the SMP. The aim of the framework was to ensure effective allocation of budget to maximize the impact of stormwater management improvement projects, and in alignment of the Rangiora Network Discharge Consent objectives, encourage WSD and NPS-FM Te Mana o Te Wai principles.

7.2. Goals and Objectives

The proposed duration of the SMP is from 2025-2040. This SMP seeks to achieve the receiving environment objectives set in Condition 8 of consent CRC184601 (Section 2.1) within this timeframe.

Water quality monitoring results from Rangiora baseline monitoring in 2014-17 and 2021-2023 under consent CRC184601 show non-compliance for several contaminants. In the consent application, WDC proposed to Environment Canterbury to implement stormwater improvement projects to meet compliance levels by 2040. A budget for these stormwater quality improvements is earmarked to cost \$9.8 million in the Long Term Plan 2024-34 (in addition to existing stormwater project allocations). The section provides an overview of the potential stormwater improvement capital projects that this funding will be allocated for, and the framework used to prioritise and assess the projects that will be delivered.

There has been previous work on prevention of downstream flooding, scour and erosion, such as projects from the Rangiora SMP in 2001 and flood recovery work after the 2014 flood event. It is projected that the Rangiora SMP will focus primarily on stormwater quality improvement projects, the area where the need is greatest, to be in compliance with contaminant guideline values (as set in CRC184601 Schedule 1 and the Rangiora Stormwater Monitoring Programme) which forms part of the consent. Consultation with Te Ngāi Tūāhuriri Rūnanga (via Mahaanui Kurataiao Ltd) has been undertaken for inclusion of actions in the work programme for objectives in consent condition 8 (d) and (e) regarding wāhi tapu, wāhi taonga and mahinga kai.

7.3. Framework Methodology and Application

The following steps of identification, categorisation, and evaluation were taken into account for the development of this methodology.

7.3.1. Project Identification

A list of potential stormwater management projects within the Rangiora township boundaries were identified and compiled. Identifying projects involved soliciting proposals from internal departments and via consultation with Te Ngāi Tūāhuriri Rūnanga, and gathering any relevant information for each project i.e description, objectives, alignment of projects to project categories and estimated timeline for implementation. Project approvals are through WDC standard planning processes, i.e. inclusion of budget in Annual and Long Term Plans.

A list of the capital expenditure projects identified to-date for inclusion in the SMP are shown in Section 9. Future projects will use the same framework methodology for evaluation.

7.3.2. Project Categorisation and Subcategorization (Tier 1 and 2 Factors)

Project groups were developed based on their key objectives of the project and alignment with CRC184601 objectives. Each project was then classified into the most relevant project group based on its primary focus. The following project categories were identified:

	Project Group	Description
1	Water Quality Improvement	Focusing on projects with the most significant impact on improving water quality in priority waterways and high-risk areas within the township.
2	Waterway Restoration	Focusing on projects that actively restore the ecological health and function of waterways impacted by stormwater runoff while ensuring the protection of wāhi tapu and wāhi taonga. (i.e: streambed and bank stabilization work, riparian zone planting and restoration, access for and enhancement of mahinga kai activities, habitat enrichment of native and or endangered species.)
3	Flood Mitigation	Prioritising projects based on severity of flood risk, vulnerable communities and areas of networks that require water quantity management improvements.
4	Community Engagement & Education	Promoting public awareness and understanding of stormwater management issues and solutions. (Educational workshops and community events, public signage and informational campaigns, public data collection initiatives, school programs.)
5	Compliance and Infrastructure	Addressing urgent needs like critical asset upgrades, meeting regulatory requirements, and remediating existing non-compliance issues.
6	Innovation and Collaboration	Encouraging innovative approaches and partnerships with tangata whenua, community groups, and other stakeholders to address emerging challenges and opportunities. Including trialling of new technology and green infrastructure solutions

Table 14: Project groups

7.3.2.1. Project Evaluation Within Categories

Each project category has a set of established subcategories or prioritization factors categorized into Tier 1 and Tier 2. The two-tiered evaluation system is used to assess potential projects in more detail and ensure a consistent evaluation process.

Tier 1 Factors: These are essential criteria applied to all projects within any category. Projects are initially evaluated against these core factors and assesses their alignment with overall goals and objectives of the category.

Tier 2 Factors: These are more specific criteria that depend on the outcome of the Tier 1 evaluation. If a project meets a specific Tier 1 factor, it is then further assessed against the corresponding Tier 2 factor(s); which provides a more in-depth understanding into project impact and effectiveness. Conversely, if a project does not meet a specific Tier 1 factor, the corresponding Tier 2 factor becomes irrelevant for that project.

The Tier 1 and Tier 2 factors are shown in the Project Assessment Table (Table 12).

This approach ensures all projects are evaluated against the same essential criteria while allowing for additional, project-specific considerations for those that demonstrate strong potential.

7.3.3. Continuous Improvement

This framework is designed to be adaptable and accommodate ongoing revisions and 5-yearly reviews, aligning with the concept of a SMP as a living document that evolves to address changing needs and opportunities. While formal consent conditions mandate a comprehensive SMP review every five years, more frequent internal revisions can ensure this plan stays current and that the review captures all emerging requirements. Recognising the importance of continuous improvement and accountability, WDC will monitor the progress and effectiveness of implemented projects based on the framework's outcomes. This exercise will inform future updates of the framework; potentially including adjustments to specific criteria (like Tier 1 and Tier 2 factors) to better align with the evolving priorities of the Council, the Rangiora community and national requirements, as set out by Taumata Arowai.

Project assessments or re-assessments could be updated and evaluated using the framework outlined whenever there is a budgetary opportunity to do so, such as for Annual Plans, Long Term Plans, as well as for reviews of this SMP every 5 years. Additionally, the weighting of each factor and the potential adoption of a scoring system in the future will be reviewed.

7.4. Project Evaluation Outcomes

7.4.1. List of Projects Identified for Stormwater Improvement within Rangiora.

Section 9 details a budget with a list of CAPEX projects recommended by this SMP. Note that this budget requires consideration and approval through a Council Annual Plan and/or Long Term Plan to be finalised.

Appendix E contains a template for further scoping of CAPEX projects for inclusion into the Council capital works programme and facilitate project initiation.

Additionally, an action programme is detailed in Section 8 for stormwater management initiatives that improve operations and maintenance, or that are one-off investigations.

7.4.2. Project Prioritisation Framework

Table 12 outlines the developed prioritization framework for stormwater improvement projects. All remaining identified projects, not currently included in the budget, will be evaluated using this framework and the methodology detailed in section 7.3.

Table 15: Project Prioritization Assessment Table

Project Prioritsation Assessment Table Project Proje Desc Key NDC Ot	Group: ct Title: ription ojective	
	Yes Tier 2 Factors V	Yes2 Internal Use: Context/Measure
Project within a high risk area	Serves an Industrial area with no exsiting treatment	Check SMP
	Exceedance in compliance limits in receiving	Check monitoring programme results (e.g. TRIM
	Serves an urban residential area with no exsiting treatment	Check SMP
	Has exsiting treatment but poor water quality	Check SMP and monitoring programme results (e.g. TRIM
Urgency: Immediate Threat to Public Safety	Risk of flooding in critical areas	Check Rangiora Urban Stormwater Model report (TRIM
	Failing on incident state informations	240508073139)
	Critical infrastructure and high population at risk	Service requests, CCTV footage and inspections
	Public health concerns	Service requests, other - Health NZ Community and Public Health
Urgency: Risk to environment	Erosion control	Check Rangiora Urban Stormwater Model reports (TRIM 240508073139, 131112104705)
	Pollution control	Pollution Prevention Plans, site-specific SMPs, ECan consents to
	Habitat restoration	Ecological Surveys - 5 Yearly surveys for CRC184601 (TRIM 24061809882)
Urgency: Regulatory Compliance	Non compliant to meeting NDC dicharge limits	ECan non-compliance reports
	Reporting deadlines	
Urgency: Resource Availability/Disruptions	New regulatory requirements Seasonal constraints	New regulations
orgency. Resource Availability/Distriptions	Emergency funding	
	Minimizing service disruptions	
Urgency: Long-Term Cost Implications	Preventative maintenance need Cascading infrastructure failures	Operations and Maintenance manuals Service request information
Identified as Culturally significant by Mana	Cultural and histroical significance	MKL report (2018) for the Proposed District Plan with wahi tapu
Whenua		and wahi taonga (TRIM 180910103490), Cultural Impact Assessment for Rangiora CRC184601 (TRIM 230830134536)
	Mahinga Kai Sites	MKL report (2018) for the Proposed District Plan with wahi tapu and wahi taonga (TRIM 180910103490), Cultural Impact Assessment for Rangiora CRC184601 (TRIM 230830134536), listed as taonga species in schedule 97 of the Ngai Tahu Claims Settlement Act (1998)
Socially significant	High Public Interest/ Publich health and Safety	Feedback from Environment Services Unit (for health and safety)
	Improving access to green spaces and recreation	Feedback from WDC Greenspace Team
	making	Feedback from WDC Community Team
	Educational and Awareness-Raising Opportunities	Feedback from WDC Community Team
	Enhancing aesthetics and neighborhood livability	Feedback from WDC Development Planning Unit
Receving environment of high ecological value	I hreat to endangered species/habitat	7 of the Land and Water Regional Plan and New Zealand Freshwater Fish Database records
	Habitat diversity and complexity	Feedback from WDC Ecologist / Water Environment Advisor -
	Benfits to ecological corridors	Feedback from WDC Ecologists / Water Environment Advisor
	Restoration potential	Feedback from WDC Ecologists / Water Environment Advisor
Multifunctional benefit	Ecosystem Services Water quality improvement	Feedback from WDC Ecologists / Water Environment Advisor
	Carbon sequestration and climate change	
	adaptation	Feedback from / WDC Ecologists / Water Environment Advisor
	Community Involvement and stewardship Community Engagement, Education and Outreach	
		Feedback from WDC Community Team
Potential allignment with other projects	Shared Recourses and Infrastructure	Roading projects
Fotential alignment with other projects		Roading projects
Meets WDC Community Outcomes	Phased implementation Efficient and resilient core services	Undergrames of other projects
	Caring for the environment	WDC LTP 2024-2034
	Positive about the future	WDC LTP 2024-2034
Allignment with LGA 4 well beings	Social well-being	Local Government Act (2002) and Local Government
	Environmental well-being	(Community Well-being Amendment Act (2019) Local Government Act (2002) and Local Government
	Economic well-being	(Community Well-being Amendment Act (2019)
	Cultural well-being	(Community Well-being Amendment Act (2019)
		(Community Well-being Amendment Act (2019)
Flood Risk Mitigation/Water Quantity Control	Critical infrastructure and high population at risk	Criticality of assets and risk assessments - Feedback from Stormwater and Waterways Manager
	Frequent and severe flooding	Check Rangiora Urban Stormwater Model report (TRIM
	Potential flood depth and damage	Feedback from the Network Planning Team
	Volume reduction and storage	Feedback from the Network Planning Team
	Improved drainage capacity	Feedback from the Network Planning Team

8. Action Work Programme

The action work programme proposed for this SMP (Table 16) are operational initiatives, to be carried out alongside capital expenditure projects (see Section 9). Actions for the period 2025-2030 are the primary focus, with an update of actions to be carried out for each 5-yearly review of the SMP. Changes to current "business as usual" practices have been listed, however current "business as usual" practices with no change proposed have been excluded for clarity and brevity purposes.

Progress on the action work programme will be overseen by the WDC Stormwater and Waterways Manager.

Flood Mitigation Aligns with consent objective 8 (a)					
Work Programme	Actions	Role (Implemented	Timeframe	Expected	
		by who)		outcomes	
Stormwater reticulation master	Develop a stormwater reticulation master plan for	Network Planning Team	Every 5 years (for SMP	Highlight any deficiencies within	
planning for	Rangiora township		review)	the stormwater	
Rangiora	based on expected level of			network and allow	
Prevent flooding of	development Regular Rangiora Urban	Network	Every 5 years	Habitable floor levels	
habitable floors to	Stormwater Model flood model	Planning Team	re-run of	will not be flooded	
a 1:50 Annual	re-runs that monitor changes to		model	through controls on	
Recurrence	Impervious areas and stormwater network capacity. Appropriate			development and/or capacity upgrades	
	use of District flood hazard	Development	Compare	cabacit, abgradee	
	modelling to set Finished Floor	Planning Unit /	model with		
	Level requirements.	Resilience	(e.g. service		
	Compensate with planning	Team	requests) – as		
	changes (i.e. District Plan		required		
	restrictions on land use) or capacity upgrades where				
	required.				
Water Quality Impro	ovement				
Aligns with consent o	objective 8 (c)	Dele	Time of some o	Europeter di europetere	
work Programme	Actions	(Implemented	Timetrame	Expected outcomes	
		by who)			
Erosion and	Create a guideline document for	Guidance	1 July 2026	Decrease in	
guidance for small	plans for small sites. Attach this	Waters. PIM		from construction	
construction sites	guide to building consents issued	Team and		sites	
	by Council.	Building Team			

Table 16: Action work programme for the Rangiora SMP

Investigate the treatment efficiency of strategic SMAs	Investigate current state functioning of strategic SMAs (North Brook Ponds <i>Io Io</i> <i>Whenua</i> , North Brook sub- catchment, Pond A – South South Brook sub-catchment, and Pond C, No. 7 Drain sub- catchment) and recommend treatment improvements	3 Waters Team (via external contracts)	30 June 2027	Ability to improve treatment efficiency of strategic SMAs
construction phase discharges - Best practice used at construction sites for sediment control	WDC requirement Erosion and Sediment Control Plans for all construction sites (as required by the Stormwater Drainage and Watercourse Protection Bylaw 2024, Section 11) Investigation of potential non- compliances	3 Waters Team, with possible referral to ECan for enforcement	30 June 2030	of construction activities is treated to best practice by 2030
Target contaminants (sediment, zinc and copper) from high traffic and industrial areas	Analyse options for improving street sweeping sump cleaning frequency and methodology, and adopting innovative technologies	3 Waters Team	Every time the Road and Drainage Maintenance Contract is renewed (approx. 5- yearly)	Understanding of how to carry out innovation for water quality improvements from high traffic and industrial areas
Retrofitting treatment or source control of high and medium risk sub- catchments	Investigate feasibility and practicability of options for source control or retrofitting treatment of existing high and medium risk catchments (North Brook , particularly Newnham St industrial area, Middle Brook, selective areas of the South Brook) where there is no dissolved metal treatment, or where contaminant levels exceed the guideline value after treatment (No. 7 Drain)	3 Waters Team	30 June 2032	Reduction in contaminants sources (such as dissolved zinc and copper) and/or increased contaminant treatment in retrofitted catchments
Review modelled and monitoring sources of zinc and copper	Use CLM outcomes and stormwater monitoring programme results to find hot spots, then propose treatment or source control options	Network Planning Team, 3 Waters Team	Prior to each review of SMP Update a CLM every 5 years	Up-to-date information for prioritising projects

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SMA sediment	Remediate SMAs that have been	3 Waters	Consent	Minimise risk of
remediation	assessed by a SQEP to require	(externally	timeframes	groundwater
programme	actions, based on 2024 sediment	contracted to		contamination from
	sampling investigation results and	a SQEP)		SMAs
	any further investigations			
Water Quality Impro	ovement - Control industrial and con	taminated sites		
Aligns with consent	objectives 8 (c) and (e)			
Work Programme	Actions	Role	Timeframe	Expected outcomes
		(Implemented		
		by who)		
Implement high	Implement changes from the	3 Waters	1 January	Annual compliance
risk site	Stormwater, Drainage and	Team,	2025	monitoring
management from	Watercourse Bylaw (2024)	Land		programme of high
Bylaw changes		Development		risk sites commences
	Set-up and refine processes for	Team		by 1 January 2025
	site-specific stormwater			
	management plan review,			Site-specific
	rick cites. Promote Dollution			Stormwater Management Plans
	Drevention Plan requirements			and Pollution
	and process for high and medium			Prevention Plans in
	risk site annrovals			place for 95% of high
				risk sites by 2030
	Apply process to assess			
	applications from LLUR sites prior			
	for acceptance or exclusion of			
	discharge into Council			
	stormwater network under			
	CRC184601 Consent			
Spill response	Require appropriate spill kits at	3 Waters	Ongoing	Contaminants
	medium and high risk sites	Team		prevented from
				reaching the
				stormwater network
High and medium	High and medium risk businesses	3 Waters	1 January	Engagement with
risk businesses	database compiled based on	Team	2025	high and medium
database	existing Environment Canterbury			risk sites enabled by
	consent information			a contacts database
Heavy metals in	Investigate sources of heavy	3 Waters	30 June 2025	Improved receiving
the South South	metals in the South South Brook	Team		environment (the
BLOOK	to establish whether there are			South South Brook)
	regacy or recent sources of			
Matorway Postarat	Drovido protoction and sulture	ly appropriate tra	atmont of wak:	organisms
habitate Protect an	d enhance mahinga kai	ly appropriate tre	atment of want	lapu anu wani taonga
Aligns with consent	objectives 8 (d) and (e)			
Work Programme	Actions	Role	Timeframe	Expected outcomes
		(Implemented		
		by who)		

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Faecal bacterial contamination	Carry out <i>E. coli</i> investigations (potentially with source tracking) and follow up with remediation measures for wastewater sources such as point sources or cross- connections with stormwater pipes Update wet weather overflow	3 Waters Team, Network Planning Team	On-going	Decrease in dry weather and wet weather <i>E.coli</i> counts
Enhancement of habitat for taonga species, targeted planting, and exotic species removal	Modelling Carry out drainage maintenance works under the Drainage Maintenance Management Plan, and enhancement projects under the Zone Implementation Programme Addendum (ZIPA), Arohatia te Awa (Cherish the River) and potentially other WDC work programmes.	3 Waters Team, Greenspace Team	On-going	Improved abundance and health of taonga species
Regular 'State of the Takiwā' monitoring and reporting	Support the programme design and implementation of 'State of the Takiwā' monitoring	Environment Canterbury, Te Ngāi Tūāhuriri Rūnanga — supported by WDC	To be confirmed	Waterways will be monitored for cultural health and mahinga kai trends
Enhancement of waipuna/springs, wetlands and riparian areas in the Ruataniwha Cam River catchment	Carry out drainage maintenance works under the Drainage Maintenance Management Plan, and enhancement projects under the Zone Implementation Programme Addendum (ZIPA), Arohatia te Awa (Cherish the River) and potentially other WDC work programmes.	3 Waters Team, Greenspace Team	On-going	Improved abundance and health of taonga species
Habitat enhancement projects within waterways, particularly Critical Habitats for Indigenous Species (CLWRP)	Boulder placement for kanakana (lamprey) spawning habitat enhancement in the South Brook, Middle Brook and North Brook	Water Environment Advisor	1 July 2026	Improved habitat for kanakana (lamprey) spawning
Maintain habitat complexity, such as woody debris for kekewai / wai kōura (freshwater crayfish)	Review Drainage Maintenance Management Plan 2020 for management of kekewai / wai kōura (freshwater crayfish) vegetation and woody debris	Water Environment Advisor, Land Drainage Engineer	Next review of the Drainage Maintenance Management Plan (2020)	Key habitat for kekewai / wai kōura (freshwater crayfish) is maintained or will improve over time from management

	-				
Encourage WSD	Incorporate further WSD in the	Land	Next ECoP	Attenuation of peak	
(also known as low	ECoP, such as to encourage	Development	review	run-off	
impact design)	minimising impervious surface	Team			
	area				
Watercress	Experiment with weeding of	Potentially Te	ТВС	Increased abundance	
enhancement	competitor species to watercress,	Ngāi Tūāhuriri		of watercress	
projects in the	bank enhancements, and	Rūnanga or		available for	
Ruataniwha Cam	enabling access to watercress	their		mahinga kai	
River catchment	areas	nominated			
		entity (from			
		WDC ZIPA			
		budget)			
Review watercress	Review existing exclusion areas		Next review of	Increased abundance	
drainage	where watercress is to not be		the Drainage	of watercress	
management	removed for drainage		Maintenance	available for	
practices	maintenance		Management	mahinga kai	
			Plan (2020)		
Community engager	nent and education programmes				
Aligns with consent of	objectives 8 (a)-(e)				
Work Programme	Actions	Role	Timeframe	Expected outcomes	
		(Implemented			
		by who)			
Source control	Community engagement	3 Waters	On-going	Decrease in	
through behaviour	programmes regarding source	Team		stormwater	
change	control for dog owners (faecal			contaminants	
	bacteria) residential and industry				
	land use (zinc and other				
	contaminants)				
	Support catchment groups and				
	environmental organisations				
	promoting healthy waterways				
Innovation and Collaboration					
Aligns with consent of	objectives 8 (a)-(e)	1	1	1	
Work Programme	Actions	Role	Timeframe	Expected outcomes	
		(Implemented			
		by who)			
Evaluation of	Monitoring of any novel	3 Waters	As required	Informed decision-	
innovative	technology installed e.g. Mussel	Team		making for future	
technologies	shell filter bunds or biofilters for			treatment decisions	
	contaminant removal rates				

9. Budget

In the WDC Long Term Plan 2024-2034 there is a total budget of \$9.8 million of capital expenditure for projects identified by this SMP. Table 14 indicates how this \$9.8 million could be spent. This SMP is not seeking any additional budget above what is currently allocated in the Long Term Plan 2024-2034. Note that

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these indicative costs require further option scoping and costing and will be confirmed through the Council Annual Plan or Long Term Plan budgeting process. This is in addition to existing budgets for stormwater treatment and capacity improvement projects which have been included in Table 17 for completeness.

	-			
Table 17:	Stormwater	Capital	Projects	Budget

	Indicative spend for	Existing	Total \$ (indicative
	SMP water quality	allocation in Long	spend and existing
Project Title	improvement projects ¹	Term Plan 2024-	allocation)
		34	
Project Works	1		
Newnham Street Industrial Area Treatment (North Brook)	4,500,000		4,500,000
North Brook Treatment	1,800,000		
North Drain Treatment - potential infiltration basin	1,200,000	1,183,110	2,383,110
Middle Brook Treatment	1,800,000	397,860	2,197,860
SMA treatment efficiency improvements or alternate options	500,000		500,000
North Brook - Railway Drain Treatment		282,690	565,380
Under Channel Piping		565,380	1,005,120
North Brook Retaining Wall - Janelle to White		921,360	1,842,720
North Drain Piping - Ashley to Edward		575,850	1,151,700
Belmont Avenue Drainage Upgrades		481,620	963,240
Stormwater Minor Improvements		471,150	848,070
Blackett Street Piping		1,256,400	2,512,800
East Belt to Cam River Connection		523,500	1,047,000
Three Brooks Enhancement Work - North Brook / Geddis Street		287,925	575,850
Three Brooks Enhancement Work - Middle Brook Tributary		209,400	418,800
Three Brooks Enhacement Project - North Brook Victoria to			
Newnham		471,150	942,300
Three Brooks Enhancement Work - Middle Brook Martyn to Bush		235,575	471,150
Three Brooks Enhancement - Middle Brook Bush to King		628,200	1,256,400
Wiltshire / Green Pipework Upgrade Stage 2		499,419	998,838
Stormwater Reticulation Renewals			
Rangiora Urban Drainage Long Term Headworks Renewals		68,055	136,110
Blackett Street Piping		130,875	261,750
Rangiora Urban Drainage Long Term Renewals		261,750	523,500

Note:

1. The figures allocated in this column are an indicative spend of a total allocation of a pool of \$9.8m in the 2024-2034 Long Term Plan. This indicative spend is in addition to stormwater budgets for specific projects that are also allocated in the LTP and included in Table 17 for completeness.

10. Review

This SMP shall be reviewed at least once every 5 years, and revised annually, if required, to respond to:

- The results of monitoring undertaken in accordance with this consent;
- The results of updated hydraulic modelling for the catchments which receive stormwater under this consent;
- Any changes to relevant national and/or regional planning documents, including those that result from the Land and Water Regional Plan sub-regional chapter development process;
- New technologies or changes in good practise stormwater treatment.

In addition to the revisions required under Condition (10) of CRC184601, as per Condition (11), the SMP shall be revised at other times if requested by the Canterbury Regional Council under the following conditions:

- Any changes to relevant national, and/or regional planning documents including those that result from the CLWRP sub-regional chapter development process; or
- The results of monitoring or modelling, including any investigations or outcomes in relation to the responses to modelling and monitoring; or
- The use of new technologies which may provide new opportunities for mitigation treatment and source control; and
- Upon the release of any amendment to the Resource Management Act 1991, or any document accepted as a New Zealand Guideline or Standard, which addresses the stormwater management requirements set out in Consent CRC184601.

11. Adaptive Management

WDC intends to apply an adaptive management approach to the management of the stormwater in Rangiora. Adaptive management is an investigational approach to management, often defined as 'structured learning by doing'. It has three elements, (1) monitoring, (2) adapting and (3) learning.

The monitoring programme assesses the performance of the management of Rangiora's stormwater management systems relative to the specified CRC184601 Objectives, as well as identify projects or management actions that would progressively improve the management of stormwater or address a specific issue(s).

The SMP will be revised annually, and reviewed every 5 years, which in turn will feed into WDC Annual Plan and Long-term planning processes. A continual review of emerging technology and consideration of the performance of the implemented projects or management actions will ensure that WDC expenditure will be directed to projects and actions that will progressively address the objectives of the SMP. The Rangiora Stormwater Monitoring Programme and CLM for CRC184601 allows WDC to evaluate the performance and progress of the stormwater management infrastructure to achieve these objectives, and more importantly, trigger the identification of additional projects that would improve the outcomes of the stormwater network.

12. References

Auckland Regional Council (1992 and 2003). *Technical Publication no. 10, Design Guideline Manual: Stormwater treatment devices*. Auckland Regional Council, Auckland

Boffa Miskell (2024). *Rangiora Freshwater Ecology – 5 Yearly Aquatic Ecology Monitoring*. Report prepared by Boffa Miskell Ltd for Waimakariri District Council

Christchurch City Council (2012). *Waterways, Wetlands and Drainage guide*. Christchurch City Council <u>https://ccc.govt.nz/environment/water/water-policy-and-strategy/waterways-wetlands-and-drainage-guide</u>

Christchurch City Council (2016). *Raingarden design construction and maintenance manual*. Christchurch City Council

https://ccc.govt.nz/assets/Documents/Environment/Water/Rain-garden-design-construction-andmaintenance-manual.pdf Cunningham, A., Colibaba, A., Hellberg, B., Silyn Roberts, G., Simcock, R., Speed, S., Vigar, N. and Woortman, W. (2017). *Stormwater management devices in the Auckland region GD01*. Auckland Council guideline document, GD2017/001

Environmental Canterbury (2018). *Waimakariri Water Zone Committee Zone Implementation Programme Addendum*. Environmental Canterbury. <u>https://www.ecan.govt.nz/your-region/your-environment/water/whats-happening-in-my-water-zone/waimakariri-water-zone/local-projects-and-priorities/waimakariri-land-water-solutions-programme/</u>

Greer, M., Meredith, A., (2016). *Waimakariri Zone water quality and ecology: State and trend*. Environment Canterbury Technical Report No. R16. Draft report

Healy, K., Carmody, M., Conaghan, A., (2010). *Stormwater Treatment Devices Operation and Maintenance*. Prepared by AECOM Ltd for Auckland Regional Council. Auckland Regional Council Technical Report 2010/053

Hullen, J. (2017). Rangiora Stormwater Network Consent Cultural Impact Assessment Report. An assessment of effects on Ngāi Tūāhuriri and Ngāi Tahu Values. Mahaanui Kurataiao Ltd

Jolly, D., & Ngā Papatipu Rūnanga Working Group (2013). *Mahaanui IMP*. Mahaanui Kurataiao Ltd. <u>https://www.mahaanuikurataiao.co.nz/iwi-management-plan/</u>

Mahaanui Kurataiao Ltd (2024). *Te Ngāi Tūahuriri Rūnanga Position Statement: Rangiora Stormwater Management Plan.* Mahaanui Kurataiao Ltd (TRIM 241120204733)

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APPENDIX A.	Schedule 1 of CRC184601 – Water Quality
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Contaminant	Guideline	Guideline Source
Total Suspended Solids	<50 gm3	CLWRP
Dissolved Copper	< 0.0018 mg/L	CLWRP spring fed – plains – Urban Water 90% of the Australian New Zealand Guidelines
Dissolved Zinc	< 0.015 mg/L	CLWRP <i>spring fed – plains –</i> <i>Urban</i> Water
рН	Shall be between 6.5 - 8.5	CLWRP, section 16, schedule 5
Dissolved Reactive Phosphorus	< 0.016mg /L	CLWRP, section 16, schedule 5
E. coli	95% of the samples should have less than 550 E. coli per 100 mL	CLWRP, section 16, schedule 5
Total Ammoniacal Nitrogen	Depends on pH level	CLWRP, Table S5C, Schedule 5
Hardness	5 yearly adjustment of Guideline Value	
Dissolved Organic Carbon	To characterise the waterway – adjust Guideline Value	

Note: The limits and targets which measure stormwater discharge quality and receiving waterway effects, and which prompt required responses, apply when managing contaminants demonstrated to be discharging from the reticulated stormwater system including from private connections to the system that are authorised under consent CRC184601.

The Rangiora stormwater network monitoring programme also includes a "stream health" section including requirements to gather baseline and trend information on environmental targets for environmental reporting purposes. These are not compliance requirements of CRC184601. The stream health reporting may demonstrate progress toward receiving environment objectives that are the result of interventions undertaken or natural processes occurring outside of the scope of consent CRC184601.

APPENDIX B. SMA Remedial Strategy and Soil Disposal Procedure

An exceedance of trigger values specified for any infiltration basin, soakpit or dry detention basin may prompt a site-specific risk assessment/s of effects of the recorded contaminant levels on groundwater quality prior to confirming whether excavation of the affected soil layers or other suitable modifications to the basin are required (based on expert advice from a contaminated land practitioner (SQEP)). This will include any mitigation provided from either:

(a) for infiltration basins and soakpits, the extent of soil depth and associated separation between the affected soil layer and the seasonal high groundwater level (e.g. what attenuation is provided if the contaminated layer is not in direct contact with groundwater and the extent to which this reduces the risk); or

(b) for dry detention basins, the attenuation provided by soil type and ground infiltration and attenuation potential, including whether infiltration and effects on groundwater from the basin are likely to be occurring or are mitigated by the soil type and infiltration rate.

For wet ponds and constructed wetlands, once the lateral and vertical extent of the contamination has been determined, then any combination of the following mitigation options may apply:

- excavation to remove all contaminated soils until contaminant concentrations in the remaining soils, as determined by a repeat of the sampling and analysis methods (above) are less than or equal to the trigger concentrations;
- the redesign of hydraulic conveyance within the wetland to reduce the disturbance and disbursal of silts being conveyed into the downstream environment; and/ or
- other suitable action/s, such as improvements to sediment trapping, addition of new or alternative plants or addition of new filtration media that will better perform the desired treatment functions to protect the site and downstream waterway.

The immediate reinstatement of a wetland or wet pond may not always be the best option for the management of water quality in both the facility and its downstream environment. This is due to various factors including effects of disturbance of the wetland habitat and extent of effects on species present during reinstatement on the ecology of the wetland. A further factor is the length of time required to reestablish wetland vegetation and habitat within a reinstated site. The draining of a wet pond with contaminated water or sludge into a downstream waterway is undesirable. The relative extent of effects of any ongoing discharge into surface water should also be considered in comparison with the extent of the effects of site reestablishment. Some constructed wetlands are lined with clay or low permeability liners, which reduces the risks of leaching materials into nearby springs or waterways. All of these factors will be considered in determining the most suitable mitigation option for each constructed wetland, or wet pond, when Guideline Values are exceeded.

WDC may commission a site-specific assessment of risks to groundwater quality to determine whether excavation to remove affected soil layers or other actions are required. Results of the risk assessment will be reported to Environment Canterbury.

Sediment for disposal will be transported to only a landfill or managed fill which are approved to accept the contaminated material.

This SMA Remedial Strategy and Soil Disposal Procedure detailed in this SMP also is incorporated into the Rangiora Stormwater Monitoring Programme and brief for basin sediment sampling that forms part of the CRC184601 consent.

APPENDIX C. Contaminant Load Model

An annual contaminant load model (CLM) has been used in this SMP to estimate contaminant loads. The model is a version of the former Auckland Regional Council (ARC) CLM adjusted for Rangiora precipitation conditions. It uses GIS land use information and converts it to likely annual loads of the following contaminants;

- TSS
- Total Zinc
- Total Copper

The land areas analysed are;

- Grasslands (subcategorised by land use)
- Roofs (subcategorised by material)
- Roads (subcategorised by daily traffic volume)
- Non-road Paved Surfaces (subcategorised by land use)

The CLM estimates the contaminant load reduction from treatment.

Comparison from land use to contaminant load is based on calibrated factors generated by ARC. These have been adjusted for total rainfall but have otherwise not been calibrated for local conditions. It is noted that there is uncertainty around roofing materials as detailed roof material information is not held by WDC.

Existing treatment devices in Rangiora use load reduction factors generated by ARC. These assume the devices are operating effectively.

TRIM document 220916161020 provides a summary report of CLM findings.

While CLM results were not directly used to identify high-risk areas in this SMP, they can offer valuable insights, such as:

- CLM results can highlight areas where existing data might be insufficient. If the model predicts high potential pollution in a specific area, but may have limited sampling data to verify projections, it flags the need for further investigation. This helps target sampling efforts to areas where the risk is most likely and assist to fill knowledge gaps.
- The model can simulate how contaminants move through the stormwater system, and the effectiveness of a treatment system. This can help identify potential sources of pollution beyond land use. For example, the model might indicate that a specific industrial site or a historical spill zone could be contributing disproportionately to the overall contaminant load. This information can be crucial for developing targeted mitigation strategies.
- CLM can predict future contaminant loads based on potential changes in land use. This allows for
 proactive planning. For example, if a new development project is planned, CLM can help assess the
 potential impact on contaminant loads in the surrounding area and or final discharge points. This
 foresight allows WDC to implement preventive measures like stormwater treatment systems or
 updated regulations to mitigate future risks.
- CLM can also be utilised as a tool for project-specific assessments. By simulating different scenarios, the CLM model can be used to project which combination of areas and treatment solutions will yield the greatest water quality improvements. Additional project specific water quality monitoring should be undertaken to verify predictions of the CLM when evaluating projects, providing further confidence for decision-making.

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APPENDIX D. Rangiora Stormwater Schematic Diagram (as of July 2023)



APPENDIX E. Project Brief Template



Te Ngāi Tūāhuriri Rūnanga Position statement: Rangiora Stormwater Management Plan Reviewed and updated: Approved: 13/11/2024

Introduction

Within the takiwā of Te Ngāi Tūāhuriri Rūnanga, Te Rūnanga hold tino rangatiratanga over the Rangiora township and surrounding catchments (Figure 1).



Figure 1. Rangiora township and catchment network (Source: WDC).

Te Ngāi Tūāhuriri Rūnanga Position statement: Rangiora Stormwater Management Plan Reviewed and updated:

Approved: 13/11/2014 Waimakariri District Council (WDC) was granted resource consent CRC184601 to discharge stormwater and water treatment chemicals into land and to surface water by Canterbury Regional Council, for a period of 24 years, effective from 7 May 2024 to 30 June 2045. Condition 9 of the consent requires that before 1 January 2025, a Stormwater Management Plan (SMP) shall be prepared, and from 1 January 2025, be maintained and implemented for the duration of the consent. Condition 13 of the consent requires that WDC engages with Te Ngāi Tūāhuriri Rūnanga for review of the SMP. This statement responds to the Rangiora Stormwater Management Plan.

The purpose of the Rangiora Stormwater Management Plan is to:

- Reduce the adverse effects of stormwater discharges on surface water quality and quantity;
- Reduce the adverse effects of stormwater discharges on wahi tapu and wahi taonga;
- Protect and enhance mahinga kai.

In 2012 a cultural health assessment of the Ruataniwha/Cam River Catchment was undertaken by Te Ngāi Tūāhuriri Rūnanga in conjunction with Mahaanui Kurataiao Ltd (MKT) to establish a cultural health baseline for the catchment. The State of the Takiwā Cultural Monitoring Programme was used to establish the cultural health baseline of the Ruataniwha catchment and represents the Ngāi Tahu Ki Uta Ki Tai (source to sea) resource management philosophy. Results from this monitoring programme indicate that a variety of management responses would be needed to improve the cultural health of waterways in the catchment. Some of the key recommendations to support Ngāi Tahu values include the need for improved water quality and habitat quality at many sites. In addition, the re-establishment of more natural waterway form and function is an important consideration at many of the monitoring sites, as is the establishment of suitable setbacks and buffer zones and the restoration of indigenous vegetation in riparian areas.

Position of mana whenua

Te Ngāi Tūāhuriri Rūnanga neither support, nor oppose, the Rangiora Stormwater Management Plan. Ngāi Tahu have traditionally strongly opposed the use of global consents for stormwater discharge. Stormwater run off from urban, industrial and rural environments can have significant effects on water quality and waterway health. Improving stormwater management requires on site, land-based solutions to stormwater disposal, alongside initiatives to reduce the presence of sediments and contaminants in stormwater, and reducing the volume of stormwater requiring treatment. Tāngata whenua have always supported discharge to land as an alternative to discharge to water, given the natural ability of Papatūānuku to cleanse and filter contaminants from waste. However, support for discharge to land is provisional on appropriate management of the activity. Over-saturation and overburdening of soils with stormwater discharges compromises the mauri of the land and can result in run off or seepage into groundwater and waterways in the area. Low impact development and low impact urban design are fundamental features of sustainable stormwater management.

The discharge of contaminants such as wastewater, stormwater or sediment to water, or to land where they may enter water, is culturally unacceptable. The effects of these discharge activities on tangata whenua values may be significant despite the activity having only been

Mahaanui Kurataiao Ltd


Te Ngāi Tūāhuriri Rūnanga Position statement: Rangiora Stormwater Management Plan Reviewed and updated:

Approved: 13/11/2024

assessed as having only minor ecological effects. It is critical that local authorities recognise that Ngāi Tahu concerns with discharges of contaminants to water extend beyond the existence of silent files or areas of cultural significance. Rather, these concerns are based on protecting the mauri of waterways, and the relationship of Ngāi Tahu to them. Clear limits are required for reducing and managing contaminants at the source, both in rural and urban environments, and for controlling those land use activities which pose the highest risk to water quality. For Ngāi Tahu, water quality is a measure of how well we are doing regarding land and water management and hāpua, coastal lakes and river mouth environments are the indicators. At the bottom of the catchment, the health of these environments reflects our progress in the wider catchment.

More stringent rules and regulations need to be implemented in order to reduce contaminants entering the waterways. The mauri of the wai must be protected so that mana whenua are able to swim, eat from and drink the water from the waterways, as their tupuna did before them. The *Canterbury Water Management Strategy* highlights that less than 10% of the region's previously extensive wetlands remain. Moreover, cultural health assessments in the takiwā highlight that one of the greatest issues facing waterways is the absence of sufficient riparian margins to buffer those waterways from intensive land use and provide habitat for mahinga kai and indigenous species. Constructed wetlands are one of the most effective tools to treat stormwater. Constructed wetlands can reduce levels of sediment, nutrients and microbes such as *E. coli*. The Mahaanui lwi Management Plan (IMP) outlines several policies around wetlands, waipuna and riparian margins. Ngāi Tahu support the creation of wetland areas to assist with the management of onsite/site sourced stormwater and other wastewater, to utilise the natural capacity of these ecosystems to filter contaminants.

Ngā Wai/Wai Māori - Freshwater

- Rūnanga are concerned with industrial areas within the Rangiora urban boundaries and the impacts they are having on receiving waterways. Despite industrial areas being largely concentrated in only three of the seven sub-catchments, industrial and commercial land use activities are recognised as significant sources of pollutants which contain high contaminant load generating activities. It is critical that future stormwater improvement projects address contaminants generated from industrial and commercial areas.
- Rūnanga advocate for the retention of natural watercourses, springheads, and other features that contribute to the current balance in the hydrological cycle. Subdivision and residential land development activities can have adverse effects on cultural values, which is why Papatipu Rūnanga implement a cultural landscape approach to help identify and protect tāngata whenua values and interests from such effects. A cultural landscape approach enables a holistic identification and assessment of sites of significance, and other values of importance such as waterways, wetlands and waipuna.

Taonga Species and Mahinga Kai

 Mahinga kai enhancement throughout the catchment is very important for Rūnanga. Much of the land in the lower Waimakariri catchment was historically very swampy, and the existing drainage network was developed through these swampy areas. Most



Te Ngāi Tūāhuriri Rūnanga Position statement: Rangiora Stormwater Management Plan Reviewed and updated:

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waterways in the catchment are known mahinga kai sites, particularly watercress in close proximity to spring-heads.

 Previous cultural health monitoring reports for the Ruataniwha catchment show that more riparian planting is needed at the majority of sites that were monitored in order to help restore indigenous biodiversity, increase habitat, and enhance cultural values. It is also important that the width of riparian zones are sufficient to help improve water quality, stabilize stream banks and increase habitat.

Recommendations

To mitigate the concerns listed above, WDC will:

- 1) Protect and enhance mahinga kai values by improving water quality.
- WDC should undertake habitat enhancement projects throughout waterways within the Rangiora urban network, particularly in critical habitat areas for indigenous species as outlined in the CLWRP.
- 3) Incorporate low impact design methods, such as minimising impervious surface areas, the use of rainwater collection and re-use systems in new developments.
- 4) WDC should incorporate watercress enhancement projects throughout the Ruataniwha as part of the Rangiora SMP. This includes incorporating heavy metal testing (i.e. arsenic) in watercress where practicable.
- 5) Engage with mana whenua prior to any proposed changes, enhancements, translocations and/or diversions rather than consult retrospectively.
- 6) Ensure the protection and enhancement of waipuna/springs, wetlands and riparian areas throughout the Ruataniwha catchment.
- 7) Support regular State of the Takiwā monitoring and reporting in the catchment.
- 8) Council should investigate options to improve instream habitats. Measures to improve instream habitat must be discussed with Rūnanga through appropriate channels.
- 9) A catchment-based planting plan must be developed that ensures riparian margins are protected and enhanced while also providing for sufficient habitat for taonga species. This should include removal of exotic pest species (e.g., blackberry, clematis, willows, poplars) to prevent indigenous planting being choked. It should also include appropriate maintenance of species such as harakeke, in conjunction with best practice and tikanga advice from mana whenua. These works must have stringent erosion and sediment controls in place during works to protect the awa.
- 10) *E. coli* levels within the catchment must be monitored regularly and the sources of this contamination be identified as soon as possible.
- 11) Pending results of the *E. coli* investigation, appropriate measures must be implemented to reduce levels of contamination within the catchment. Further information on the source of the *E. coli* contamination and measures to reduce contamination must be discussed with rūnanga through appropriate channels.
- 12) Sediment sources must be investigated throughout the catchment, and specific plans for planting be developed and enacted to improve stream health and habitat. As

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Te Ngāi Tūāhuriri Rūnanga Position statement: Rangiora Stormwater Management Plan Reviewed and updated:

Approved: 13/11/2024

mentioned above, any plantation works must have stringent erosion and sediment controls to protect the awa.

- 13) All future urban development must have appropriate setbacks from waterways that are consistent with policies outlined in the Mahaanui lwi Management Plan 2013 (refer to policy **WM12.5**).
- 14) Future urban developments should incorporate *Ngāi Tahu Subdivision and Development Guidelines* to the greatest practical extent. Guidelines relating to stormwater in particular should be adhered to.
- 15) Developers should retain natural waterways where practicable in all future development projects throughout the Rangiora SMP boundaries.

Te Ngai Tūāhuriri Runanga reserve the right to oppose the proposal or pursue avoidance or mitigation of any subsequent impacts that are identified as a result of further site visits or further discussions with CCC.

Signed

Date: 13-11-24

Date: 13-11-24

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	WAT-10-14 / 250115005245
REPORT TO:	UTILITIES AND ROADING COMMITTEE
DATE OF MEETING:	25 February 2025
AUTHOR(S):	Sophie Allen – Water Environment Advisor
SUBJECT:	Community Biodiversity Funding – ZIPA Recommendation 2.8
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager Chief Executive

1. <u>SUMMARY</u>

- 1.1. This report seeks approval for the allocation of the \$20,000 per annum for 3 years (\$60,000 total) from the Zone Implementation Programme Addendum (ZIPA) budget to the Waimakariri Biodiversity Trust.
- 1.2. A budget of \$20,000 per year is earmarked for community group support to carry out biodiversity work under ZIPA recommendation 2.8. A contestable funding round was advertised publicly for 4 weeks, closing on the 30 November 2024. Information about the funding round was also circulated to Waimakariri Biodiversity Trust and other potential trusts. The Waimakariri Biodiversity Trust was the only applicant. The trust has sought funding for the maximum allocation of three years, from 2024-27.
- 1.3. The Waimakariri Biodiversity Trust received registration as a charitable trust in March 2022. The Waimakariri Biodiversity Trust deed states:

The **VISION** of the Trust is to see vibrant, healthy, indigenous ecosystems valued across the Waimakariri District.

The **PURPOSE** of the Trust is to provide the necessary information, education and resources to enable the community to protect, restore, create and sustainably manage indigenous biodiversity in the Waimakariri District.

- 1.4. This report evaluates the Waimakariri Biodiversity Trust application against the criteria for assessment and recommends the allocation of the \$20,000 in 2024-25 to the Waimakariri Biodiversity Trust. An accountability review against achieved outcomes will be undertaken by WDC staff before the allocation of \$20,000 per annum for 2025-26 and 2026-27 is released to the Waimakariri Biodiversity Trust.
- 1.5. The criteria used to allocate funding are:
 - 1.5.1. The community organisation must be a legal entity, such as an incorporated society or charitable trust.
 - 1.5.2. The organisational vision and proposed projects must align with the Waimakariri Water Zone Committee Action Plan 2021-24 (Attachment i)
 - 1.5.3. The community organisation must have the ability to coordinate an overarching vision and discussion opportunities for the Waimakariri Community.
 - 1.5.4. The community organisation must be able to provide community engagement support for WDC-endorsed projects.

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- 1.5.5. The community organisation must provide community education and advice to Waimakariri District landowners for indigenous biodiversity projects.
- 1.6. Organisational support is an effective use of funding, as allows an organisation the capacity to leverage for project support. Therefore, funding is proposed as organisational support for the Waimakariri Biodiversity Trust in 2024-27, specifically for the following deliverables:
 - 1.6.1. Wages and expenses of a part-time coordinator for the Waimakariri Biodiversity Trust.
 - 1.6.2. Planning and hosting community events.
 - 1.6.3. Promoting indigenous flora and fauna through social media and promotional activities.
 - 1.6.4. Creating and distributing biodiversity resources to the community.
 - 1.6.5. Coordinating restoration projects and supporting landowners and community groups in the Waimakariri District.
 - 1.6.6. Maintaining and updating the Waimakariri Biodiversity Trust website as a platform to provide resources for community.
 - 1.6.7. Implementing predator control programs, and providing predator control support and advice for landowners and community groups

Attachments:

i. Waimakariri Water Zone Committee Action Plan 2021-2024 (TRIM 211015167102)

2. <u>RECOMMENDATION</u>

THAT the Utilities and Roading Committee

- (a) **Receives** Report No 250115005245.
- (b) **Approves** the allocation of \$20,000 per annum (\$60,000 total) to the Waimakariri Biodiversity Trust for operational expenses from the existing 2024-27 Zone Implementation Programme Addendum (ZIPA) Operational expenditure budget.
- (c) **Notes** that an accountability review of achieved outcomes will be undertaken by WDC staff before the allocation of \$20,000 per annum for 2025-26 and 2026-27 is released to the Waimakariri Biodiversity Trust.
- (d) **Circulates** this report to the Waimakariri Water Zone Committee and Ngāi Tūāhuriri Rūnanga, at a WDC-Rūnanga Liaison meeting, for information.

3. BACKGROUND

- 3.1. Waimakariri District Council approved the Zone Implementation Programme Addendum (ZIPA), developed by the Waimakariri Water Zone Committee in December 2018 (181115135055[v2]).
- 3.2. Recommendation 2.8 of the Zone Implementation Programme Addendum (ZIPA), states:

That Environment Canterbury and the Waimakariri District Council work with community groups to address indigenous biodiversity protection and enhancement by means such as:

- Provision of administrative support;
- Provision of financial assistance;
- Identification of funding sources;

• Provision of technical advice; and

• Endorsement of projects.

- 3.3. \$20,000 per year has been allocated to this Recommendation 2.8 in the Waimakariri District Council Long Term Plan 2021-31 (TRIM 210401054372). This allocation of funding is anticipated to strengthen community-led biodiversity work in the District in the future.
- 3.4. The Waimakariri Biodiversity Trust received the \$20,000 allocation in 2021-22 and 2023-24 after approval to distribute the funds from the Utilities and Roading Committee. The budget was not allocated in 2022-23.
- 3.5. At the 21 May 2024 Community and Recreation Committee meeting (230529078453), the budget was approved to become a contestable fund that was amalgamated with the existing Biodiversity Contestable Fund administered by Greenspace.
- 3.6. The Waimakariri Biodiversity Trust received registration as a charitable trust in March 2022. The Waimakariri Biodiversity Trust deed states:

The **VISION** of the Trust is to see vibrant, healthy, indigenous ecosystems valued across the Waimakariri District.

The **PURPOSE** of the Trust is to provide the necessary information, education and resources to enable the community to protect, restore, create and sustainably manage indigenous biodiversity in the Waimakariri District.

- 3.7. The Waimakariri Biodiversity Trust employs a part-time coordinator. It commenced operations in 2021-22. The ZIPA budget received by WDC in 2021-22 and in 2023-24 has been key seed funding for establishment of the trust in its infancy. Supported by funding from the Waimakariri Water Zone Committee's Action Plan budget, the Waimakariri Biodiversity Trust currently has eight active restoration projects, as of December 2024.
- 3.8. In 2024, the Waimakariri Biodiversity Trust held a number of events including a workshop on biodiversity on life-style blocks, planting for birds and presentations on biodiversity in the rural area. The Trust co-managed allocation of the Mainpower Biodiversity Fund, and maintains a website (<u>https://www.wbt.org.nz/</u>) and social media presence with regular posts.

4. ISSUES AND OPTIONS

Criteria for biodiversity funding

- 4.1. There were five key criteria whereby the Waimakariri Biodiversity Trust was assessed for funding from the ZIPA Recommendation 2.8 budget. These criteria were first approved for allocation of the 2021-22 budget by the Land and Water Committee at their 22 March 2022 meeting, and also approved for allocation of the budget in 2023-24 by the Utilities and Roading Committee at the 19 September 2023 meeting. These criteria are:
 - 4.1.1. The community organisation must be a legal entity, such as an incorporated society or charitable trust.
 - 4.1.2. The organisational vision and proposed projects must align with the Waimakariri Water Zone Committee Action Plan 2021-24 (Attachment i)
 - 4.1.3. The ability to coordinate an overarching biodiversity vision and discussion opportunities for the Waimakariri Community.
 - 4.1.4. The ability to provide community engagement support for WDC-endorsed projects.

- 4.1.5. The ability to provide community education and advice to Waimakariri District landowners for indigenous biodiversity projects.
- 4.2. The Waimakariri Biodiversity Trust was incorporated as a charitable trust in March 2022, and therefore is a legal entity, meeting the first criterion.
- 4.3. Funding of the Waimakariri Biodiversity Trust aligns with the Zone Committee's Action Plan 2021-2024, thereby meeting the second funding criterion. Specifically, the target for increased indigenous biodiversity in the Zone is met by:

• Facilitating the establishment of a Waimakariri Biodiversity Trust and provide ongoing support to this Trust;

• Provide ongoing support and encouragement to groups in the zone advancing indigenous biodiversity values.

- 4.4. The Waimakariri Biodiversity Trust is well-placed to coordinate biodiversity networking opportunities within the district, meeting the third criterion.
- 4.5. The Waimakariri Biodiversity Trust is well-placed to provide community engagement support for WDC-endorsed projects, as well as education and advice for indigenous biodiversity projects- meeting the fourth and fifth criteria for funding. It should be noted that this is not a unique role, i.e. there are other trusts such as the Waimakariri Landcare Trust, Landcare Trust and other place-based trusts that are also be well-placed to provide such a service in the District. Information about the 30 November 2024 funding round was circulated to other potential trusts, however no other applications were received.

Proposed funding deliverables of the Waimakariri Biodiversity Trust

- 4.6. It is proposed that the \$20,000 of funding is allocated to the following deliverables, which are proposed to be fully expended by the Waimakariri Biodiversity Trust within 12 months of their receipt of the funding:
 - 4.6.1. Wages of a part-time coordinator for the Waimakariri Biodiversity Trust. A part-time co-ordinator has been contracted by the Waimakariri Biodiversity Trust since November 2022. The co-ordinator is responsible for day-to-day operational activities such as meeting landowners, liaising with schools and other organisations and administering the Trust's website and communications.
 - 4.6.2. Support for indigenous biodiversity projects in the District.
 - 4.6.3. Communications planning to visually and verbally communicate the vision of the trust.
 - 4.6.4. Event coordination, including the preparation of communication material, and communication with the various biodiversity groups in the Waimakariri District.
 - 4.6.5. Completing website and social media updates. The Waimakariri Biodiversity Trust has a website as well as a presence on numerous social media platforms.
 - 4.6.6. Response to requests from private landowners for advice about, and help with, indigenous biodiversity, planting and restoration projects.
- 4.7. An accountability review and update of the above deliverables and achieved outcomes will be undertaken by WDC staff before the allocation of \$20,000 per annum for 2025-26 and 2026-27 is released to the Waimakariri Biodiversity Trust.

4.8. Accountability reporting of funding deliverables achieved are proposed be submitted for annual reporting from the Waimakariri Biodiversity Trust to WDC Biodiversity staff, such as in the form of an annual report. This annual reporting will be the basis for assessment to continue annual funding of \$20,000 per annum in 2025-26 and 2026-27. This accountability reporting will be included in reporting to a Utilities and Roading Committee meeting for information, potentially with a deputation by the Waimakariri Biodiversity Trust.

Implications for Community Wellbeing

- 4.9. There are implications on community wellbeing by the issues and options that are the subject matter of this report. Community wellbeing will be enhanced by well-supported organisations working to improve the indigenous biodiversity in our District.
- 4.10. The Management Team has reviewed this report and support the recommendations.

5. <u>COMMUNITY VIEWS</u>

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. It will be circulated for information at a Rūnanga-WDC Liaison meeting.

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, such as biodiversity organisations within the District who are seeking operational funding.

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 no financial implications of the decisions sought by this report. The budget is existing budget allocated in the Long Term Plan 2024-34. This report is regarding allocation of the budget to a community group.

6.2. Sustainability and Climate Change Impacts

The recommendations in this report do have sustainability and/or climate change impacts. Successful allocation of the ZIPA Recommendation 2.8 budget to a community biodiversity group could achieve sustainability and/or climate change mitigation and adaptation outcomes.

6.3 Risk Management

There are minor risks arising from the adoption/implementation of the recommendations in this report that proposed outcomes will not be achieved by the recommended community group. This is mitigated by requiring accountability reporting of the Waimakariri Biodiversity Trust that enables a review of effectiveness.

6.3 Health and Safety

There are no health and safety risks for the Council arising from the adoption/implementation of the recommendations in this report. The health and safety of the coordinator role at the Waimakariri Biodiversity Trust would fall with the Trust if an employee, as defined as a Person Conducting a Business or Undertaking (PCBU), or with a contractor for the trust.

7. <u>CONTEXT</u>

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

7.2.1. No applicable legislation.

7.3. Consistency with Community Outcomes

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

7.4. Authorising Delegations

7.4.1. The Utilities and Roading Committee holds the delegation for the allocation of the Zone Implementation Programme Addendum (ZIPA) budget.

Waimakariri Water Zone Committee Action Plan July 2021-June 2024

This summary highlights the key actions agreed by the zone committee for the next three years.

For more detail on the zone committee and plan, visit ecan.govt.nz/waimakariri-water-zone.

Our purpose:

To uphold the mana of the freshwater bodies within the Waimakariri Water Zone by facilitating enduring land and water management solutions that give effect to the Canterbury Water Management Strategy (CWMS) vision, principles and targets in our zone.

The CWMS aims to enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework.

Our functions:

Community engagement - continuing an active programme of engaging with communities on freshwater management matters and facilitating the provision of advice to councils (relevant territorial authorities and Environment Canterbury) and others (e.g. private sector) contributing to freshwater management.

Enhancing delivery capability and coalition of the willing -

working with stakeholders across all sectors to extend the resources available to implement the CWMS, including securing additional resources and seeking opportunities to promote, support, leverage and expand catchment-based initiatives that advance CWMS implementation.

Progress reporting - annual progress reporting to councils on progress towards delivery of the zone-specific priorities and CWMS target areas identified in the Zone Committee Action Plan.

Our Councils' priorities for our zone committee are: Waimakariri District Council

Ecosystem Health and Biodiversity

- To maintain or improve existing high-quality indigenous dryland ecosystems in intermontane basins and on the plains;
- Reduction of threatened or at-risk status of indigenous fish species compared with 2020;
- All coastal lagoons, hapua and estuaries show improvement in key ecosystem health indicators compared with 2010.

Drinking Water

- Implementation programmes in place for each zone to achieve catchment load limits;
- Achieve nutrient efficiency targets for the zone on all new irrigated land and 80% of other land in major rural land uses (pasture, major arable, and major horticulture crops, and have 100% of rural properties working towards these targets (and for properties within urban boundaries that apply nutrients over significant areas).

Recreation and Amenity Opportunities

- Cyanobacterial risk for priority contact recreation sites in Canterbury rivers and lakes is understood and managed for public health;
- Manage water demand through meeting requirements under the Land & Water Regional Plan and continue regular community education/behaviour change campaigns on water use management and conservation.

Environment Canterbury

Kaitiakitanga Wāhi Taonga and mahinga kai targets

Grow support and resources to achieve the goal of five mahinga kai projects.

Ecosystem health and biodiversity targets

- Increased riparian management to protect aquatic ecosystems;
- Reducing the number of fish barriers;
- Protection and enhancement of wetlands.

Recreation and amenity targets

Achieving the 2025 target to restore priority freshwater recreation opportunities in each zone.



This taniko (woven pattern for clothing) Pātikitiki, represents lashing or binding together. The smaller diamonds represent pātiki (flounder). The Aramoana are white chevron shaped spaces representing the ocean waves. Together they represent the sustainment of our waters and the binding organisations that protect them. Pātiki is also the symbol for abundance. - Ariki Creative







Waimakariri Water Zone Committee **Action Plan 2021-2024**

Improved monitoring of groundwater and surface water in the zone

To encourage community understanding and awareness of monitoring and clarify future monitoring requirements in the zone by:

- Facilitating collaboration to develop a wider monitoring network in the zone;
- Encouraging more monitoring by catchment and landcare groups.

We will measure this by:

- Establishing a working group to bring together relevant organisations to review existing freshwater monitoring in the zone and address future monitoring requirements across the zone:
- Promoting the benefits of monitoring and establish options for the community to be involved in monitoring;
- Working with ECan and WDC to ensure monitoring results are accessible and understandable to the community;
- Facilitate catchment and landcare groups and the wider community working together with Councils to expand the freshwater monitoring in the Waimakariri and share information.

Increased indigenous biodiversity in the zone

To protect and improve the indigenous biodiversity, habitat or ecosystems in the zone through:

- Managing and eliminating plant and animal pest species;
- Assisting all landowners and managers to integrate indigenous biodiversity management into the wider aspects of land and water (catchment) management.

We will measure this by:

- Facilitating the establishment of a Waimakariri Biodiversity Trust and provide ongoing support to this Trust;
- Provide ongoing support and encouragement to groups in the zone advancing indigenous biodiversity values;
- Encourage catchment and landcare groups to protect, enhance and create more indigenous biodiversity habitat on properties;
- Promoting greater community understanding about biodiversity, and wetlands, and the benefits of their protection and enhancement.

Promoting the natural braided character and increased flow of the Ashley River/Rakahuri

To protect the braided river values associated with the Ashley River/Rakahuri, ki uta ki tai. bv:

- Promoting an improved community understanding of land and water use impacts on braided river character and the lower catchment ecosystems;
- Working to make the Ashley River/Rakahuri safe for contact recreation, with improved river habitat, fish passage and customary use, and flows that support natural coastal processes.

We will measure this by:

- Encouraging the improved understanding of landowners and wider community of climate . change impacts on the Ashley River/Rakahuri;
- Encouraging landowners and agencies to protect the landscape and indigenous biodiversity values in the upper catchment;
- Supporting weed control in the upper and middle sections of the catchment;
- Supporting an investigation into existing consents and water use in the Ashley River/ Rakahuri catchment:
- Encouraging landowner and agency efforts to improve the habitat health of lowland spring-fed tributaries;
- Supporting investigations focused on understanding and improving the ecosystem health of Te Aka Aka/Ashley estuary.

Protection and enhancement of recreation in the zone

To protect and manage the natural landscape and recreation resources in the Waimakariri Water Zone by:

- Facilitating the extension of recreation corridors and amenity space in the zone;
- Encouraging awareness of land use impacts on high value landscapes in the zone.

We will measure this by:

- Supporting the completion of the Silverstream loop;
- Supporting specific Arohatia te Awa marginal strip recreation works;
- Encouraging investigation into the causes of cyanobacteria blooms;
- Encouraging reductions in pollutants/contaminants to help reduce nuisance algal growths in waterways.

Improved Mahinga Kai within the Waimakariri Water Zone

To protect and enhance mahinga kai practices in waterways within the Waimakariri Water Zone, while also:

We will measure this by:

- and in lowland waterways;

Want to get involved?



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Encouraging a wider understanding of mahinga kai practices in the community;

Increasing Mahinga kai enhancement and access on the plains.

Supporting the Ngāi Tūāhuriri mahinga kai enhancement projects on the plains

Encouraging catchment and landcare groups to protect and improve riparian habitat to support mahinga kai practices on the plains and lowland waterways;

Supporting mahinga kai workshops across the zone.

Head to ecan.govt.nz/waimakariri-water-zone



WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	WAT-10-14 / 250210020464
REPORT TO:	UTILITIES AND ROADING COMMITTEE
DATE OF MEETING:	25 February 2025
AUTHOR(S):	Sophie Allen – Water Environment Advisor
SUBJECT:	Zone Implementation Programme Addendum budget 2025-2034 update
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager Chief Executive

1. <u>SUMMARY</u>

- 1.1. This report requests approval for reallocation within the existing budget in the Long Term Plan 2025-34 for the Zone Implementation Programme Addendum (ZIPA). Reallocation of a some of the budget is proposed due to changing requirements and opportunities arising over time, and as some ZIPA Recommendations have been completed or have decreased scope, with budget able to be targeted to other priority ZIPA Recommendations.
- 1.2. A ZIPA budget of \$100,000 capex and \$205,000 opex was approved by Council on 19 May 2019, after adoption of the ZIPA in December 2018. The ZIPA is a document by the Waimakariri Water Zone Committee with specific recommendations to meet Canterbury Water Management Strategy goals for the Waimakariri Water Zone.
- 1.3. Budgets for fish passage improvement and minimising drainage effects (Recommendations 1.8 and 1.14 respectively) are proposed to decrease slightly. A new capex budget of \$5,000 per year allocation is proposed to support works on the Taranaki Stream (Recommendation 1.21). Forestdale Wetland, a WDC-owned wetland in Okuku, is proposed to receive \$15,000 per year in weed control cost (Recommendation 1.24). Recommendation 1.26 is proposed to increase from \$10,000 to \$30,000 per year, particularly to support mahinga kai enhancement actions that have arisen from the draft Rangiora Stormwater Management Plan 2025-2040. Recommendation 1.27 will decrease from \$40,000 capex to \$30,000 capex, and will also be refocused to on-the-ground mahinga kai protection and enhancement projects.
- 1.4. A review of ZIPA budget allocation to ZIPA Recommendations is intended to be carried out again within 3 years, on an as required basis.
- 1.5. There is a foreseen underspend of \$30,000 in the 2024-25 ZIPA capex budget that was approved by the Utilities and Roading Committee for North Brook Trail culvert installation in May 2024 (TRIM 240508073256). Project owner, the Waimakariri Landcare Trust, however has confirmed that this is no longer able to be spent in 2024-25 due to timing of other related works not commencing until 2025-26. Therefore, a reallocation of this budget is proposed to a mahinga kai enhancement project (also under ZIPA Recommendation 1.26). This mahinga kai enhancement project supports objectives under the draft Rangiora Stormwater Management Plan 2025-2040 and Rangiora Stormwater Network Discharge Consent CRC184601.

Attachments:

i. Proposed ZIPA budget 2025-34 (TRIM 250124011270)

2. <u>RECOMMENDATION</u>

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 250210020464.
- (b) **Approves** the reallocation of the existing ZIPA budget 2025-34 to Recommendations as proposed in Table 1:

ZIPA Recommendation	Current allocation	Proposed Allocation	Rationale
1.8 Review the presence and effects of barriers to indigenous and introduced fish	\$20,000 capex	\$15,000 capex	Fish passage budget has not been fully spent each year. More survey work is required to prioritise projects
1.14 Minimising waterway management and maintenance activity effects (Drainage Maintenance Management Plan initiatives)	\$20,000 capex \$15,000 opex	\$10,000 capex \$5,000 opex	This project budget has not be fully spent each year
1.21 On-the-ground projects for Taranaki Stream	\$0	\$5,000 capex	For Taranaki Stream works (in addition to inanga spawning area works in a separate budget). A culturally significant waterway
1.24 Lees Valley and Upper Ashley Rakahuri River catchment focus	\$0 opex	\$15,000 opex	For the WDC-owned Forestdale Wetland, within the Ashley Rakahuri catchment. This wetland requires opex to implement the restoration plan above current Greenspace budget.
1.26 Improved stream health, Ngāi Tūāhuriri values, and improved recreational amenity in the North Waimakariri River tributaries.	\$10,000 capex \$15,000 opex	\$30,000 capex \$5,000 opex	For northern Waimakariri tributaries - such as continued planting for South Brook at Townsend Fields, and for partial support of the North Brook Trail planting, fencing and other costs
1.27 On-the-ground projects in the Cam Ruataniwha and Silverstream/Kaiapoi catchments	\$40,000 capex	\$30,000 capex	To be retargeted to mahinga kai projects, such as watercress improvement projects

Table 1: Proposed reallocation of ZIPA budget.

(c) **Notes** that a review of ZIPA budget allocation to ZIPA Recommendations is intended to be carried out again within 3 years, on an as required basis.

- (d) **Approves** reallocation of \$30,000 capex budget from the North Brook Trail culverts project (ZIPA Recommendation 1.26) to boulder cluster placement within the North Brook, South Brook and Middle Brook for the enhancement of habitat for kanakana (pouched lamprey), a mahinga kai species (also under ZIPA Recommendation 1.26).
- (e) **Circulates** this report to the Waimakariri Water Zone Committee and Ngāi Tūāhuriri Rūnanga at a WDC-Rūnanga meeting for information.

3. BACKGROUND

- 3.1 The ZIPA, a Waimakariri Water Zone Committee document, created specific recommendations for the implementation of the Canterbury Water Management Strategy within the Waimakariri Water Zone.
- 3.2 A report was presented on 29 January 2019 to Council, seeking a decision on the role of WDC in ZIPA implementation, staff resourcing, and funding of projects (refer to TRIM 181217148924). A total of \$305,000 per year was approved by Council for 2019-21 on 28 May 2019, of which \$100,000 is capex and \$205,000 is opex.
- 3.3 A ZIPA role and budget allocation review was carried out in 2021 for the Long Term Plan 2021-31, which was presented to the Land and Water Committee for approval at the 20 July 2021 meeting. A review of the allocation to ZIPA Recommendations within this budget has not been carried out since July 2021.
- 3.4 A capex budget of ZIPA projects for 2024-25 was approved at the Utilities and Roading Committee meeting of 28 May 2024 (TRIM 240508073256).

4. ISSUES AND OPTIONS

Reallocation of the ZIPA budget

- 4.1. The previous allocation of the budget to ZIPA recommendations was carried out in July 2021. Since this time there have been the completion or reduction in the cost of some projects, or difficulties with spending the allocated budget. Other projects have been recommended to receive ZIPA budget allocation, such as projects arising from the drafting of the Rangiora Stormwater Management Plan 2025-2040, particular for mahinga kai species such as watercress. Table 1 indicates the proposed budget reallocations.
- 4.2. Budgets for fish passage improvement and minimising drainage effects (Recommendations 1.8 and 1.14 respectively) are proposed to decrease slightly. This is because these budgets have not been fully spent in previous years. A new capex budget of \$5,000 per year allocation is proposed to support works on the Taranaki Stream (Recommendation 1.21) as a culturally significant waterway. Forestdale Wetland, a WDC-owned wetland in Okuku is proposed to receive \$15,000 per year in weed control cost (Recommendation 1.24), as current Greenspace weed control budget is not sufficient to carry out the scope of the restoration plan. Recommendation 1.26 is proposed to increase from \$10,000 to \$30,000 per year, particularly to support mahinga kai enhancement actions that have arisen from the draft Rangiora Stormwater Management Plan 2025-2040. Recommendation 1.27 will decrease from \$40,000 capex to \$30,000 capex, and will also be refocused to on-the-ground mahinga kai protection and enhancement projects. The total allocation of ZIPA budget (\$100,000 capex, and \$205,000) remains unchanged.

Table 1: Proposed reallocation of ZIPA budget.	See Attachment i for the full recommendations and
budgets that are unchanged.	

ZIPA Recommendation	Current allocation	Proposed Allocation	Rationale
1.8 Review the presence and effects of barriers to indigenous and introduced fish	\$20,000 capex	\$15,000 capex	Fish passage budget has not been fully spent each year. More survey work is

			required to prioritise projects
1.14Minimisingwaterwaymanagementandmaintenanceactivityeffects(DrainageMaintenanceManagementPlaninitiatives)	\$20,000 capex \$15,000 opex	\$10,000 capex \$5,000 opex	This project budget has not be fully spent each year
1.21 On-the-ground projects for Taranaki Stream	\$0	\$5,000 capex	For Taranaki Stream works (in addition to inanga spawning area works in a separate budget). A culturally significant waterway
1.24 Lees Valley and Upper Ashley Rakahuri River catchment focus	\$0 opex	\$15,000 opex	For the WDC-owned Forestdale Wetland, within the Ashley Rakahuri catchment. This wetland requires opex to implement the restoration plan above current Greenspace budget.
1.26 Improved stream health, Ngāi Tūāhuriri values, and improved recreational amenity in the North Waimakariri River tributaries.	\$10,000 capex \$15,000 opex	\$30,000 capex \$5,000 opex	For northern Waimakariri tributaries - such as continued planting for South Brook at Townsend Fields, and for partial support of the North Brook Trail planting, fencing and other costs
1.27 On-the-ground projects in the Cam Ruataniwha and Silverstream/Kaiapoi catchments	\$40,000 capex	\$30,000 capex	To be retargeted to mahinga kai projects, such as watercress improvement projects

- 4.3. Note than an error in the ZIPA budget for 2021-2031 has been corrected. \$210,000 opex was allocated in the 2021-2031 budget, however only \$205,000 opex per annum was approved by Council in May 2020. Therefore, Attachment i (ZIPA Budget 2025-34) has reduced the opex total slightly to \$205,000 per year.
- 4.4. A review of ZIPA budget allocation to ZIPA Recommendations is intended to be carried out again within 3 years, on an as required basis.

Kanakana boulder placement project

4.5. There is a foreseen underspend of \$30,000 in the 2024-25 ZIPA capex budget that was approved by the Utilities and Roading Committee for North Brook Trail culvert installation in May 2024 (see report TRIM 240508073256). The approved report reallocated budget from other Recommendations to Recommendation 1.26 in 2024-25, and therefore differs from the ZIPA budget amount of \$10k capex for 2021-31 in Attachment i.

- 4.6. Project owner, the Waimakariri Landcare Trust, has confirmed that this is no longer able to be spent in 2024-25 due to timing of other related works not commencing until 2025-26. Therefore, a reallocation of this budget is proposed to a mahinga kai enhancement project (also under ZIPA Recommendation 1.26). This mahinga kai enhancement project supports objectives under the draft Rangiora Stormwater Management Plan 2025-2040 and Rangiora Stormwater Network Discharge Consent CRC184601.
- 4.7. The Ngāi Tūāhuriri Rūnanga position statement for the Rangiora Stormwater Management Plan 2025-40 requested in Recommendation 8 that 'Council should investigate options to improve instream habitat. Measures to improve instream habitat must be discussed with Rūnanga through appropriate channels'. Therefore a project is proposed to create boulder clusters (see Figure 1) within the North Brook, Middle Brook and South Brook as sites for kanakana (pouched lamprey) spawning. This is as recommended by Boffa Miskell Ltd for improvement of habitat of this species. This budget includes costs for engagement with Te Ngāi Tūāhuriri Rūnanga, as well as ecological advice and monitoring of the success of the design. WDC drainage engineers will advise on appropriate locations that do not affect flooding risk.
- 4.8. For the Rangiora Stormwater Network Consent CRC184601 consent compliance monitoring, Boffa Miskell Ltd was contracted to carry out ecological survey work and provide recommendations for Rangiora waterways. Their 2024 report provided a recommendation to enhance spawning habitat for the kanakana, which is a threatened and taonga species likely spawning in the upper Ruataniwha Cam River catchment.

Boffa Miskell Ltd stated 'Enhance in-stream habitat to support Threatened, Nationally Vulnerable kanakana spawning through the catchment. Kanakana spawn by laying eggs in a 'nest' cluster under large hard surfaces (e.g., boulders), therefore the addition or maintenance of larger substrate types should be prioritised for the mid-upper Cam River / Ruataniwha catchment.'



Figure 1: Boulder with kanakana (pouched lamprey) spawning found. The circle shows the egg cluster. Source: NIWA

Implications for Community Wellbeing

- 4.9. There are implications on community wellbeing by the issues and options that are the subject matter of this report. The ZIPA recommendations and budget allocations are to meet targets in the Canterbury Water Management Strategy for recreation and amenity, biodiversity and mahinga kai provision for example.
- 4.10. The Management Team has reviewed this report and support the recommendations.

5. <u>COMMUNITY VIEWS</u>

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. Ngāi Tūāhuriri representatives of the Waimakariri Water Zone Committee will be circulated this report, and it will be circulated at a WDC- Rūnanga monthly meeting.

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.

5.1.1. The Waimakariri Water Zone Committee – Updates on the progress of ZIPA projects are presented to the Waimakariri Water Zone Committee for comment and discussion.

5.2. Wider Community

The wider community is not likely to be affected by, or to have an interest in the subject matter of this report. The wider community was consulted on the role of WDC and budget allocation for the ZIPA in the draft Annual Plan public consultation in March-April 2019.

6. OTHER IMPLICATIONS AND RISK MANAGEMENT

6.1. **Financial Implications**

There are no financial implications of the decisions sought by this report. Budget is included in the Long Term Plan for 2024-34. No carry-over budget is requested from the 2024-25 budget from 2023-24 projects that have not been completed. This report is for more detailed specifics of the allocation of the budget to ZIPA Recommendations.

6.2. Sustainability and Climate Change Impacts

The recommendations in this report do have sustainability and/or climate change impacts. For example, the ZIPA projects for planting of trees will help to sequester carbon.

6.3. Risk Management

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

ZIPA capex spend is be reported on quarterly in a summary capital expenditure report to the Audit and Risk Committee. This provides governance with information of any risk of an under or overspend.

6.4. Health and Safety

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

ZIPA capital expenditure project implementation will follow established health and safety processes. There are no new health and safety risks or hazards that have been identified.

7. <u>CONTEXT</u>

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

Resource Management Act (1991). All works requiring consent are anticipated to be covered by the 'Maintenance and Minor Works in Waterways' global consent (CRC195065, CRC195066, CRC195067) that WDC has been granted from Environment

Canterbury, and the Waimakariri District Council consent RC19143 for works beside waterways.

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 hold the delegation for the allocation of the ZIPA budget.

Waimakariri ZIPA - I	Final version (26 November 2018)	WDC and ECar	roles (MOU)			WDC	Funding - red te	xt indicates a proposed change	
Recommendation	Text	Project Lead	Project Contributor	Current funding per annum (K) CAPEX	Current funding per annum (K) OPEX	Proposed WDC funding 2025- 34 (K) CAPEX	Proposed WDC funding 2025- 34 (K) OPEX	Notes	Column1
1.8	That Environment Canterbury, Waimakariri District Council, Department of Conservation, Fish and Game, and Ngãi Tušhurri review the presence and effects of barriers to indigenous and introduced fish migration on waterways in the Zone in consultation with stakeholders and land owners. The review should: a. Identify locations where there are barriers to migrating indigenous fish and salmonids b. Consider the purpose of specific barriers (e.g. tidal control, flood management, drainage) c. Determine and prioritise options for removing or retrofitting barriers appropriate to different species at specific sites.	ECan Zone Delivery	WDC 3 Waters, Ngāi Tūāhuriri Rūnanga, DOC, Fish & Game	20)	5 15	; 5	Fish passage projects or survey work. Fish passage guidelines now required by the National Policy Statement for Freshwater Managemen (2020). There is a need to have a more active programme to identify these barriers and survey them. This has led to not spending this budget in full each year.	45 it
1.14	That Environment Canterbury and Waimakariri District Council ensure waterway management and maintenance activities minimise contaminant losses to downstream waterbodies and loss of aquatic life, while maintaining flood carrying capacity.	WDC 3 Waters, ECan Zone Delivery		20) 1	5 10) 5	Funding to start implementation of initiatives under the Drainage Maintenance Management Plan (200728095074). Funding for drain shading, channel shaping, habitat creation, animal salvage works, erosion and sediment controls above BAU. Both CAPEX and OPEX.	50
1.21	That Environment Canterbury prioritise on the ground projects for Taranaki Creek, given its significant value to Ngãi Tüähurin and proximity to Kaiapoi Pā, particularly those related to: • reducing and removing sources and legacies of deposited fine sediment • improving the quality of habitat for mahinga kai species • removing barriers to native fish passage • removal of invasive fish species	ECan Science	Ngāi Tūāhuriri Rūnanga, WDC 3 Waters, WDC Greenspace, ECan Zone Delivery			5 5	0	For Taranaki Stream works (in addition to inanga spawning area works in a separate budget). A culturally significant waterway	5
1.24	That Environment Canterbury and the Waimakariri District Council recognise the Upper Ashley River/Rakahuri catchment, including Lees Valley, for its high natural landscape and ecosystem values, and protect its waterways from degradation by: • avoiding increased contaminant losses to waterways. • preventing the removal or degradation of any existing wetlands. • preventing the expansion of wilding pines.	ECan Planning	WDC Planning	(D C) 15	On track to protect Lees Valley wetlands as SNAs in District Plan, and designate area as Outstanding Natural Landscape . BAU with 70 hours Water Environment Advisor / Ecologist - Biodiversity for compliance. Budget proposed for weed control of Forestdale Wetland (WDC asset) as Greenspace weed control budget is not sufficient	15
1.25	That Environment Canterbury and the Waimakariri District Council initiate public education and awareness campaigns aimed at improving the water quality and health of urban waterways.	WDC 3 Waters	ECan Zone Delivery	() 10) () 10	Urban waterway education (funding for Enviroschools Canterbury- decision from \$17a review report)	20
1.26	That Environment Canterbury and the Waimakariri District Council support projects that have enduring benefits for improved stream health, Ngài Tùähuriri values, and improved recreational amenity in the North Waimakariri River tributaries.	ECan Zone Delivery	WDC 3 Waters, WDC Greenspace, Ngãi Tūāhuriri Rūnanga	10	0 1!	5 30) 5	Fencing, walkways on WDC land, as well as biodiversity and stream health projects. Continue with South Brook Townsend Fields Reserve possibly start work on a new esplanade reserve- (North Brook Trail?). Role for Ecologist - Biodiversity to lead plantings.	- 60
1.27	That Environment Canterbury and the Waimakariri District Council prioritise on-the-ground projects in the Cam River/Ruataniwha and Kaiapol/Silverstream, including but not limited to: • Reducing and removing sources and legacies of deposited fine sediment. • Improving the quality of habitat for mahinga kai. • Removing barriers to native fish passage.	ECan Zone Delivery	WDC 3 Waters, Ngāi Tūāhuriri Rūnanga	40	0 10	D 30) 10	Kaiapoi river projects e.g. plantings (\$10k for 3 years), transitions to funding for Cam River, post the Cam River Enhancement Fund (project and emptying of sediment traps). Watercress mahinga kai enhancement (heavy metal testing, access,signage,shade management) - with some budget given to Runanga annually or their nominated entity. Kanakana boulder placement under this recommendation - one-off increased budget in 2024-25 (30k from Northbrook Trail culverts to re-allocate)	s 90

2.2	The Waimakariri Water Zone Committee endorses and supports the implementation of the Canterbury Regional Biodiversity Strategy as it applies in the Waimakariri Water Zone. In particular: a. The zone committee endorses the vision, goals, targets, and actions of Canterbury Regional Biodiversity Strategy: b. The zone committee recommends that Environment Canterbury support the appointment of a regional re-ordinator for the Canterbury Regional Biodiversity Strategy.	Waimakariri Water Zone Committee	ECan Strategy & Planning	0	110	0	110	1 X Ecologist-Biodiversity at 90k/yr plus 20K overheads	220
	c. The zone committee recommends that Waimakariri District Council increase its biodiversity capability and capacity								
2.5	That Environment Canterbury and the Waimakariri District Council integrate indigenous biodiversity and instream ecological values into councils' planning and operational activities, including in work carried out by consultants or contractors.	Ecan Planning	WDC Policy & Strategy, WDC 3 Waters, ECan Zone Delivery, ECan Science	0	10	0	10	Ecology surveys to assist planning and operational. Relates to rec. 1.7. Budget being used for inanga spawning, trout redd survey etc.	20
2.8	That Environment Canterbury and the Waimakariri District Council work with community groups to address indigenous biodiversity protection and enhancement by means such as: • Provision of financial assistance; • Identification of funding sources; • Provision of technical advice; and • Endorsement of projects.	ECan Zone Delivery	WDC 3 Waters, ECan Regional Support, ECan Science	0	20	0	20	Baseline support for community organisation(s) for District-wide support for landowners, catchment groups and community groups - budget being allocated annually in contestable funding round.	40
2.11	The zone committee recognises the importance of the tidal reaches of waterways as inanga habitat and recommends that Environment Canterbury and the Waimakariri District Council support the development of habitat at inanga spawning sites and riparian planting.	WDC 3 Waters, ECan Science	ECan Regional Support	10	5	10	5	Started with the McIntosh, Courtenay - potential further CAPEX work at Taranaki, Benzies Creek, Saltwater Creek - as well as follow-up survey work and sea level rise preparation (OPEX)	30
3.16	That Environment Canterbury, Waimakariri District Council and Canterbury District Health Board work together to: a. develop a programme for testing and reporting of water quality in private drinking water supply wells, and b. raise awareness of health impacts from high nitrates in drinking water	ECan Science, WDC 3 Waters	ECan Comms, CDHB	0	10	0	10	Cost of water sampling if full chemical suite analysis. Programme delivered by WDC, with technical support from ECan Groundwater Team. Budget fully spent each year with 40 wells.	20
				100	210	100	205	TOTAL (\$K per year)	

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	TSU-01-02 / 241203214710
REPORT TO:	UTIILTIES AND ROADING COMMITTEE
DATE OF MEETING:	25 February 2025
AUTHOR(S):	Colin Roxburgh, Project Delivery Manager Kalley Simpson, 3 Waters Manager
SUBJECT:	Engineering Code of Practice Update – Stormwater Design Standards
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager Chief Executive

1. <u>SUMMARY</u>

- 1.1. This report seeks the Utilities and Roading Committee's approval of recommended changes to the Engineering Code of Practice regarding design standards for stormwater.
- 1.2. The following is a summary of the changes proposed:
 - 1.2.1. Update the return period for design storms for the primary and secondary systems as follows:
 - Primary system to be designed for 10% annual exceedance probability (AEP) event (10 year ARI), rather than 20% AEP event (5 year ARI).
 - Secondary system to be designed for 1% AEP event (100 year ARI), rather than 2% AEP event (50 year ARI).
 - 1.2.2. Clarify requirements about how developers undertake modelling to demonstrate stormwater neutrality and compliance with the above.
- 1.3. The proposed changes are intended to bring the Council's Engineering Code of Practice into line with the industry best practice. In particular, the 10% and 1% AEP events are commonly used as the design criteria for the primary and secondary system in other jurisdictions. Staff have undertaken research on the design standards of other councils where data was able to be found, to help inform these changes. Key findings were:
 - 68% (19 out of 28) of other councils where design standards were found required the secondary system to be design to at least the 1% AEP event (100 year ARI), rather than 2% (50 year ARI).
 - 75% (21 out of 28) of other councils where design standards were found required the primary system to be designed to at least the 10% AEP event (10 year ARI), rather than 20% (5 year ARI).
 - 82% (23 out of 28) of other councils have higher design standards for stormwater compared to those in the current ECoP.
- 1.4. In addition to the proposed updated requirements aligning with the majority of other councils' requirements, this would also be consistent with the requirements within New Zealand Standard NZS4404 (2010); Land Development and Subdivision Infrastructure which is the most applicable nationally recognised reference document.

1.5. It is noted there have been questions raised previously regarding whether developments adequately manage stormwater flows to ensure no negative impact on the surrounding and downstream community. The recommendations in this report are intended to address the matters previously raised, by ensuring stormwater is managed in the Waimakariri District in accordance with industry best practice.

Attachments:

i. Draft updated Stormwater and Land Drainage section of Engineering Code of Practice – 250220027876.

2. <u>RECOMMENDATION</u>

THAT the Utilities and Roading Committee:

- (a) **Receives** Report No. 241203214710.
- (b) **Approves** the updated version (TRIM: 250220027876) of the Stormwater and Land Drainage section of the Engineering Code of Practice to be adopted.
- (c) **Approves** that the changes come into effect from the time that this report is adopted, and apply to any new development applications that are received by the Council from that point in time onwards.
- (d) **Notes** the key changes proposed are to require that:
 - i. the primary stormwater system be designed for the 10% annual exceedance probability event (10 year ARI), rather than 20% annual exceedance probability event (5 year ARI),
 - ii. the secondary stormwater system be designed for the 1% annual exceedance probability event (100 year ARI), rather than 2% annual exceedance probability event (50 year ARI), and;
 - iii. providing more clarity on expectations regarding the level of modelling undertaken to demonstrate that stormwater neutrality for the specified design events is achieved.
- (e) Notes that some discretion may have to be applied to the proposed new requirements for multi-stage developments where the SMA sizing may have been dictated already at an earlier stage that is already built or consented, meaning that it might be difficult for future stages that discharge into that earlier stage to meet those new requirements, and that in these instances, such discretion shall only be granted with the approval of the General Manager Utilities and Roading and General Manager Planning, Regulation and Environment.
- (f) Notes that the proposed changes are intended to bring the Council in line with how the majority of other councils (where design standards were found) in the country manage stormwater for new developments, and in line with the key New Zealand Standard (NZS4404) for Land Development and Subdivision Infrastructure.
- (g) **Notes** that key developers and key consultants within the District will be made aware of the changes once adopted, as is normal practice when changes to the Engineering Code of Practice are made.

3. BACKGROUND

3.1. There have been concerns raised in the past about whether new developments are having a detrimental impact upon the wider community from a stormwater perspective, due to the additional runoff volume and flows that they can add.

- 3.2. In particular, questions have been raised about some recent developments and whether they are adequately attenuating storm flows, or whether they are having a negative impact on the downstream system.
- 3.3. Staff have taken this feedback on board and identified areas where the Council's Engineering Code of Practice (ECoP) has less stringent requirements than some other councils. A survey was undertaken to compare the design requirements for the primary and secondary system for other councils across the country. The results are shown in Figure 1 below, with the primary system requirements on the x axis, and secondary system requirements on the y axis.



Figure 1: Design Storm Requirements of Other Councils for Primary and Secondary Stormwater Systems

- 3.4. Key findings from above are:
 - 68% (19 out of 28) of other councils where design standards were found required the secondary system to be designed to at least the 1% AEP event, rather than 2%.
 - 75% (21 out of 28) of other councils where design standards were found required the primary system to be designed to at least the 10% AEP event, rather than 20%.
 - 82% (23 out of 28) of other councils have higher design standards for stormwater compared to those in the current ECoP.
- 3.5. Given the number of issues that are experienced with flooding in the District, and the high levels of growth, it is important that the Council takes measures to ensure its requirements for new developments keep up with good practice for stormwater management.
- 3.6. The following key points identify where updates to the ECoP are recommended to ensure new developments better manage their impact in terms of stormwater:

Design storm event for primary system

- 3.6.1. Currently the Council's ECoP requires that the primary system be designed to convey the 5-year average recurrence internal (ARI) event, also known as the 20% annual exceedance probability (AEP) event.
- 3.6.2. This means that all stormwater up to and including a 20% AEP event should be contained within the kerb and channel and downstream pipework, and any other

infrastructure forming part of the primary system. During storm events greater than this, water may spill out and enter the secondary stormwater system.

3.6.3. As identified above, the majority of other councils where data was found require that the primary system be designed for the 10% AEP event. This would mean that it would take a larger scale storm event before the primary system is overwhelmed and spills out onto the road.

Design storm event for secondary system

- 3.6.4. Currently the Council's ECoP requires that the secondary system be designed to convey the 50-year average recurrence internal (ARI), or 2% annual exceedance probability (AEP) event.
- 3.6.5. This means that all stormwater up to and including a 2% AEP event should be contained within the secondary system, which generally consists of roadways, but can also include accessways, parks and reserves. For storm events greater than this specified design event, water may spill out of the secondary system and enter private property.

Offsite Effects

- 3.6.6. As well as the design requirement for the conveyance of primary and secondary flows, another key design criteria is the design of attenuation and/or soakage systems to manage any possible offsite effects.
- 3.6.7. Due to the potential for extra runoff to be created by new developments that create additional impervious areas, they are required to attenuate flows up to and including a specified design event, such that post-development flows are no greater than pre-development flows for the specified event, and that the extra runoff volume does not cause adverse impacts downstream.
- 3.6.8. Typically, the design event specified for attenuation systems is aligned with the design event for secondary systems. Therefore, currently the Council requires that attenuation systems are designed for the 2% AEP event.
- 3.6.9. As identified above, the majority of other councils where data was found require that the secondary system be designed for the 1% AEP event, rather than the 2% event. This would mean that it would take a larger scale storm event before the secondary system is overwhelmed, and basins designed to flow from the secondary system would be required to be sized to accommodate a larger sized event.

<u>Clarification around how to demonstrate post-development flows are no greater</u> <u>than pre-development</u>

3.6.10. There can be a lack of clarity with developers about how they go about demonstrating that post-development flows are no greater than pre-development. To provide clarity to developers, it is proposed to provide additional wording, by requiring that they consider a range of return intervals for storm events (5 year through to 100 year) and a range of storm durations (10 minute through to 72 hour), in order to demonstrate no detrimental downstream events for the specified design events.

4. ISSUES AND OPTIONS

- 4.1. In order to ensure the impacts of developments are better managed in terms of stormwater, and to ensure that the District keeps up with industry best practice, it is recommended that the Engineering Code of Practice be updated as follows:
 - 4.1.1. Update the return period for design storms for the primary and secondary systems as follows:

- Primary system to be designed for 10% annual exceedance probability (AEP) event, rather than 20%.
- Secondary system to be designed for 1% AEP event, rather than 2%.
- 4.1.2. Update the minimum requirement that any attenuation systems to manage offsite effects are designed up to the 1% AEP event, rather than the 2% AEP event, while also ensuring off-site effects are considered and managed.
- 4.1.3. Clarify requirements about how developers undertake modelling to demonstrate compliance with the above.
- 4.2. A draft version of the updated ECoP has been attached (refer Attachment i), showing how the recommendations are proposed to be incorporated into the document.
- 4.3. Several matters were considered with respect to the proposed changes. These are discussed below:

Will the recommendations be feasible to implement:

- 4.3.1. Consideration was given as to whether the recommended changes will have a substantial impact upon the design of new development areas, or make certain developments impractical.
- 4.3.2. Given that these requirements are already in place in the majority of other councils where data was found, as well as in the key applicable New Zealand Standard (NZS4404), it has been demonstrated by the industry that these can be implemented in practice without major issues throughout New Zealand. The Waimakariri District does not have sufficiently unique geological or other characteristics that would mean what is practical elsewhere in the country is not practical in this District.
- 4.3.3. It is worth noting that a 100-year return period event is not double the size in terms of volume relative to a 50-year return period event, but rather is a marginal difference.

Will the proposals significantly impact upon the housing yield able to be achieved:

- 4.3.4. Consideration has been given to any impact that the proposed changes may have on the amount of developable land in the district, and the assumptions that sit behind this. As a general rule, the size of SMA's with current ECoP requirements, can be in the order of 6% of the total developable area, noting that this can range from 3% to 10%, depending on some site specific factors.
- 4.3.5. With it expected that the new requirements may increase this figure by approximately 12%, then the increase may be in the order of 0.72% (i.e 12% increase of 6%). Given this relatively small change overall, this is expected to be within the margin of error of assumptions made previously about what lot yields are achievable. Therefore, it is not considered that the proposed changes will have a material impact on the yield available across the district.

What impact will the changes have on the cost to develop:

- 4.3.6. Some analysis has been undertaken to understand the impact upon new developments of the proposed update to requirements. While each development will have unique characteristics and would require its own analysis, the following gives an approximate indication of the order of magnitude of the proposed changes on the cost of development:
 - Pipes designed and installed as part of the primary system may need to be a larger size, resulting in an approximate cost increase of 11.6% for the stormwater reticulation portion of the cost of development.

• While not assessed directly, based on the analysis undertaken with regard to sizing of pipes and SMAs, secondary flow paths (typically roads), will need to demonstrate approximately 12% greater capacity to cater for the 1% event rather than 2% event.

correlation to the cost to construct, this would result in an approximate

There are many contributing factors when sizing a road corridor, with conveyance of secondary flows only one factor. In the cases where the ability to convey secondary flow was the determining factor in the size of the road corridor, the proposed changes would have an impact upon this cost. However, there would be other cases where different factors dictate the road dimensions, in which case the proposed changes may have no bearing on the sizing of the road corridor.

4.3.7. In summary, the proposed changes may impact the costs associated with stormwater conveyance and storage by approximately 12%, based on the points outlined above.

How will the changes be phased in to existing developments:

- 4.3.8. The changes would only apply to developments that apply to the Council for consent after the adoption of the updated document. For any already consented developments, they would not have to meet the new requirements.
- 4.3.9. For developments with multiple stages where one stage has been consented, that included stormwater infrastructure related to future stages, specific consideration may be required. For example, the first stage of a given development may have involved the construction of stormwater infrastructure (including pipework and basins) for a number of future stages, and as such it may be difficult to upsize these already constructed basins to account for the new standards as part of consenting future stages. In such instances, staff may apply discretion (considered on a case-by-case basis) regarding what design events the development is required to design to, taking into account the requirements at the time initial stages were developed.
- 4.3.10. It is proposed that such discretion shall only be granted with the approval of the General Manager Utilities and Roading and General Manager Planning, Regulation and Environment.

Will the changes be required to be imposed to existing infrastructure

- 4.3.11. As the proposed updates to the ECoP require a higher design standard than previously, existing infrastructure in most cases will not meet the new standard.
- 4.3.12. This is normal over time, even without these proposed changes. For example, as new rainfall data is published, the expected intensity for a given storm event will typically become greater over time. A 20% AEP storm event using today's rainfall data will be greater than a 20% AEP storm event using rainfall data from 20 years ago. Therefore, even without changing standards, a pipe sized to the same standard previously will not meet current design standards based simply on the underlying data that informs the design calculation changing.

12% impact upon the cost of the SMAs.

- 4.3.13. Based on the above, it is not expected that all existing infrastructure comply with the latest version of the ECoP, only that it conforms with the design standard applicable at the time it was designed.
- 4.3.14. To address this, specific design decisions need to be made when existing infrastructure is renewed in existing sites. The decision will be whether to renew assets to the latest version of the ECoP (with higher design standards, and more recent rainfall data), or whether to renew assets to tie in with the surrounding infrastructure, which will have been sized to previous standards. In some cases it may not make sense to replace a particular pipe to a higher standard than the upstream and downstream infrastructure, while in others there might be a good opportunity to bring a system up to the latest design requirements as part of undertaking a renewal.
- 4.3.15. The above is a consideration that exists currently due to increases in underlying rainfall data (as explained above), and it is something that will continue to need to be worked through on site specific designs within existing areas.
- 4.3.16. Irrespective of the above, the key intention with the changes is to ensure that all new developments in particular meet the required new standards, to ensure moving forward systems are designed in accordance with current best practice, while acknowledging that not all existing systems will meet these same standards.
- 4.4. It is noted that there has not been a comprehensive update of the ECoP for a number of years, and rather a series of minor updates for specific items have been undertaken from time to time in recent years. Staff are part way through a more comprehensive review, and will report back at a later date with proposals for this.

Implications for Community Wellbeing

There are implications on community wellbeing by the issues and options that are the subject matter of this report. The proposed changes as included within this report are intended to improve community wellbeing, by reducing the risk of negative flooding impacts from weather events.

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

5. <u>COMMUNITY VIEWS</u>

5.1. Mana whenua

Te Ngāi Tūāhuriri hapū are unlikely to be affected by, or have an interest in the subject matter of this report. While stormwater management in general is a matter covered within the lwi Management Plan, and is of interest to hapū, a modification to a design standard to keep up with industry best practice is not considered to be a matter of significant cultural interest.

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. In particular, the development community will have an interest in this report. As is the case with other updates to the ECoP, notification of the update will be circulated to key developers and consultants within the district, and information made available via the Council's website, with input from the Communications team.

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 no immediate financial implications to the Council of the decisions sought by this report.

It is acknowledged that as pipe sizes and stormwater management areas are built and vested to the Council that are a greater size (and therefore value) than they would otherwise have been, there will be some modest impact over time. As these greater value assets are vested to the Council, the cost to depreciate them will be marginally greater than it would have otherwise been (estimated to be in the order of 12%).

This will occur incrementally as new developments are vested, and valuations updated. Conversely, having stormwater infrastructure built to a higher standard, to better manage impacts on the wider community, may create some modest operational savings over time. The scale of cost in each direction (both positive and negative) is difficult to quantify, however both are also considered to be relatively modest, and there would be some cancelling out affect.

6.2. Sustainability and Climate Change Impacts

The recommendations in this report do have sustainability and/or climate change impacts. With the intensity and frequency of rain events increasing, it is important that the Council is proactive in ensuring stormwater designs are undertaken in accordance with industry best practice.

6.3 Risk Management

There are risks arising from the adoption/implementation of the recommendations in this report. With the current design standard, which is lower than the majority of other councils where data was found, there is a greater risk of a new development having a detrimental impact on the downstream or surrounding system. Conversely, the proposed higher standard, will have a reduced risk of negative impacts relative to the status quo.

6.3 Health and Safety

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

7. <u>CONTEXT</u>

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 Resource Management Act is relevant in this matter.

7.3. **Consistency with Community Outcomes**

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

- Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change.
- The natural and built environment in which people live is clean, healthy and safe.

7.4. Authorising Delegations

The Utilities and Roading Committee is responsible for approving updates to the Engineering Code of Practice.



Part 5: Stormwater & Land Drainage

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Part 5: Stormwater & Land Drainage

5.1 INTRODUCTION

This Part of the CoP covers the design and construction requirements of stormwater and land drainage works for land development and subdivision, including capital works projects.

This Part is not intended to be a detailed design guide or to replace the need for stormwater engineering expertise in some areas of the design process. The standards included in this Part are one way of achieving the desired outcomes and performance criteria of the network components described below.

5.1.1 Philosophy

The Waimakariri District Council is taking a values-based approach to management of the natural and physical resources that make up the District's system of waterways, wetlands and drainage. This includes not only the natural waterway system but also the built network. By understanding the natural processes operating in land and water we are much more able to bring to life values that are important to the community while addressing drainage issues associated with individual developments. Values that have been specifically identified are ecology, landscape, recreation, heritage, culture and drainage.

The emphasis on each value at a particular site will be dependent on the objectives of the project. The process toward understanding these values, how they can be reflected and enhanced in new developments, and an appreciation of ongoing management requirements, is outlined in the CCC *Waterways, Wetlands and Drainage Guide (WWDG) Part A.*

5.1.2 Objectives

The stormwater drainage system serves four purposes:

- The conveyance of storm surface run-off with minimal flood damage;
- Control of water quality (surface and groundwater);
- Protection of bio-diversity and ecological function;
- Groundwater control and protection.

The objective of a stormwater drainage system is to balance these four aspects; to the extent that agreed levels of service are maintained and any adverse effects on the environment are minimised. To satisfy the latter, remedial or mitigation works will often need to be incorporated within the stormwater drainage system (see *WWDG Part B* section 2.2). Potential adverse effects include flood damage, surface and channel erosion and sedimentation, water pollution, loss of bio-diversity and damage to aquatic ecosystems.

Opportunities exist for the stormwater drainage design to integrate with the natural drainage system. Grassed swales, natural or artificial waterways, ponds and wetlands, for example, may in certain circumstances be not only part of the stormwater drainage system, but a required solution (depending on urban priorities) especially if a low impact on receiving waters downstream is critical.

Well designed and maintained alternative systems that replicate the pre-development hydrological regime can not only mitigate adverse environmental effects but also enhance amenity and ecological values.



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5.2 CONSENT AND COMPLIANCE ISSUES

The consent and compliance information set out in Part 2: *General Requirements* applies to all works within the Waimakariri District, with the addition of the clauses below.

5.2.1 Legislation

The following Acts and amendments are the principal statues governing stormwater and land drainage:

- Local Government Act (2002) (LGA)
- Resource Management Act (1991) (RMA)
- Land Drainage Act (1908)

5.2.2 District Council Requirements

Requirements in the Stormwater Bylaw must be met (see also WWDG Part B chapter 17).

5.2.3 Consent Application – Information Required

In addition to the information required to support the concept drawings and/or Resource Consent plans in CoP Part 2: *General Requirements*, the following data shall also be provided:

- Catchment boundaries by defined surface levels (where the location of the catchment boundary is uncertain, the developer must define the boundary by survey);
- Identification of any natural or artificially created basins.



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5.3 QUALITY ASSURANCE REQUIREMENTS AND RECORDS

Provide quality assurance records that comply with the requirements in CoP Part 3: *Quality Assurance* and the CCC *Construction Standard Specifications* (CSS), during design and throughout construction.

5.3.1 The Designer

The designer of all stormwater reticulation systems that are to be taken over by Waimakariri District Council and the person undertaking the catchment analysis must be suitably experienced. The qualifications and experience of the designer may be requested by the Council for approval prior to commencement of the design.

The design reviewer must have at least equivalent experience to the designer.

5.3.2 System Review

When the pipe selection and layout have been completed, perform a system review to ensure that the design complies with both the parameters specified by the Council and detailed in the CoP. The documentation of this review must include a full hydraulic system analysis. Compliance records must cover at least the following requirements:

- Pipe and fittings materials are suitable for the particular application and environment;
- Pipe and fittings materials are approved by Council;
- Pipe class is suitable for the pipeline application (including operating temperature, surge and fatigue where applicable);
- Layout and alignment meets the Council's requirements;
- Capacity is provided for future adjacent development;
- Hydraulic analysis details are provided;
- All assumptions are stated.

5.3.3 Engineering Design Approval

Provide the following information to support the engineering drawings and Design Report, as a minimum:

- Details and calculations that demonstrate that minimum standards of protection required by clause 5.5.2 will be maintained;
- Detailed calculations and drawings where applying to build within a flood plain, which determine the floodplain boundaries and levels relative to building floor levels (see *WWDG Part B* chapter 20 and the Building Act);
- Details and calculations that clearly indicate any impact on adjacent areas or catchments that the proposed works may have;
- Estimates of catchment imperviousness and the basis for its derivation;
- Summaries of hydrological and hydraulic modelling as required by the *WWDG* (see *WWDG Part B* chapters 21 and 22), including design parameters and assumptions;
- All assumptions used as a basis for calculations, including pipe friction factors;
- Draft versions of operations and maintenance manuals for any water quantity or quality control structures (refer also to clause 5.3.7);
- Landscape and planting drawings complying with QP-C811-AA *Standard Draughting Layout and Format Requirements* (attached to CoP Part 2 as Appendix A);
- System review documentation as detailed in clause 5.3.2;
- All options considered and the reason for choosing the submitted design.



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Design checklists, to aid this process, are available in WWDG Part B sections 6.10 and 19.2.

Provide the following additional information for detention basins and swales:

- The design return period;
- The design rate of discharge at each discharge point;
- The design water level;
- The design volume, where there is a storage function;
- The volume of the basin or swale below surrounding ground level.

5.3.4 Construction Records

Provide the information detailed in CoP Part 3: *Quality Assurance* and the CCC CSS, including where applicable:

- All performance test results;
- Material specification compliance test results;
- Compaction test results;
- Subgrade test results;
- Infiltration test results.

5.3.5 Post-Construction Records

Provide the information detailed in CoP Part 3: *Quality Assurance*, Part 12: *As-Builts*, and the CCC *CSS*, including where applicable:

- Design report;
- Completion certificates;
- Producer statements design, construction, construction review;
- Commissioning report, including all test results;
- Operations & maintenance manuals, where applicable;
- As-built plans and records.

5.3.6 Approved Materials

Where a material or product is proposed that is not approved in the district, prior to approval, the Council may require assurance that demonstrates the durability of that material. Where there is no current standard, the manufacturer will be required to supply copies of their Quality Assurance procedures and producer statements to support their performance and composition claims for the products concerned.

5.3.7 Operations and Maintenance Manual

Provide an Operations and Maintenance Manual in accordance with *WWDG* Part B clause 19.2 for any water quantity and/or quality control structures or formed features such as ponds. The manual must describe the design objectives of the structure, describe all the major features, identify all the relevant references to the *WWDG* and identify key design criteria (including any conditions attached to the relevant resource or other consents).

A separate section must explain operations such as the recommended means of sediment removal and disposal, and identify on-going management and maintenance requirements such as landscape establishment, vegetation control and nuisance control. CoP Part 10 section 10.6 – *Establishment & Maintenance* expands on these requirements.



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5.3.8 Acceptance Criteria

All pipelines, pump stations and other integral components must be tested before acceptance, and must have been inspected and signed off by the Council. Testing shall be carried out in accordance with CCC CSS: Part 3 clause 14.


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5.4 GENERAL DESIGN PRINCIPLES

Stormwater drainage is the total system protecting people, land, infrastructure and improvements against flooding. It consists of a primary drainage system of pipes and waterways and detention areas and a secondary system consisting of open channels, controlled flood plains, natural ponding areas and flow paths. These are utilised in conjunction with the setting of building levels to ensure that buildings remain free of inundation up to the minimum protection standards set out in clause 5.5.2 and the Building Act.

The primary system must cater for the more frequent rainfall events and the secondary system must cater for higher intensity rainfall events and occasions when there are blockages in the primary drainage system. <u>Table 5.1</u> Table 5.1 sets out the minimum level of service requirements for the District. Where required, the developer shall provide new treatment and disposal facilities, and upgrade the existing facilities. Treatment and disposal systems in Business zoned area shall be specifically designed.

The designer shall have an appreciation of the local catchment, both upstream and downstream, and limit or mitigate any adverse effects imposed by the development, including effects on surface water and groundwater

To maintain water quality, it is desirable to avoid mixing stormwater and spring water if at all possible. The reticulation and disposal system should receive minimal influence from wastewater and groundwater.

5.4.1 Design Considerations

Consider the following aspects and include in the design, where appropriate:

- Size (or sizes) of the surface water drainage pipework throughout the proposed reticulation system;
- Selection of appropriate pipeline material type(s) and class;
- Mains layout and alignment including: route selection, topographical and environmental aspects, easements, foundation aspects, clearances and shared trenching requirements, provision for future system expansion;
- Hydraulic adequacy including acceptable flow velocities and other requirements where applicable to satisfy *WWDG Part B* chapter 22;
- Property service connection locations and sizes;
- Seismic design all structures must be designed with adequate flexibility and special provisions to minimise risk of damage during earthquake. Provide specially designed flexible joints at all junctions between rigid structures (e.g. reservoirs, pump stations, bridges, buildings, manholes) and natural or artificially formed ground;
- Geotechnical investigations take into account any geotechnical requirements determined under CoP Part 4: *Geotechnical Requirements*.

5.4.2 Integrated Stormwater Systems to Manage Quality and Quantity

Integrated stormwater systems are both the optimum and preferred method of stormwater treatment. When these systems are being considered, discuss their use with the Council at an early stage (Refer to *WWDG Part B* chapters 5 to 12 for more information on this topic).



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Well-designed and well-maintained integrated systems, which replicate the pre-development hydrological regime, can not only mitigate adverse environmental effects, but also enhance local amenity, water quality and ecological values. These systems are designed in accordance with the waterway's six values of ecology, landscape, recreation, heritage, culture and drainage (refer *WWDG Part 1* Table 1.1).

- Ecology Includes ecological processes and inter-relationships between plants, birds, fish and insects.
- Landscape The special character of sites, aesthetic quality, and sense of place to people and communities.
- Recreation Active and passive recreation, play and facilities associated with recreational activities.
- Heritage Sites and activities of both human (e.g. structures) and natural (e.g. landforms) significance.
- Culture The values of Maori and Pakeha, as well as wider community aspirations and involvement.
- Drainage Groundwater and surface water inter-relationships, flows, flooding and stormwater.

The Council may approve existing or proposed areas of vegetation that are protected by way of an agreement, such as conservation covenant or Queen Elizabeth II Trust Covenant.

Matters that the Council will assess when considering approval shall include:

- Vegetation type, cover and location with respect to the stormwater system;
- Duration and purpose of the agreement (as defined above);
- Planned or potential earthworks or vegetation removal.

5.4.3 Catchment Management Planning

Carry out stormwater planning on a coordinated and comprehensive catchment-wide basis. Consider catchment-wide issues at the concept design stage and comply with the catchment management plan, if one exists.

The implications of future development upstream of the site, and the cumulative effects of land development on water quality and flooding downstream, are important considerations. The larger the scale of the development the more significant the catchment management planning issues are likely to be.

Discuss any catchment management planning issues with the Council at an early stage (see also *WWDG Part B* chapters 2, 5, 7 to 12 and 20).

5.4.4 Effects of Land Use on Receiving Waters

Impervious surfaces and piped stormwater drainage systems associated with urban development have a major effect on catchment hydrology. Faster run-off of polluted storm flows, reduction in stream and groundwater base flows and accelerated channel erosion and depositions alter the hydrology and adversely affect the quality of receiving waters. This in turn reduces the diversity of the aquatic biological community.

The effects of rural development on receiving waters are generally less significant where riparian margins are protected. However, any reduction in riparian vegetation which increases sediment loads and nutrient concentrations is likely to reduce aquatic biodiversity.



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Consult with Environment Canterbury (ECan) and Waimakariri District Council at an early stage to identify likely adverse effects of land use on receiving waters (see also *WWDG Part B* chapter 2).

5.4.5 Catchments and Off-Site Effects

All stormwater systems must provide for the collection and controlled disposal of surface water from within the land being developed, together with any existing run-off from upstream catchments. In designing downstream facilities, consider the upstream catchment to be fully developed, including both the existing zoning and any catchment management plans.

For all land development works (including projects involving changes in land use or coverage), include an evaluation of stormwater run-off changes on upstream and downstream properties. This evaluation will generally be required at the resource consent stage.

Development must not increase <u>the depth or duration of off-site flooding in any storm event up to</u> <u>the design eventupstream or downstream flood levels</u>, unless any increase is negligible and can be shown to have no detrimental effects.

Investigate downstream impacts including changes in flow peaks and patterns, flood water levels, contamination levels, erosion or silting effects, and effects on the existing stormwater drainage system. Where such impacts are considered detrimental, mitigation measures (e.g. peak flow attenuation, velocity control, contamination reduction facilities) on or around the development site, or the upgrading of downstream stormwater disposal systems at the developer's expense, will be required.

5.4.6 Stormwater Pumping

Permanent stormwater pumping will only be permitted under exceptional circumstances. Refer to *WWDG Part B* section 13.6, taking into account the following additional requirements:

- Pumping systems shall be specifically designed using a multi-pump system to best balance the need for regular pump operation against the relative infrequency of major storm events. Design philosophy and technical details shall be discussed with the Council before detailed design is commenced;
- All pumps within a station shall be of the same or similar capacity. An additional installed pump shall act as standby;
- All electrical equipment shall be designed for a maximum of 15 starts per hour. Depending on the consequences of flooding during a pump station power outage, the Council may require that an on-site emergency power source or hook-up be provided;
- Valving of pumps shall be such that maintenance can be undertaken on the standby pump and check valve without interfering with the operation of the duty pump. Flanged or welded fittings shall be provided throughout, with a proprietary dismantling joint or similar in the system to facilitate dismantling;
- Stormwater pump stations shall incorporate control, monitoring, alarm and telemetry communication systems to Council standards at the time of the design. Any station on private land must have all weather access for light 5 to 7 tonne trucks.



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5.4.7 Flood Risk

Flood Risk Assessment shall take account of the characteristics of the total catchment. A search shall also be undertaken to find any relevant historical information on flooding. This could include reviewing records held by relevant bodies, discussions with the local inhabitants or appropriate field investigations.

The assessment shall address the following:

- The proximity and nature of any river, stream or watercourse and associated flood plains;
- The capacity of culverts or watercourses downstream of the site and likelihood of upstream ponding resulting from under capacity or from blockage by debris or slips;
- The upstream culvert and watercourse conditions and the location of the secondary flow path for floodwater in the event of blockage or under capacity.

Flood design shall take into account the overall site conditions, details of the drainage system and the probable impediments to free flow (both upstream and downstream) when determining the expected runoff and design flood levels.

5.4.8 Reducing Waste

When designing the development, consider ways in which waste can be reduced.

- Plan to reduce waste during site clearance e.g. minimise earthworks, reuse excavated material elsewhere.
- Design to reduce waste during construction, e.g. prescribe waste reduction as a condition of contract.
- Select materials and products that reduce waste by selecting materials with minimal installation wastage rates.
- Use materials with a high recycled content e.g. recycled concrete subbase.

See the Resource Efficiency in the Building and Related Industries (REBRI) website for guidelines on incorporating waste reduction in your project www.rebri.org.nz/.

5.4.9 Alternative Technologies

The Council will consider alternative technologies on a case-by-case basis. Examples of such technologies are gross pollutant traps and bio-filters.



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5.5 DESIGN PARAMETERS

5.5.1 Design Lifetime

All stormwater reticulation systems are to be designed to last for an asset life of at least 100 years with appropriate maintenance. Design the systems accordingly, to minimise lifecycle costs for the whole period. Assets designed to minimise capital cost at the expense of overall lifecycle cost will not be accepted.

5.5.2 Minimum Protection Standards for New Developments

Design all new surface water and land drainage systems to cope with design storms in accordance with <u>Table 5.1</u> and *WWDG Part B* chapters 20, 21 and 22. It is noted that Table 5.1 takes precedence over the *WWDG* where there are discrepancies.

Table 5.1 Design Storm AEP for System or Infrastructure

System or Infrastructure	AEP
Primary reticulation system - general	<u>1</u> 20%
Primary reticulation – Rangiora and Kaiapoi CBD	10%
Secondary system, including overland flowpaths	<u>1</u> 2%
Culvert (Refer also NZTA Bridge Manual Clause 2.3 for heading up and maximum levels below road surface).	10%
Bridge (Refer also NZTA Bridge Manual Appendix A3 for minimum clearance above water level).	1%

Post-development peak flows for all intensity events shall be less than pre-development flows,_-The way in which this is demonstrated shall include consideration of a range of design events (5-year, 10-year, 50-year and 100-year ARI) and durations (10 minute through to 72 hour), and for this to include consideration of off-site effects, as outlined under Section 5.4.5. As a minimum stormwater management area (SMAs) shall be sized to manage flows from the 10-year and 100-year ARI events, however the impact of other events, as outlined above, shall also be considered.

The minimum floor level must be as specified in the *District Plan Chapter 27: Natural Hazards* where those plans apply, otherwise as specified in the Building Code E1/AS1 subject to the limitations of that document. Where neither document is applicable, specific flooding design shall be required to demonstrate compliance with the Building Code.

Note:

- The Building Code requires that the floor height must be above the 2% AEP (annual exceedance probability) flood level, plus a set freeboard depending on the building site. Freeboard is the provision for flood level design estimate imprecision, construction tolerances and natural phenomena (e.g. waves, debris, aggradations, channel transition and bend effects) not explicitly included in the calculations.
- Discuss commercial and industrial developments with special circumstances with the Council.
- In circumstances where ponding water on roads will exceed 100 mm a greater freeboard may be required.
- It is the responsibility of the developer to identify the 2% AEP level and ensure the accuracy of that information.

Discuss protection standards in tidal areas with ECan and the Council at an early stage. Storm surge and tsunami hazards, climate change, the *District Plan* requirements, and sea level rise must be considered, and a precautionary design approach is recommended.



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5.5.3 Surface Water Run-off

Surface water hydrology shall be in accordance with *WWDG Part B* chapter 21, with the adjustments stated below. Drainage system hydraulics shall be in accordance with *WWDG Part B* chapters 20 and 22. Disposal to soakage chambers shall be in accordance with *WWDG Part B* chapter 6.

Estimation of the peak flow rate and volumes shall be in accordance with *WWDG Part B* chapters 21, 22.

The rainfall intensity tables for use in runoff calculations are provided in QP-C814-AA (attached as Appendix A). These have been taken from HIRDS V4 Scenario RCP 8.5 (2081-2100). For areas not covered by the tables, interpolate between the nearest points given. If required, more precise data may be obtained by using HIRDS V4 Scenario RCP 8.5 (2081-2100) or by requesting the data from WDC.

To be conservative, the rainfall estimates should be increased further for hill catchments.

The runoff coefficient (C value) used shall be taken from either Table 5.2 or Table 5.3, whichever is the greater, rather than the values given in *WWDG*.

Surface Type	C Value		
Fully roofed and/or sealed developments	0.90		
Asphalt, concrete, and other paved surfaces	0.85		
Bare impearmeable clay with no interception channels or runoff control	0.70		
Bare uncultivated soil of medium soakage	0.60		
Unsealed roads, yards and similar surfaces	0.50		
Heavy clay soil types – pasture and scrub cover			
Parks, playgrounds, reserves, gardens, lawns, etc predominantly grassed areas			
Heavy clay soil types – bush cover			
Parks, playgrounds and reserves – predominantly bush			
High soakage gravel and sandy types – pasture and scrub cover	0.20		
Slope of Ground	Correction		
0-5%	-0.05		
5-10%	0		
10-20%	+0.05		
Steeper than 20%	+0.10		

Table 5.2 Runoff Coefficients for Specific Designs

The C values in Table 5.2 shall be adjusted by the slope corrections as appropriate. The initial values given assume an average slope of 5-10%.

Table 5.3 Runoff Coefficient by Zone

Land Use	Zones	C Value		
Industrial, commercial, CBD, town house developments	Bus1, Bus2, Bus3, Bus4	0.80		
Residential	Res1, Res2, Res3, Res6, Res6A	0.65		
Rural, Rural-residential	Res4A, Res4B, Res5, Rural 4B, Rural Pegasus	See Table 5.2		

Impervious area estimations shall be based on proposed land use activity. Impervious area is defined as all potential buildings, houses, driveways, sheds, patios, carparks and other impervious or semi-pervious areas. Where alternative porous pavements or other methods that encourage groundwater infiltration are used then appropriate allowances may be made. Historical evidence would need to be submitted that verifies the performance of these alternatives.



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A recognised alternative runoff estimation method supported by good hydrological information may be presented for consideration.

5.5.4 Determination of Water Surface Profiles

Design stormwater drainage systems in accordance with *WWDG Part B* sections 14.6 and 22.10, by calculating or computer modelling backwater profiles from the specified outfall water level set by the Council as stated in clause 5.9.9 – Outfall water levels On steep gradients, both inlet control and hydraulic grade line analysis must be used, and the more severe relevant condition adopted for design purposes. For pipe networks at manholes and other nodes, water levels computed at design flow must not exceed finished ground level while allowing existing and future connections to function satisfactorily.

An example of stormwater system analysis including a backwater calculation is provided in *WWDG Part B* Appendix 5.

Stormwater pipelines generally operate in a surcharged condition at full design flow. Pipe diameters chosen on the basis of pipe flow graphs, such as *WWDG Part B* Appendix 9 (which uses pipeline gradient rather than hydraulic gradient), are likely to be conservative in parts affected by free outfall conditions.

5.5.5 Secondary Flowpaths

Shape lots generally so that they fall towards roadways, which may be used as secondary flow paths. The use of strategic or arterial roads for this purpose shall not be approved. Ponding or secondary flow on roads must not exceed 100 mm at the crown, and velocities must be sub-critical other than where it is unavoidable on hillsides. On hillsides, convey secondary flows safely and as directly as possible into permanent open waterways.

Surface flows on carriageways shall be controlled in order to enable safe and comfortable vehicle and pedestrian access across and along road reserves.

Where secondary flow paths cannot, with good design, be kept on roads, they should be kept on public land such as accessways, parks, and reserves. Secondary flow paths over private land are the least desirable option and will need to be protected by legal easements.

Design secondary flow paths so that erosion or land instability caused by the secondary flows will not occur. Where necessary, incorporate special measures to protect the land against such events.

Avoid shaping roads to create basins with piped outlets. Where basins are created a higher level of service for the primary system may be required.

The secondary flow path sizing and location must be supported by adequate analysis to show:

- That it is of adequate capacity to handle the full flow of events up to <u>12%</u> AEP, assuming the primary system is not functioning (this may be relaxed at the Council's discretion); and
- That it discharges to a location that does not detrimentally affect others and can safely dissipate via a controlled disposal system as the storm peak passes.

Consider the secondary flow path under conditions of total inlet blockage at critical culverts and other critical structures.



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5.6 PIPELINE DESIGN

5.6.1 Pipe Flow

Determine pipe diameters, flows and gradients from WWDG Part B Appendix 11.

For pipes not flowing full, use Manning's equation adopting 'n' values from *WWDG Part B* Table 22-1. Determine part full pipe flow relationships from *WWDG Part B* Appendix 9.

The primary piped system shall be designed to cater for the peak design flow, without surcharge, based on the "Colebrook-White" equation. The pipe roughness coefficient shall be:

- For pipes up to and including 300 mm diameter Ks = 1.50 (n = 0.013).
- For larger pipe diameters Ks = 0.60 (n = 0.012).

Refer to WWDG Part B chapter 22 for guidance on energy loss through structures.

5.6.2 Pipeline Connections

Make pipeline connections in accordance with CCC CSS: Part 3.

Design the stormwater drainage system as a separate system (i.e. with no inter-connections whatsoever with the wastewater system).

Submain and lateral lines may be saddled directly onto larger pipelines, if and only if the main line is greater than twice the diameter of the branching line, and provided that a manhole or other surface opening is supplied on the branching line within 50 m of the main line. If this is not possible, then a manhole shall be installed.

5.6.3 Minimum Pipe Sizes

The minimum pipe diameter is 225 mm diameter.

5.6.4 Material Selection

Select stormwater pipe materials in accordance with this document. Other materials shall be considered on a case-by-case basis.

The following pipe materials currently available in New Zealand are acceptable for gravity stormwater lines:

- Polyvinyl Chloride: PVC-U
- Reinforced Concrete with Rubber Ring Joint (RCRRJ)

The following pipe materials currently available in New Zealand are acceptable for pressure stormwater lines:

- Polyvinyl Chloride: PVC-U and PVC-O
- RCRRJ;
- Polyethylene: PE 100B and PE 80B;
- Ductile iron (DI);
- Concrete-lined steel.



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Each material has specific design and installation issues, as identified in the manufacturers' design manuals, specifications and other literature. Consider these issues, as listed below, when specifying materials.

- Polyvinyl Chloride: PVC-U, PVC-O
 - UV degradation after more than 2 years exposure.
 - $\circ~$ Depth of scratching, gouging and impact damage limited to 10% of the wall thickness.
 - Proper bedding and installation required.
 - Possible permeation by contaminants.
- Polyethylene: PE80B, PE100
 - Sophisticated equipment and highly skilled workers required.
 - Depth of scratching, gouging and impact damage limited to 10% of the wall thickness.
 - UV degradation (Blue pipe).
 - Bedding support required to prevent excessive deformation.
 - Pulling forces for PE are not to exceed the manufacturer's recommendations.
 - Vulnerable to permeation by contaminants (e.g. hydrocarbons).
- RCRRJ and Concrete-lined Steel
 - Internal lining and external coatings must be undamaged or fully restored after repairs or fabrication work.
- Ductile Iron
 - Internal lining and external coatings must be undamaged or fully restored after repairs or fabrication work.
 - Potential problems with stray electric currents and bimetallic corrosion.

The effect of fatigue on the pipe is important for all pressure lines subject to cyclic pressure changes.

All fittings shall have a rating at least equal to or greater than the pipe rating. Pressure pipe fittings may not have a rating less than PN12.

The highest class determined for any point on a line is required for the entire section, manhole to manhole.

5.6.5 Minimum Cover

Pipelines must have pipe protection complying with CoP Part 6 clause 6.6.8 – *Pipe Protection & Cover*, where the minimum cover specified in CCC *CSS: Part 3* is not available.

5.6.6 Gradients and Acceptable Flow Velocities

Refer to WWDG Part B clause 14.2.4.

5.6.7 Steep Gradients

Where gradients are steeper than 1:3 over lengths greater than 3.0 metres or where velocities are higher than 4.0 m/s, and when flows are continuous or frequent, specify wear-resistant pipes such as ABS, or PVC-U pressure pipe with a minimum class of SN12. This requirement may extend past the termination of the steep grade. Sacrificial layers can be used in special concrete pipes, or in insitu structures.

Avoid lateral junctions on these sections of pipeline. If PVC-M pipes are used and junctions can not be avoided, specify factory-moulded fittings. Take care to provide adequate anchorage for the pipes.



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5.6.8 Scour

Hilly areas, and areas adjacent to them, may have large variations in groundwater levels. These variations can cause sufficient water movement within the trench for bedding scour to develop. Allow for scour in flat areas where pipe gradients are steeper than 1:10 and immediately below hill areas. Refer to *CSS: Part 3* clause 8.6 for details of requirements. Fill any under-runner voids encountered during the work with either 'foam concrete' or 'stiff flowable mix' as defined in CCC *CSS: Part 1*. This treatment must be carried out under the direction of the engineer.

Haunching and backfill materials for areas prone to scour include lime-stabilised loess (40 kg/m³), lime stabilised SAP20 (40 kg/m³), lime stabilised SAP40 (40 kg/m³), 'firm mix' as defined in CCC *CSS: Part 1* or concrete haunching (if bedrock is encountered).

Confirm the suitability of loess for backfill. Loess can only be used in areas outside carriageways and where there is adequate control of moisture content and mixing on site. Use lime stabilised SAP40 for backfilling all carriageways, and lime stabilised SAP20 in all areas outside carriageways where loess is not suitable.

Specify water stops on all pipelines with gradients steeper than 1:3, where the pipe is concrete haunched. Where 'firm mix' is used for haunching, water stops are not required. *WWDG Part B* clause 14.2.3 details the design criteria, and construction must comply with SD 600-347.

5.6.9 Inlet and Outlet Structures

Design inlets and outlets in accordance with *WWDG Part B* sections 14.6 and 14.7. Install safety grills where pipe diameter is greater than 525 mm. Install debris grills where blockage is a potential problem. Provide for operational requirements.

Consider the effects of inlet and tailwater controls when designing culverts, as set out in *WWDG Part B* section 22.9.

Take backflow effects into account in design. Consider outlet design and water level conditions in the design of discharges to existing stormwater systems and waterways and incorporate backflow prevention if necessary.

Where pipes discharge onto land or into a waterway outlet, design structures to dissipate energy and minimise erosion or land instability. Ensure velocities are non-scouring at the point of discharge. Acceptable outlet velocities will depend on soil conditions, but should not exceed:

- 0.5m/s where the substrate is cohesive; or
- Velocities given in WWDG Part B section 22.7 Table 22-5.

5.6.10 Manholes

Provide manholes in accordance with *WWDG Part B* section 14.4 and CCC *CSS: Part 3*. Consult the Council before embarking on any part of the system design where the velocity is such that the flow will not progress smoothly through the manhole into the discharge pipe.

No feature should impede flow through a manhole. If circumstances necessitate such a feature, widen the cross section of the manhole to counteract any potential head loss. The design must be accepted by the Council.

Check the effects of turbulence or hydraulic grade on pressure within manholes. Manhole depths must prevent the lifting of manhole lids and tops.



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Manholes shall normally be provided on all drainage pipelines as follows:

- At each change of direction, pipe size or gradient;
- At each branching line or intersection;
- At the end of all terminal lines other than those with headwalls;
- At a spacing of not more than 90 m for pipes of diameter 1500 mm or less;
- At a spacing of not more than 150 m for pipes of diameter in excess of 1500 mm, with the approval of the Drainage Asset Manager.

Access chambers or sumps may be used in place of manholes where appropriate.

5.6.11 Sumps

Sumps shall be generally constructed to accord with *WWDG Part B* section 14.5 and with the standard drawings. Sump grate bars shall be aligned with the direction of flow.

Sumps shall be installed at every intersection and dip , and located such that channel flows do not exceed the limits stated:

- 55 L/s for a single sump
- 90 L/s for a double sump

Maximum sump spacing shall be as described for manholes in clause 5.6.10. In addition to the requirements above, note that intersection sumps are generally located on the kerb-line tangent point.

Sumps shall be sited so that they do not impede accessways or kerb crossings due to any ponding that may occur in rainfall events less than 10% AEP.

Design consideration shall also be given to the effect of stormwater flows from and along the road surface, for example flow around corners and at intersections.

Terrain with a slope of greater than 10% is considered hilly. In this situation sump efficiency and effectiveness decreases and the Council will require specific design to be submitted for approval.

Connections to sumps shall be made in accordance with SD 600-341A/B/C. Minimum 225 mm diameter pipes shall be used to connect a sump to any adjacent manhole in the primary stormwater reticulation system. Direct saddle connections from any sump outlet pipe to an adjacent stormwater system may be approved provided the adjacent system uses 600 mm diameter pipes or larger, and an existing manhole is not conveniently located. The diameter of the connecting pipe shall be less than half the diameter of the pipe used by the adjacent system.

During road works or construction a suitable means of preventing debris entering the stormwater system must be used. Any gravel or debris entering sumps or the stormwater system shall be removed or flushed from the system prior to acceptance by the Council.

Sump filters may be used, provided that a specific design and a maintenance plan are submitted to the Council. Written approval from the Council shall be required to proceed.

5.6.12 Subsoil Drains

Design subsoil drains, which are installed to control groundwater levels, in accordance with *WWDG Part B* clause 5.3.1.

Refer to manufacturer's literature for information on pipe materials, filter fabrics, bedding and filter design.



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5.6.13 Pipelines in Permeable Ground

Where a buried pipeline is likely to encounter an underground source of water, ensure that the groundwater in the water bearing layers will not be diverted to a new exit point through the backfill. Specify backfill material with the same permeability as the surrounding ground and detail water migration barriers at any change of ground permeability.

5.6.14 Concrete Waterstops

WWDG Part B clause 14.2.3 details the design criteria to consider before installing concrete waterstops, additional to those relating to permeable ground. Space waterstops as detailed in *WWDG Part B* Table 14.2. Specify waterstops constructed to comply with SD 600-347.

Also specify waterstops on all pipelines with gradients steeper than 1:3 where the pipe is concrete haunched. Where 'firm mix' is used for haunching water stops are not required.



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5.7 WATERWAY DESIGN

Design waterways in accordance with WWDG Part B chapters 7 to 13 inclusive.

Where a natural waterway, open stream, or formed drainage channel is incorporated in a land drainage system, then it shall:

- Accommodate the design freeboard including the required factor of safety;
- Be designed to prevent scour effects resulting from a 2% AEP storm.

Provide access along at least one side of any waterway for maintenance, taking into account the "reach" of cleaning machinery. Vegetate berms and banks and lay at slopes that are stable, maintainable, and not prone to scour in flood flows.

Buildings and other structures are to be subject to a 10m offset from a waterway, and any proposed reduction will require approval by the Drainage Asset Manager.

Maintain fish passage, unless otherwise authorised by the Council or ECan. Refer to *WWDG Part B* section 2.2 and clause 13.2.5

5.7.1 Constructed waterways

Design constructed waterways to meet the aesthetic and amenity criteria of the Council (see *WWDG Part B* chapters 7 to 9, 11 and 12). These waterways must form part of a surface water management system.

Public constructed waterways will be maintained by the Council.

5.7.2 Natural waterways

Restore and enhance the natural features and amenity values of highly modified natural waterways wherever possible.

Avoid the piping or filling-in of natural waterways. A resource consent from the Council and ECan will be required for this activity.

Provide for drainage, landscape, ecology heritage, recreation and cultural values when enhancing these waterways. Refer to *WWDG Part A* for an understanding of the principles underpinning these values and *WWDG Part B* Chapters 7 to 9, 11 and 12 for information about specific criteria. For information about riparian planting refer also to the *Streamside Planting Guide*.

Create Local Purpose (Esplanade) Reserves around significant natural waterways.

5.7.3 Fencing

The *Stormwater and Land Drainage Bylaw* requires consent for the erection of a fence across a waterway. Fences must not significantly impede flood flows up to the minimum protection standards (Refer *WWDG Part B* section 13.9).





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5.8 DISPOSAL AND TREATMENT DESIGN

5.8.1 Approved outfall

The outfall for a development must be either the public stormwater drainage system or an approved alternative stormwater disposal system, subject to the following conditions:

- Development in areas zoned Residential 1 or 2 shall discharge either directly or indirectly to a reticulated system, through an approved soakage or detention system as appropriate;
- Development in areas zoned Residential 4A or 4B, but not in a rural drainage area, shall discharge to a public drain, a natural drainage system or to ground, where the subsoil strata permits;
- In rural drainage areas, all lots shall be provided with access to a common or public drain. This may require passage via a reticulation system that includes a private drain across third party property, in which case easements and rights of way shall be required. In all cases, the existing drainage system and use rights shall be retained. Where practicable and approved, disposal may be via soakage to ground.
- A suitable headwall and dissipating structure must be constructed at the outlet to ensure no erosion occurs in the immediate vicinity of the waterway;
- No obstruction which will impede the natural flow may be placed in the channel;
- The discharge must be authorised by ECan.

All primary piped reticulation outlets that discharge into a natural waterway, swale, pond, or open drain, and are also subject to tidal effects or backflow, shall be fitted with an approved flap valve.

All primary piped reticulation outlets in Residential or Business Zone areas and using pipes greater then 600 mm in diameter, or if otherwise required by the Drainage Asset Manager, shall have an approved safety grill that is secured to prevent unauthorised access.

5.8.2 Discharge to ground

The Council encourages discharging to ground where soil conditions are suitable for soakage. Note that soakage cannot be relied on to reduce the capacity required by the system (refer to *WWDG Part B* section 6.5). The stormwater system should be designed to handle the full stormwater discharge at the required level of service, with the assumption that the soakage is not functioning. Offset of reticulation capacity may be allowed at the Council's discretion.

A geotechnical investigation shall be carried out when considering the use of soakage in a development.

A discharge consent may be required from ECan for discharge to soakage.

All roadside soakpits shall comply with the requirements of this Code. Example designs are shown in SD 600-330A/B and 600-390. Soakpits for roading purposes shall be marked using one blue post of a type to be approved by the Council.

Silt traps and standard sump and gratings may be installed upstream to protect soakpits from excess sediment entering the soakpit system.

Soakpit design will take into account any effects of the location and inflow source. Pre-treatment shall be designed and installed where needed to prevent silting up and other problems. The systems shall be designed and located for ease of maintenance and replacement as required.

Discharge to ground on private property is acceptable, but in urban areas the soakpit must be protected by a consent notice requiring the property owner to maintain and protect the system. This does not apply for rural developments.



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5.8.3 Stormwater Tanks

Stormwater tanks on private properties can regulate stormwater discharge from connected impervious areas such as roofs, hardstand areas and driveways. The Council may recommend or require a stormwater tank when:

- The public stormwater system downstream has no capacity for a new connection and it is uneconomic to upgrade it;
- Direct discharge to a hill gully or slope is likely to cause erosion.

Tanks are unlikely to be approved if an economic alternative system is available.

The Council may approve a request from a private property owner to install a stormwater tank for water conservation or other reasons.

Refer to the CCC leaflet *Stormwater Tanks on Private Properties* for further guidance, including installation guidelines.

5.8.4 Treatment

Design for discharge quality in accordance with *WWDG Part B* chapter 6 and ARC TP10. The designer may propose alternative design elements with supporting evidence from recognised authorities.

All stormwater that outfalls from a development to a centralised system shall be treated prior to entry to the Council's stormwater system. Discharge quality shall not breach the ECan Pollution and Sediment Control guideline, and shall also comply with the specific conditions of the discharge consent. Note that ECan currently has a minimum threshold of 30 lots.

The Council may consider alternative methods that provide adequate treatment of discharge. The developer is encouraged to explore ground infiltration and non-structural methods of water quality protection. Such methods include reduction of impervious area, providing sheet flow through vegetated buffer strips, bio-retention and maximising vegetation cover. Use of the above suggestions may reduce the size of stormwater treatment facilities required.





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5.9 NETWORK LAYOUT DESIGN

5.9.1 Topographical Considerations

In steep terrain, the location of pipes is governed by topography. Gravity pipelines operating against natural fall create a need for deep excavations, which can be very expensive. They can also create basins with piped outlets.

The pipe layout must conform to natural fall as far as possible. Where basins are created, provision of a fail-safe outlet and a higher level of service for the primary system may be required.

5.9.2 Location of Open Waterways

Open drainage systems shall generally be located within a drainage reserve, easement or road reserve. Using drainage easements or road reserves in Residential or Business zones is subject to approval by the Drainage Asset Manager.

5.9.3 Location and Alignment of Stormwater Pipelines

Locate stormwater pipeline mains within the legal road (but not under the crown of the carriageway) or within other public land. Allow for access for construction or future maintenance.

Position pipes as follows:

- Within the road formation (refer WWDG Part B clause 14.2.1);
- Within public land with the approval the Council;
- Within drainage reserves;

Pipes should not be placed within private property where other options are available. If this is unavoidable, the pipe shall be placed adjacent to and, if possible, parallel to boundaries, with a minimum offset to the pipe centreline of one metre. Clause 5.9.12 – <u>Easements Easements shall</u> apply.

Make crossings of roads, railway lines, creeks, drains and underground services at right angles, as far as practicable.

Allow for possible future building plans when locating proposed pipes and avoid maintenance structures within the property. This may include specifying physical protection of the pipe within or adjacent to the normal building areas or any engineering features (existing or likely) on the site e.g. retaining walls.

Specific design and approval from the Council is required for the use of curved pipelines.

Note that pipes with diameter 450 mm or less, within the road reserve, shall be located under the kerb & channel (where present). Pipes with diameter 525 mm or greater shall be located in the carriageway. See also SD 600-245A/B/C.

5.9.4 Service Lateral Connections

In Residential or Business Zone areas, all primary piped reticulation inlets shall be via either a service connection, a sump or an approved grated entry structure. Those fitted with a grate shall offer a maximum bar spacing of 150 mm. The approach slope of any fitted inlet grill shall be at a slope of no more than 30 degrees above the horizontal.

Connections of laterals to mains must be in accordance with CCC CSS: Part 3.

Forma



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The connection of individual lots and developments to the public system must meet the following requirements:

- Connection must be by gravity flow via laterals to mains or waterways, or to a roadside kerb or swale or rain tanks, or (in certain situations) on site detention tanks;
- Provide all new urban lots with individual service laterals;
- Each connection must be capable of serving the entire building area of the lot (unless approval is obtained from the Council to do otherwise);
- Provide stormwater connections at such depth at the boundary of urban lots that a drain is able to be extended from the connection to the farthest point on the lot, at grades and cover complying with the Building Act 2004;
- The minimum diameter of connections must be:
 - 100 mm for residential or commercial lots.
 - 150 mm for industrial lots.
 - 150 mm for connections serving three or more dwellings or premises (unless otherwise approved by the Council);
- Where the public system is outside the lot to be served, extend a connection pipeline a minimum of 0.6 m into the main area of the lot;
- The connection shall be positioned so as not to compromise the lot's available building area. Generally this position will be on the road frontage, clear of street trees and vehicle crossings, approximately 0.6 m from a side boundary and within 0.6 m of the final ground surface;
- Connection to features such as vegetated swales, soakpits, or soakage basins is acceptable provided the system is authorised by ECan and adverse effects and potential nuisances are addressed;
- Seal all connections to pipelines or manholes by removable caps at the upstream end until such time as they are required.

Where a design for a residential lot requires a 150 mm diameter service connection pipe or larger:

- Connection to a kerb or roadside drain outfall shall require two 100 mm diameter pipes.
- The 100 mm diameter pipes shall outfall from an approved sump located inside or adjacent to the roadside boundary.
- Where outfall is to kerb and channel, two kerb adapter connections shall be used and be located not less than 300 mm and not more than 500 mm between centres.

Service connections shall, wherever possible, be laid at right angles to the main reticulation system, and shall be of a type as detailed in <u>Table 5.4Table 5.4</u>.

	Zone	Reticulation	Connection Type			
		Kerb and channel	PVC-U Kerb adapter			
	All Residential except 4A and 4B	Piped main available	Direct saddle connection to main, or to ground soakage where soil conditions are suitable (overflow pipe to kerb & channel may be required)			
	Residential 4A or Residential 4B	With Reticulated drainage system	To provide retention, drains, natural waterways or ground soakage where soil conditions are suitable.			
		Without reticulated drainage system	To natural waterway or ground soakage where soil conditions are suitable.			

Table 5.4 Service Connection Type



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Where the reticulation is laid deeper than 3 metres below ground level, service connections should not be via direct connection to the reticulation. In this situation, connections shall be made via a manhole, sump or similar structure.

Footpaths and kerbs shall be sawcut at the position of the service connection to allow controlled cracking.

5.9.5 Location and Design of Basins

Ponding basins are being used throughout the district as stormwater treatment and detention devices to improve water quality and to mitigate increased stormwater flows. These structures are important landscape features in public open space. Carefully consider their location, design, construction, and ongoing maintenance requirements, including full vehicle access, during the early stages of planning.

Ponding basins must be constructed on land vested in the Council. If the land is not to be vested immediately, the area must be protected by an easement, a bond, and an agreement for the land to be vested at a later date.

From a landscape perspective, these types of basins are highly designed and managed in order to protect their primary functions (e.g. stormwater storage capacity, soil infiltration). Design solutions should build on the features of the local landscape, features associated with the proposed development and the wider planning context. As the Council will generally take on the responsibility for these structures, it needs to have input into the design of these structures from the outset.

Co-locate basins with public open space having a similar appearance and maintenance approach (i.e. road reserves and recreation reserves with a garden approach to maintenance). Basins should not be located in areas that are being managed primarily for their ecological values (such as esplanade reserves). The management approach for ecological areas aims to support natural processes through encouraging natural regeneration with limited maintenance that focuses predominantly on managing for weed species.

Design and construct swales and basins so that they replicate natural landforms. Where possible, create organic, undulating landforms with meandering inverts and mid-slope terraces. Avoid slopes that have a gradient steeper than one-in-four. Round off all tops and toes of slopes to blend imperceptibly with adjoining landforms. For safety reasons, ensure open sightlines from surrounding public and private land. Provide sufficient areas of land to achieve this land shaping and to enable public access, as well as to provide for stormwater capacity.

The flow characteristics of natural open stream systems shall be based on their likely long-term state, particularly in terms of density of vegetation. The flow characteristics shall also consider peak flood conditions such as surcharge and blockage.

Refer to WWDG Part B, Chapter 6 for more information on the design of stormwater treatment systems.

5.9.6 Location and Design of Swales

Use swales for temporary water storage or retention, as this provides attenuation of stormwater peaks and may also reduce the downstream flood peak. Normally this design consists of shaped grass berms, with no permeability built into the construction materials.



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Primary treatment is achieved by a detailed design that uses suitable permeable material to allow soakage to subsoil levels. Volumes undergoing primary treatment through infiltration can be increased through longer resident times in permeable swales. Provide opportunities for sediment to settle out in swales through slower velocities, longer resident times and dense grass cover, as these all slow overland flows.

Design longitudinal gradients steeper than 1 in 70 unless:

- There is an effective subsoil drainage system either under or in the swale invert or;
- The invert contains gravel mulch, a narrow concrete invert or landscape planting.

Planting material installed in the swale should not include bark, similar organic mulch or other loose easily transported material.

Take into account repeated use of vehicles or heavy ride-on mowers, which will substantially reduce the permeability of swales that have been constructed for primary treatment. See also clause 5.9.5 and CoP Part 10: *Reserves, Streetscape & Open Spaces* for guidance on design.

5.9.7 Bridges and Culverts

Refer to the *Bridge Manual* and *WWDG Part B* chapter 13 for waterway design at bridges and culverts.

The minimum design storm AEP for systems or structures shall be as shown in Table 5.1 Table 5.1.

5.9.8 Protection of road subgrade

The potential risk of carriageway damage from a saturated sub-base is a design issue. Early discussion with the Council is needed when the maximum level of detained water in any ponding area is greater than 200 mm below any carriageway or right of way within a horizontal distance of 80 metres. Provide evidence that the road subgrade will not be compromised. Special pavement or pond design may be necessary.

5.9.9 Outfall water levels

Where possible, the Council will provide the start water level at the point of connection to the public stormwater system or at some point downstream where design water levels are known, as a subdivision consent parameter. If this information is not known to the Council, the applicant's engineer shall determine this figure.

When a tributary drain or a waterway flows into a much larger drain or a much larger waterway, the peak flows generally do not coincide. Check both the situation where the tributary has reached peak flow but the receiving waterway has not and where the receiving waterway is at peak flow but the tributary has passed it. Take the worst case as the design case (refer to *WWDG Part B* clause 22.5.2).

5.9.10 Clearances from Other Services or Structures

CoP Part 9 clause 9.5.4 – *Typical Services Layout and Clearances* summarises clearances for utility services. Confirm these clearances with the network utility operators, before deciding on any utility layout or trench detail.

Locate pipes that are adjacent to existing buildings and structures clear of the "zone of influence" of the building foundations. If this is not possible, undertake a specific design covering the following:

- Protection of the pipeline;
- Long term maintenance access for the pipeline;



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Part 5: Stormwater & Land Drainage

• Protection of the existing structure or building.

Specify the protection on the engineering drawings.

5.9.11 Building over Pipelines

The Council prefers not to have public stormwater mains under buildings because of the potential difficulties with maintenance, replacement and repairs. In some situations it is permitted to construct buildings over the stormwater mains, however, this would be considered on a case by case basis.

Approval may be given provided:

- There is no reasonable alternative for the property owner; and
- The existing pipeline is not greater than 225 mm diameter; and
- The length under the building is minimised; and
- The Council is advised and approves each individual proposal, in writing, prior to obtaining a building consent; and
- One of the following solutions is used:
 - The length of pipe under the building is replaced with an equivalent diameter PVC main laid inside a carrier pipe of the next appropriate larger size or as specified to facilitate future size upgrading. Manholes are to be placed on each side of and clear of the building, with no lateral connections permitted between these points. The foundations of any building must be designed and constructed so that no additional load is placed on the pipe. All backfill must be thoroughly compacted and certified by an appropriately competent person; or
 - There is still access for repairs or replacement without disturbing the building, e.g. high open foundations on poles or cantilevered with a minimum of 2 metres vertical clearance from ground level and 1.5 metres vertical clearance from the centreline of the main.

Where the pipeline is covered by an easement, the property owner shall:

- Where there is no subdivision planned, request a waiver letter from the Council seeking permission to encroach upon the easement; **or**
- Where a subdivision is planned, adjust the easement document to record the encroachment and pay associated costs.

5.9.12 Easements

Provide easements for public pipelines, subsoil drains and waterways through private property or where private pipelines serving one lot cross another lot.

For a pipeline, the minimum width of a drainage reserve or easement shall be 3 m or twice the depth from ground level to the buried pipe, whichever is greater. The easement shall be centred on the pipe.

For a waterway, the minimum width of a drainage reserve or easement shall be annual bank full width plus 10 metres on one side of the drain from the top of bank and along the full length of the drain.

The easement may also provide for public right of way or other legal access.

Where it is on one side of the drain only, the reserve shall be continuous on that side from one road/public legal corridor to the next upstream or downstream road/public legal corridor.



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Part 5: Stormwater & Land Drainage

5.10 MATERIALS

The Council has an asset service life requirement of 100 years. Pipes and fittings must have a minimum required design life of 100 years and a minimum warranty period of 50 years. All products must be fit for their respective purpose and comply in all respects with the Council's current specification for the supply of that material and the standards referenced.

Where a material or product is proposed that is not approved in the district the Council may require assurance that demonstrates the durability of that material prior to approval. Where there is no current standard, the manufacturer will be required to supply copies of their Quality Assurance procedures and producer statements to support their performance and composition claims for the products concerned.

5.10.1 Bedding, Haunching and Backfill

Bedding and haunching materials must comply with CCC CSS: Part 3 and the pipe manufacturer's specifications.

Specify backfill materials individually. The material used must be capable of achieving the backfill compaction requirements set out in CCC CSS: Part 1.

5.10.2 Corrosion Prevention

Contaminated sites and areas with the potential for corrosion may produce a reduction in expected life and should be specifically designed for. The developer will be required to submit for approval their proposed list of materials such that the Council can determine material suitability.

Potential problems may include:

- Mildly corrosive soils
- Higher than normal operating pressures
- Potential for liquefaction

Corrosion can be caused by hydrogen sulphide, aggressive groundwater, saltwater attack, carbon dioxide or oxygen rich environments. **Before** specifying concrete pipes within potentially corrosive areas, test the groundwater to check whether concrete piping is appropriate. Regard groundwater as aggressive to ordinary Portland cement if any of the criteria in <u>Table 5.5</u><u>Table 5.5</u> are met.

Options	Measure	Condition			
1)	Calcium carbonate alkalinity	$CaCO_3 > 35 \text{ ppm}$			
	Aggressive carbon dioxide	CO ₂ > 90 ppm			
2)	Calcium carbonate alkalinity	CaCO₃ < 35 ppm			
	Aggressive carbon dioxide	CO ₂ > 40 ppm			
3)	Acidity	pH < 6			
4)	Sulphate	SO ₄ > 1,000 mg/L			

Table 5.5 Criteria for Aggressive Groundwater

Design to minimise corrosion through:

- Selecting materials which will resist corrosion;
- Designing in an allowance for corrosion over the 100-year life-cycle of the asset;
- Providing protective coatings, such as polyethylene film or coal tar epoxy;
- Increasing cover to reinforcing;
- Laying concrete pipes in concrete haunching (see SD 600-344A Type C or H).



Part 5: Stormwater & Land Drainage

Bolts and fittings must be hot dip galvanised and incorporate zinc anodic protection. Do **not** use stainless steel where it may fail as a result of crevice corrosion in the presence of sulphides and chlorides.



Part 5: Stormwater & Land Drainage

5.11 INSTALLATION

5.11.1 Authorised Installers

Only Waimakariri District Council Authorised Drainlayers are permitted to install pipework that will be vested into the Council and any pipework that is located within legal roads. A full list of authorised drainlayers and conditions of approval may be obtained on request from the Council.

Registered drainlayers who have tendered for a Council contract as a contractor or sub-contractor shall be evaluated on their ability to complete the works, and accepted or rejected accordingly.

Construction of the stormwater system must not start until acceptance in writing has been given by the Council.

Wherever works are installed within existing legal roads, a Road Opening Notice (RON) must be obtained for that work. The work must comply with requirements as set out in the Council standard specification QP-C843 for this type of work.

No work may start until the RON has been approved in writing by the Council.

5.11.2 Connection to the Public System

Only Council approved contractors may make connections to the Council utility system. Connection of any part of the works into the Council system shall only be made with prior approval of Council in writing.

5.11.3 Handling

Both the developer and the contractor are responsible for ensuring the appropriate handling, storage, transportation and installation of pipes and fittings to avoid damage and to preserve their dimensions and physical properties. The total exposed storage period from the date of manufacture to the date of installation for all PVC pipe must not exceed 12 months. Store fittings under cover at all times.

5.11.4 Approved Plans

The contractor shall work from the most up-to-date, Council-authorised plans.

5.11.5 Confined Spaces

Contractors shall work within the Council's *Guidelines for Entering and Working Within Confined Spaces* (QP-C606). Contractors that do not hold the relevant qualifications shall not work within confined spaces. The Council Water Unit may be engaged at the Contractor's expense.



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ENGINEERING CODE OF PRACTICE

Part 5: Stormwater & Land Drainage

5.12 TESTING & COMMISSIONING

Testing of all pipelines, manholes and other structures must be carried out as specified in CoP Part 3: *Quality Assurance* in the presence of the Council Representative.

Any particular network facility (e.g. pumping station or other complex item) shall have a specific testing and commissioning procedure prepared and submitted to the Council for approval. It shall then be tested & commissioned in accordance with this approved procedure.





Part 5: Stormwater & Land Drainage

5.13 AS-BUILT INFORMATION

Provide as-built information which complies with CoP Part 12: As-Builts and this Part.





Part 5: Stormwater & Land Drainage

5.14 ASSOCIATED DOCUMENTS

Appendix A Rainfall Intensity Tables (QP-C814-AA)

WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	RDG-32-16-08 / 241024185615				
REPORT TO:	RANGIORA-ASHLEY COMMUNITY BOARD				
DATE OF MEETING:	11 December 2024				
AUTHOR(S):	Kieran Straw – Civil Projects Team Leader Joanne McBride – Roading & Transportation Manager				
SUBJECT:	Approval to Install No Stopping Restrictions – South Belt				
ENDORSED BY: (for Reports to Council, Committees or Boards)	Department Manager Chief Executive				

1. <u>SUMMARY</u>

- 1.1 This report seeks a recommendation from the Community Board to the Utilities and Roading Committee, in relation to the proposed installation of a pedestrian refuge island on South Belt, at the King Street intersection. The following approvals are sought:
 - a. Approval to install approximately 28m of no stopping lines associated with the installation of the pedestrian refuge island.
 - b. Approval to install a right turn bay for turning traffic into King Street.
- 1.2 The right turn bay, and the pedestrian refuge island had previously been approved by the Board when it was proposed to be included as part of the Rangiora Town Cycleway, which is no longer proceeding at this time.
- 1.3 This installation of the pedestrian refuge was included within the 2024 / 25 Minor Works programme, which has previously been approved by the Board.
- 1.4 The need to remove on-street parking on South Belt is due to the refuge island being in the centre of the road, which results in the traffic lane moving towards the parking lane, and also to ensure that there are clear sight lines for pedestrians to determine that the road is clear before proceeding to cross the street.

Attachments:

i. South Belt Pedestrian Refuge Plan (Trim No. 241024185412)

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2. <u>RECOMMENDATION</u>

THAT the Rangiora Ashley Community Board:

(a) **Receives** report No. 241024185615.

AND

THAT the Rangiora-Ashley Community Board recommends:

THAT the Utilities and Roading Committee:

- (a) **Approves** the installation of no-stopping restrictions at the following locations, as a result of the planned minor improvement project:
 - i. Outside No. 99 South Belt (approximately 12m long)
 - ii. Outside No. 1 King Street (approximately 16m long)
- (b) **Approves** the installation of a right turn lane into King Street from South Belt as part of the project to install a pedestrian refuge island.
- (c) **Notes** that the installation of no stopping lines at this site equates to the loss of five onstreet car parking spaces.
- (d) **Notes** that this pedestrian refuge, associated right turn bay, and no stopping was previously included in the now cancelled Rangiora Town Cycleway project, and that the design for this was previously endorsed by the Board, and approved by Council in November 2023.
- (e) **Notes** that there was general support for the refuge in South Belt as part of the now cancelled Rangiora Town Cycleway project, and the width of the refuge will accommodate cycles to future proof this pedestrian refuge crossing.

3. <u>BACKGROUND</u>

- 3.1. South Belt is a Primary Collector that carries 4,100 vehicles per day. The location is an important crossing point for pedestrians, and there are several pedestrian generators in the area including:
 - i. Southbrook Park & Ride (as well as other adjacent bus stops)
 - ii. Southbrook Park
 - iii. Dog Park
 - iv. Kings Mart Diary
- 3.2 Pedestrian demand is expected to grow significantly in the near future with the development of the Summerset Retirement Village to the west already underway.
- 3.3 The South Belt refuge island was included within the design of the proposed Rangiora Town Cycleway. The overall cycleway design was endorsed by the Board in October 2023 before being approved by Council on 7th November 2023.
- 3.4 Although the cycleway project has been cancelled, the need for a pedestrian refuge at this location remains and was generally well received by residents during consultation of the cycleway.

4. ISSUES AND OPTIONS

- 4.1. When identifying locations for pedestrian refuge islands, staff consider the volume of both motor vehicles (including heavy vehicles) and pedestrians, pedestrian safety and desire lines, destinations, proximity to bends and intersections, proximity to vehicle entrances, and location of existing crossing locations.
- 4.2. The proposed design of the South Belt pedestrian refuge island has been based on the previously approved refuge island that was included within the now cancelled Rangiora Town Cycleway project.

As such, this design includes provision for the right turn lane into King Street and provides an increased width to accommodate cycles within the refuge.

- 4.3. The Rangiora Community Board have the following options available to them.
 - i. <u>Option One</u> Approve the recommended right turn bay and no-stopping associated with this minor improvement project.

This option would endorse the installation of the right turn bay and no-stopping lines on South Belt associated with the installation of the proposed pedestrian refuge island outside No. 99 South Belt

This is the **<u>recommended option</u>** as it reduces the amount of no-stopping lines to be installed, while still allowing the minor safety improvements to proceed.

ii. <u>Option Two</u> - Request further work be done on proposed improvements

Decline the recommendations of this report and instruct staff to investigate alternative options, such as investigate alternative crossing locations on South Belt east of King Street

This is <u>not</u> the recommended option as staff have considered these sub-options and believe the recommended option strikes the appropriate balance.

It should also be noted that there is future provision within the Minor Improvement programme to install a second pedestrian refuge on South Belt east of King Street.

iii. <u>Option Three</u> – Retain the Status Quo

Decline the recommendations of this report and do not install any pedestrian refuge or cut-downs.

This option is <u>not</u> recommended as it would result in poor safety outcomes for pedestrians who are trying to cross busy roads within the district.

Providing safe crossing locations is important for all pedestrians, but especially vulnerable members of our community. Safe crossing points also encourage people to participate in active transport modes.

- 4.4. There are implications on community wellbeing by the issues and options that are the subject matter of this report. By providing quality pedestrian facilities and improving connectivity, community wellbeing is improved by providing the option of walking within our towns.
- 4.5. The Management Team has reviewed this report and support the recommendations.

5. <u>COMMUNITY VIEWS</u>

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 and Te Ngāi Tūāhuriri are generally supportive of the provision of footpaths in the district.

5.2. Groups and Organisations

There are not groups and organisations likely to be affected by, or to have an interest in the subject matter of this report.

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.

Consultation will be undertaken with residents immediate adjacent to, and / or impacted by parking loss will be contacted in early December regarding the proposal, and a verbal update on feedback from the residents will be provided at the Community Board meeting.

6. OTHER IMPLICATIONS AND RISK MANAGEMENT

6.1. **Financial Implications**

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

This budget associated with the delivery of the Minor Improvement Programme is included in the Annual Plan and is independent of the installation of the required no stopping lines.

6.2. Sustainability and Climate Change Impacts

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

Improving pedestrian facilities encourages more sustainable travel mode choices, such as walking.

6.3. Risk Management

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

The installation of no-stopping lines reduces the space available for on-street car parking. The design, while minimising the loss of on-street parking spaces, does still require the loss of two on-street parking spaces outside No. 99 South Belt, and three on-street parking spaces outside No. 1 King Street. Both properties have access to additional on-street parking immediately adjacent to the site.

Consultation will be undertaken with immediately adjacent residents in early December, and a verbal update of feedback from the residents will be provided at the Community Board meeting.

6.4. Health and Safety

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

Installation of pedestrian refuge islands are important to improve pedestrian safety, and encourage compliance with posted speed limits.

7. <u>CONTEXT</u>

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

Section 2 of the Land Transport Rule: Traffic Control Devices 2004 requires a Road Controlling Authority to "authorise and, as appropriate, install or operate traffic control devices".

7.3 **Consistency with Community Outcomes**

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

Environmental - that values and restores our environment...

- 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.

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

- Public spaces are diverse, respond to changing demographics and meet local needs for leisure and recreation.
- Council commits to promoting health and wellbeing and minimizing the risk of social harm to its communities.

7.4 Authorising Delegations

As per Section 3 of the Waimakariri District Council's *Delegations Manual*, the Rangiora-Ashley Community Board have the delegated authority to recommend the installation of no-stopping restrictions on roads within its ward area.

The Utilities and Roading Committee is responsible for roading and transportation activities, including road safety, multimodal transportation, and traffic controls.



REV	REVISION DETAILS	DRN	CHK	APP	DATE	SURVEYED			PROJECT No	PD001696
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						DRAWING CHKD			SCALE (A3)	1:500
						DESIGNED	AK	24/10/2024	DATUM ORIGIN	1
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						APPROVED			VERTICAL	NZVD 2016



WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	RDG-32-126 / 241018181377				
REPORT TO:	RANGIORA-ASHLEY COMMUNITY BOARD				
DATE OF MEETING:	11 December 2024				
AUTHOR(S):	Kieran Straw – Civil Project Team Leader Joanne McBride – Roading & Transportation Manager				
SUBJECT:	Kippenberger Ave - Approval of Bus St	op Locations			
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager	Chief Executive			

1. <u>SUMMARY</u>

- 1.1. This report seeks approval for parking restrictions and changes associated with the Kippenberger Ave Urbanisation Project. The specific approvals sought are:
 - Installation of a new Bus Stop on Kippenberger Ave, outside Lamb & Heyward funeral home
 - Installation of a new Bus Stop outside No. 91 / 93 Kippenberger Ave
 - Installation of a new pedestrian refuge outside No. 107 Kippenberger Ave
 - Installation of no-stopping lines outside 107 Kippenberger Ave (18.0m)
- 1.2 The Scheme Design for Kippenberger Ave has previously been approved, however this did not specifically note the parking changes required within the recommendations.
- 1.3 The addition of two new bus stops is proposed to provide residents in the surrounding area, including the new Bellgrove development, with the option of using the bus as an option for travel within the district.
- 1.3 Staff have continued to develop the design during the detailed design phase and are currently preparing the works for tender.

Attachments:

- i. Detailed Design Plans (Trim No. 241126208795)
- ii. Option 1 Overview (Trim No. 241203213970)
- iii. Option 2 Overview (Trim No. 241203213971)
- iv. Option 3 Overview (Trim No. 241203213972)
- v. Option 4 Overview (Trim No. 241203213973)
- vi. No Stopping Schedule (Trim No. 241126208794)

2. <u>RECOMMENDATION</u>

THAT the Rangiora-Ashley Community Board:

(a) **Receives** Report No. 241018181377.

AND

THAT the Rangiora-Ashley Community Board recommends:

THAT the Utilities and Roading Committee:

- (a) **Approves** the installation of a new Bus Stop on Kippenberger Ave (east-bound) outside Lamb and Heyward funeral home;
- (b) **Approves** the installation of a new Bus Stop on Kippenberger Ave (west-bound) outside No. 91 / 93 Kippenberger Ave
- (c) **Approves** the installation of a new pedestrian refuge outside No. 107 Kippenberger Ave for the purposes of accommodating a pedestrian crossing facility and the 18.0m of required no-stopping lines.
- (d) **Notes** that the impacted businesses and residents have been consulted on these locations, and that they have no objection to the proposed works.
- (e) **Notes** that there is no change to the bus route as a result of this project.
- (f) **Notes** that Council staff have discussed the proposed locations with Environment Canterbury who have no immediate objections.
- (g) **Notes** that two additional parking bays have been incorporated into the design on the northern side of Kippenberger Ave, providing on-road parking bays for up to six additional vehicles.
- (h) **Notes** that an additional three street trees are to be installed after minor path design changes are made which are not reflected on the provided plans following discussions with Greenspaces.

3. BACKGROUND

- 3.1. The RACB has noted that Kippenberger Avenue is one of the main entrance ways into Rangiora. The RACB has a program in mind with its General Landscaping Fund to improve and beautify the entrances that include Lineside Road, Oxford Road, Flaxton Road, Ashley Bridge and Kippenberger Avenue.
- 3.2. In November 2022, report no. 221027187090 was presented to the Board seeking approval of the landscaping and concept plan for Kippenberger Ave. This plan included bus stops on the north and south side of Kippenberger Avenue.
- 3.3. This report was approved, and the first stage of the implementation of this plan was completed by the developer during the construction of Bellgrove.
- 3.4. In September 2024, report no. 240717116901 was presented to Council. This report sought approval of the 2024/25 subdivision contribution programme, which included the urbanisation of Kippenberger Ave, between No. 106 Kippenberger Ave, and the Bellgrove Roundabout. This section of Kippenberger Ave will join the existing "old" section of Kippenberger Ave with the recently completed section of Kippenberger Ave adjacent to the new Bellgrove Development.
- 3.5. Environment Canterbury (ECan) is the operator of the scheduled bus services within Waimakariri District. ECan contracts various bus operators to deliver that service but is responsible for determining the routes.
- 3.6. Kippenberger Ave is on Route 97 and provides a public transport route between Pegasus and Rangiora. Council Staff determine the most suitable bus bay locations based on, but not limited to the following criteria;
 - Location to suitable crossing / access points
 - Maximum of 400m-600m spacing between stops

- Point of access for large catchments (in this case Bellgrove Subdivision)
- Spacing between driveways and access points to allow full construction.
- 3.7. Once the most suitable locations have been determined by Council Staff, Environment Canterbury are liaised with for approval or changes as required.
- 3.8. Kippenberger Ave has a current Annual Daily Traffic (ADT) count of 6537 vehicles per day.

4. ISSUES AND OPTIONS

- 4.1. The following options are available:
 - <u>Option One</u>: Approve the installation of the two additional bus stops, pedestrian refuge outside 107 Kippenberger Avenue and 18.0m of required no-stopping for the pedestrian refuge.

This is the **recommended option** as it provides the greatest level of service to pedestrians and users of public transport.

The inclusion of the pedestrian refuge provides a mid-block crossing location, and safe crossing facility for Kippenberger Ave's 6,537 vehicles per day.

• <u>Option Two</u>: Decline the installation of the two additional bus stops, nearby pedestrian refuge and 18.0m of required no-stopping for the pedestrian refuge.

This option would see the significant risk to bus passengers continue until such time as alternative bus routes can be determined and the Woodend Bypass is completed. These will take some time to work through and as such this option does not address the risk in the short term. As such this is <u>not</u> the recommended option.

 <u>Option Three</u>: Approve the installation of the two additional bus stops, but decline to install the pedestrian refuge and 18.0m of required no-stopping for the pedestrian refuge.

This option would see a significant increase in risk to pedestrians and bus passengers crossing Kippenberger Avenue to access both the shared path and new bus stop locations. As such this is <u>not</u> the recommended option.

• <u>Option Four</u>: Approve the installation of the pedestrian refuge and 18.0m of required no-stopping for the pedestrian refuge, but decline the to install the two additional bus stops.

As the original scheme design had these bus stops approved and provides a higher level of service for those wishing to access the district to and from the Bellgrove Subdivision and surrounding areas, this is <u>not</u> the recommended option

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

Enhancing safety for public transport users contributes to a safer and more efficient transport network.

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

5. <u>COMMUNITY VIEWS</u>

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 not groups and organisations likely to be affected by, or to have an interest in the subject matter of this report.

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.

The residents, and businesses directly impacted by the recommendations within this report have been consulted on, and have no objections to the proposed bus stops, and build-out.

6. OTHER IMPLICATIONS AND RISK MANAGEMENT

6.1. Financial Implications

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

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The cost of the works is included within the overall project, which has a total project budget of \$350,000 within the overall sub-division contribution area budget, of \$779,077.

This budget is / included in the Annual Plan/Long Term Plan.

6.2. Sustainability and Climate Change Impacts

The recommendations in this report do have sustainability and/or climate change impacts. Providing safe and efficient public transport reduces the reliance on private vehicles, contributing to reduced emissions.

6.3 Risk Management

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

6.4 Health and Safety

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

Physical works will be undertaken by a pre-qualified contractor, with a valid SiteWise assessment.

7. <u>CONTEXT</u>

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

Land Transport Act 1998 Section 22 AB.

7.3. Consistency with Community Outcomes

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

Social:

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.
Environmental:

...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.
- The natural and built environment in which people live is clean, healthy and safe.

Economic:

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

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

7.4. Authorising Delegations

The Community Board has delegation to consider items in relation to maintaining an overview of services provided by the Council such as road works, water supply, sewerage, stormwater drainage, parks, recreational facilities, community activities, and traffic management projects within the community.

The Utilities and Roading Committee enjoys all powers granted to a standing committee and are responsible for Roading matters.



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WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO:	RMA-08-28 / 240527085141	
REPORT TO:	RANGIORA ASHLEY COMMUNITY BOAR	D
DATE OF MEETING:	11 December 2024	
AUTHOR(S):	Jennifer McSloy, Development Manager Joanne McBride, Roading Manager	
SUBJECT:	Kippenberger Underpass	haller 1
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager	Chief Executive

1. <u>SUMMARY</u>

- 1.1. This report sets out a summary of the current condition of the Kippenberger Underpass, and the reasons for the staff recommendation to decommission the underpass particularly as it poses a significant Health & Safety Risk to the public.
- 1.2. The Kippenberger Underpass was originally constructed as a stock underpass. The underpass was vested with Council, and it has the potential to provide a linkage between the north and south Bellgrove areas. Staff have investigated whether the underpass could provide a safe pedestrian route.
- 1.3. Unfortunately, staff have concluded the underpass cannot be made safe for pedestrians. The key issue is the high groundwater levels, which result in the structure filling with water when not adequately managed. Even with the groundwater pump on, the underpass leaks in multiple locations. The leaks were repaired in early 2024, but a site visit on 18 June 2024 showed these had already failed. Another site visit on 17 September 2024 confirmed the structure is still leaking. There is water flowing through the base and sides of the underpass in several places.
- 1.4. In addition to the groundwater issue, there are also several design and CPTED requirements which need to be assessed. Ongoing repair and operation costs to try and maintain the structure in a dry usable condition would be expensive. There is also the risk of the pump failing, which will result in the underpass filling with water (see figure 2).
- 1.5. The staff recommendation is to decommission the underpass, and this report seeks approval of that recommendation. This recommendation is based on comments from WSP (who assess the condition of Council's roading infrastructure assets), the contractor who originally installed and recently repaired the underpass (Dormer Construction) and evidence from site visits. Aurecon have provided a recommended methodology to decommission the underpass, and cost estimate.
- 1.6. Unfortunately, the groundwater level, even following a dry period, is too high, and the water pressure too great for the underpass to be made watertight. Staff do not have confidence the underpass can be made safe and operated at an affordable cost to Council.

Attachments:

i. Presentation to Utilities & Roading Committee - Trim no. 241030188057.

2. <u>RECOMMENDATION</u>

THAT the Rangiora Ashley Community Board:

(a) **Receives** Report No. 240527085141;

AND

RECOMMENDS THAT the Utilities & Roading Committee:

- (b) **Approves** the decommissioning of the underpass located at Kippenberger Avenue, approximately 24m east of Devlin Avenue;
- (c) **Approves** staff proceeding to seek pricing from three contractors to decommission the underpass.
- (d) **Notes** the estimated cost of decommissioning is \$100,000;
- (e) **Notes** the works would be funded out of the Subdivision Contributions budget. That budget is forecast to be overspent in this financial year (refer to report 240717116901), however, the long-term average is within budget and often projects anticipated by the budget do not occur due to developer delays. If it is not possible to undertake the project this financial year, it will be completed in summer 2025/26;
- (f) **Notes** the works at the southern side of the underpass for the benefit of the developer will be paid for by them;
- (g) **Notes** staff presented on this topic to the Utilities & Roading Committee on 15 October 2024 during a workshop (refer to attachment i for the presentation).
- (h) **Notes** staff will engage with the lease holder to formalise a deed of surrender.

3. BACKGROUND

3.1. The Kippenberger Underpass was installed approximately ten years ago to provide a route for stock to pass to/from the farmland north of Kippenberger Avenue to/from the south. Council entered into two agreements with the property owner at the time.

3.2. Bellgrove Rangiora Ltd (**Bellgrove**) purchased the farmland, including no. 15 and no. 52 Kippenberger Avenue. See figure below to see these two lots, with the underpass location in the blue box:



Figure 1: location of the underpass

- 3.3. The underpass, being in the legal road reserve, is now a Council owned asset.
- 3.4. There is community interest in operating the underpass as a pedestrian underpass, which would provide a crossing point under Kippenberger Avenue and avoid residents needing to cross what is often a busy road. There are a series of practical considerations to work through (the physical condition of the underpass, operational requirements, CPTED design requirements) and legal matters to consider as the underpass is subject to an existing lease agreement.

4. OWNERSHIP AND MAINTENANCE OBLIGATIONS

- 4.1. Staff have confirmed under the agreements which were put in place at the time of installation of the underpass that:
 - 4.1.1. The underpass is vested in Council.
 - 4.1.2. The lease holder could choose to have the stock underpass removed under the agreements (at his cost), but otherwise Council is responsible for its up-keep.
 - 4.1.3. Bellgrove have not acquired any rights under the agreements, so a prudent approach would be for Council to engage with the lease holder and enter into a Deed of Surrender of the Lease Agreement as it is no longer required.
- 4.2. It is therefore recommended Council staff contact the lease holder and request a Deed of Surrender is entered into.

5. **OPERATIONAL MATTERS**

- 5.1. The underpass presents an opportunity for a crossing point beneath the busy Kippenberger Avenue for pedestrians and cyclists. There are several considerations that need to be given to the practicality of this, as it was not designed for this purpose. These considerations include the physical condition (structural integrity, ongoing maintenance requirements, and the high groundwater table), and the suitability of the dimensions and entry/exit to the structure for pedestrians and cyclists.
- 5.2. These considerations are outlined below.

Physical condition

5.3. The underpass is in an area of high groundwater. The base of the underpass is set within the water table. Without pumping, the underpass fills with water. This was witnessed during construction of Bellgrove Stage 1, when the pump was turned off and later failed:



Figure 2: Aerial image showing natural groundwater level with pump off.

5.4. WSP undertook a condition assessment in 2021 and were asked to provide commentary on the potential to use the underpass for pedestrians. WSP confirmed the structure was built in 2015, and no condition related defects were identified in the November 2021 inspection. They are comfortable with its structural integrity.

5.5. There was water coming through the floor joins during the 2021 inspection, likely due to the high groundwater level. WSP anticipate it will be a difficult and costly exercise to permanently keep the groundwater level down to keep the floor dry. Their inspection photo shows water spouting through the floor, with the moss/algae present suggesting it is an ongoing issue.



Figure 3: Water spouting through floor join (red circle) and algae growth, November 2021

5.6. The floor joins were re-sealed by Dormer Construction in early 2024. Dormer Construction were the contractor who originally installed the underpass and are part of the BG Dormers joint venture which completed the Stage 1 Bellgrove subdivision works. Since the repair, the underpass has been cleaned and on 3 May 2024 was dry and clean:



Figure 4: Underpass and new pump to the right of the underpass, 3 May 2024

5.7. However, note at the time this photo was taken the groundwater levels were low as there had been very low rainfall in the months prior.

5.8. Unfortunately, during a site visit on 18 June 2024, the repairs had failed, and groundwater was spouting through the structure joins again. It had not rained much in the time from 3 May to 18 June, so staff did not expect to find the structure leaking such a high quantity of groundwater. It is apparent that even in relatively dry times with low rainfall, the groundwater in this area is consistently challenging. Over winter it will worsen. The pump was operating at the time of the visit, but it was not preventing groundwater leaking through the structure.



Figure 5: repaired join with groundwater spouting through



Figure 6: looking through the underpass towards Bellgrove – water evident throughout



Figure 7: leaking join at entrance to underpass



Figure 8: outlet of the groundwater pump into the SMA scruffy dome; pipe full

Groundwater levels

- 5.9. As mentioned above, groundwater levels are high in this area. A permanent pump is required to prevent the underpass from flooding. The pump failed in 2023 and required replacement. Figure 2 shows the natural groundwater level without a pumping solution, while Figure 4 shows the underpass with low groundwater levels after a very dry period and a functioning pump. Figures 3 and 5-8 show the underpass in typical conditions, leaking groundwater. The pump discharges to a scruffy dome in the Bellgrove stormwater management area (figure 8).
- 5.10. WSP in their assessment raised concerns with the ongoing maintenance effort and cost that may be involved with constantly pumping groundwater from the area. Pete Dormer of Dormer Construction was also asked for comment on groundwater in the area, and the possibility of making the underpass watertight. He noted the underpass already has a thick concrete floor to prevent buoyancy, and the floor is part of the waterproofing which over time has come under pressure and sprung leaks, struggling to cope with the amount of groundwater. He noted when the water table is high, the underpass is designed to overflow

and flood to prevent it "popping" out the ground. He does not consider retrofitting/repairing the underpass for pedestrian use is a viable option.

- 5.11. Groundwater levels in the area are a significant challenge to the operation of the structure as a pedestrian underpass. Remediation or replacement of the underpass will be a very expensive exercise due to its location under a busy road, and the high groundwater table. In reality it will not be possible to maintain the underpass dry year-round without very significant capital expenditure.
- 5.12. Larger pumps could be installed to pump a larger volume of groundwater, and the structure could be replaced with a new one. However:
 - 5.12.1. The current groundwater pump does not have an ECan consent. Larger pumps will likely require ECan consent and an assessment of the impact on the local groundwater zones and the Ruataniwha / Cam River.
 - 5.12.2. Replacing the structure will be a very costly exercise, and on a balance of probabilities it is more likely than not a new structure would start to fail within ten years as the current one has. The current underpass is less than ten years old, and although structurally sound it is leaking in several places. A pedestrian underpass needs to be reliably dry year-round.
- 5.13. When considering all factors, the staff recommendation is therefore to decommission the underpass.

Design and CPTED considerations

5.14. The underpass was originally designed for stock rather than people. There are additional design requirements to ensure it is suitable for pedestrian and cycle use. The table below summarises the key items which would need to be addressed.

Item	Comment
Groundwater	Currently the underpass has a single pump and power supply. Should it be retained, it would potentially need a backup pump, a backup power supply (generator?), and an alarm to monitor water levels in the underpass. Additional pumps, power supply and alarm systems will be costly.
Pavement surface	The base of the underpass is damp, slippy and algae grows in the base, which is a slip risk to the public if they were to use it.
Height and width	The underpass is 1.975m tall from its base level to the underside of the roof. This height is not suitable for cyclists as it will provide insufficient clearance height, and they would likely need to dismount. The ceiling edges would need warning signage. AGRD06A and NZTA Pedestrian Network Guidance both allow a minimum 2.0m clearance in extremely constrained circumstances. It is 3.58m wide. This width is sufficient (shared paths are generally 2.5m wide).
Lighting / surveillance	To ensure the area is safe, it will need to be well lit. Both the ramps and internally. Consider whether cameras are required. CPTED assessment required.
Signage and markings	Appropriate signage would be needed to advise cyclists to dismount. Potentially markings on the path to delineate two sides and avoid collisions.
Approach angles and connecting pathways	The approach angles to turn into/out of the underpass need to be properly assessed. Additional length of path potentially required on south side to link underpass to Devlin Avenue needs to be assessed. Crossing of Devlin Avenue?
Ramp steepness	The ramp steepness has not been assessed for usage by pedestrians, including those in wheelchairs/with prams, or cyclists.

6. DECOMMISSIONING THE UNDERPASS

- 6.1. Staff requested Aurecon assess the most cost-efficient method to decommission the underpass. Aurecon have reviewed and recommended:
 - a. The underpass is backfilled with self-compacting material such as pea-metal or drainage chip, as it will be impractical to compact engineered fill within the space. Earthworks contractors should be approached to propose a detailed methodology with pricing.
 - b. It is not necessary to "breakout" the base or sides, as groundwater is already flowing through the structure and the water level will equilibrate with time. The northern ramp can remain, but the southern ramp is recommended to be removed as residential development is planned in the area. Staff consider this portion of work should be at the developer's cost, and the developer has agreed that is reasonable.
 - c. Even with backfilling, the risk of settlement is considered low and estimated by Aurecon at a maximum of 15mm.
- 6.2. A high-level cost estimate has been prepared by Aurecon for all work. Bellgrove would pay for a portion of the work on the south side of the underpass, as they will reinstate the ground to a developable state.

Staff propose to put the methodology and schedule of quantities out to three contractors for pricing. The physical works are anticipated to cost Council approximately \$100,000. The additional work for the southern side of the underpass not covered by the Council cost will be paid for by Bellgrove.

7. ISSUES AND OPTIONS

7.1. There are two key options, which are to either:

Option 1: make improvements to the underpass and retain it, or;

Option 2: to decommission and abandon it. This is the option recommended by staff.

Due to the ongoing issues with groundwater, and the fact the structure is not watertight despite having been repaired earlier in the year, the <u>staff recommendation is to proceed</u> with Option Two and decommission the underpass.

Replacing and operating the underpass is not considered economically viable and there are residual risks to the public should infrastructure such as the pumps fail. Decommissioning the underpass removes these risks.

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

8. <u>COMMUNITY VIEWS</u>

8.1. Mana whenua

Te Ngāi Tūāhuriri hapū are likely to be affected by, or have an interest in, the subject matter of this report due to the presence of groundwater at the underpass site.

8.2. Groups and Organisations

No other groups or organisations are likely to be affected by, or have an interest in, the subject matter of this report.

8.3. Wider Community

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

9. OTHER IMPLICATIONS AND RISK MANAGEMENT

9.1. Financial Implications

Decommissioning the underpass will incur a cost, estimated to be \$100,000.

The appropriate account for this work is the Subdivision Contributions budget. That budget is forecast to be overspent in this financial year (refer to report 240717116901), but over time will be on budget. Often projects anticipated by the budget do not occur in the financial year due to developer delays.

The physical works would ideally be completed in Summer 2024/25 if staff are able to obtain pricing and potentially gain some efficiency by coordinating works with the Bellgrove development programme. If this is not possible, the work would be programmed later in 2025/early 2026.

9.2. Sustainability and Climate Change Impacts

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

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 any further health and safety risks arising from the adoption/implementation of the recommendations in this report. Retaining the underpass would present a significant health and safety risk to the public. It therefore cannot be left in its current state, nor is it practical to convert it to a usable pedestrian underpass.

10. <u>CONTEXT</u>

10.1. Consistency with Policy

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

10.2. Authorising Legislation

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

10.3. Consistency with Community Outcomes

The following community outcomes are relevant to the actions arising from recommendations in this report:

The relevant community outcomes are:

Social:

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.

Environmental:

...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.

• The natural and built environment in which people live is clean, healthy and safe.

Economic:

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

- Infrastructure and services are sustainable, resilient, and affordable.
- 10.4. Authorising Delegations

The Rangiora-Ashley Community Board is responsible for considering issues within the Boards and can make a recommendation to a Committee for consideration.

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



Kippenberger Underpass <u>Utilities</u> & Roading Committee

15 October 2024



Decision making process:

- Bringing background information to U&R Committee for feedback
- Report to RACB November
- Report to Council for decision December

Current Condition:

- Leaking, even with pump in operation
- Leaks repaired by Dormer January 2024
- Repairs had failed May 2024
- Last winter was dry
- Groundwater levels are consistently high, above the floor of the underpass (+85cm)
- Sought feedback from Structural Engineers

Current condition (cont.)



Outlet of underpass pump into Bellgrove SMA







Groundwater levels without pump:



Underpass pump was turned off during construction of Bellgrove Stage 1.

Without pumping, groundwater returns to its natural level and fills the underpass. The pump later failed and was replaced.

Proposed recommendation

Decommission underpass due to following key concerns:

- Groundwater leaks which cannot be repaired long-term
- Pumping required 24/7 risk of pump failure
- WSP (Structural Engineers) noted concerns with pedestrian use
- CPTED concerns lighting, surveillance and the slippery surface are key concerns for resident safety
- Ongoing operation and maintenance costs would include:
 - Electricity (~\$300 per month)
 - Installation of back-up pump and power supply (~ \$12 \$15k)
 - Ongoing leak repair (cost and frequency unknown)
 - Lighting / surveillance / make pedestrian usable costs
 - Monitoring of water levels

Likely cost to decommission:

- Aurecon has provided a methodology and cost estimate for backfilling.
- Risk of settlement has been assessed as low (up to 15mm).
- WSP provided condition assessment of structure (no concerns).
- Methodology would be to leave structure in place, backfill with pea metal or similar, reinstate north side to match Stormwater Reserve.
- South side would be cost share with Bellgrove, who will want to place engineered fill for future development.
- Cost estimate \$110,000.

WAIMAKARIRI DISTRICT COUNCIL

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REPORT FOR DECISION

FILE NO and TRIM NO:	RDG-32-03 / 240819138236
REPORT TO:	KAIAPOI-TUAHIWI COMMUNITY BOARD
DATE OF MEETING:	17 February 2025
AUTHOR(S):	Kieran Straw – Civil Projects Team Leader Joanne McBride – Roading and Transportation Manager Duncan Roxburgh – Implementation Project Manager
SUBJECT:	Charles Street – Approval of the Scheme Design and Proposed Relocation of a Mobility Park
ENDORSED BY: (for Reports to Council, Committees or Boards)	General Manager Chief Executive

1. <u>SUMMARY</u>

- 1.1. This report is seeking approval of the Scheme Design for Charles Street (southern side of the road from east of Williams St to the Marina carpark) including the following:
 - Proposed line marking / road layout changes for Charles Street
 - Relocation of an existing mobility carpark
 - Formalisation of existing P120 parking restrictions,
 - Implementation of a short length of "no stopping" restrictions,
 - Implementation of a P120 time restriction on an existing mobility park
- 1.2. The kerb and channel on Charles Street (outside Paris for the weekend) is programmed for renewal this year, while the road is programmed for repairs and resurfacing in the 2025/26 year.
- 1.3. The kerb and channel work is being co-ordinated with New Zealand Posts plans for improving access to their site at No. 55 Charles Street. Their planned works require the removal of the existing mobility park directly outside the property.
- 1.4. There is an opportunity to realign the kerb & channel through the wider area to provide an improved layout in this area, which is an important part of the town centre.

Attachments:

i. Charles Street Scheme Design for Kaiapoi-Tuahiwi Community Board (Trim No. 250114004447)

2. <u>RECOMMENDATION</u>

THAT the Kaiapoi-Tuahiwi Community Board:

(a) **Receives** Report No. 240819138236.

AND

THAT the Kaiapoi-Tuahiwi Community Board recommends:

THAT the Utilities and Roading Committee:

- (b) **Approves** the proposed Charles Street Scheme Design as per Trim: 250114004447.
- (c) **Approves** the implementation of 6m of no-stopping, between the relocated NZ post entrance, and the existing angle parking, noting that there is insufficient space to accommodate an on-road parking space in this location.
- (d) **Notes** that the revised design retains the existing angle parking, and that the footpath width has increased, and the width of the central painted median is reduced to accommodate the wider footpath area.

AND

THAT the Kaiapoi-Tuahiwi Community Board recommends:

THAT the District Plan and Regulation Committee:

- (e) **Approves** the relocation of the existing mobility park to a new location in front of "Paris for the Weekend", noting it will have a length of 6.6m (the maximum we can accommodate within the constraints of the vehicle entrances).
- (f) **Approves** the implementation of "P120" parking restrictions for all parking (including the relocated mobility park) on the southern side of Charles Street, for a distance of 55m between the vehicle entrance to No. 55 Charles Street, and Tom Ayres Drive.
- (g) **Approves** the implementation of a "P120" parking restriction for the existing unrestricted mobility parking space at the western end of the angle parking outside No. 55 Charles Street.
- (h) Notes the "P15" parking restrictions within the extent of angle parking outside No. 55 Charles Street is currently within the Schedule of Parking Restrictions, and will remain as "P15"
- (i) Notes that the "P15" parking restriction for a mobility parking space may be considered unreasonable, due to the additional time mobility impaired people may require to carry out their business. Therefore staff recommend a "P120" restriction for this parking space instead.
- (j) **Notes** that staff will update the Schedule of Parking Restrictions upon completion of the works.
- (k) Notes that the relocation / extension of the NZ Post vehicle entrance encroaches into the existing mobility park, and the relocation of this park results in the loss of one car-parking space as a result.

3. BACKGROUND

3.1. Following the canterbury earthquakes of 2010 and 2011, damaged sections of kerb and channel to both east and west of the No. 55 Charles Street were replaced. The length of approximately 95m was not replaced at the time as the condition was considered acceptable at the time. With the ongoing development and changes in the area and further

deterioration / settlement in the kerbline, there is an opportunity to renew the final length of kerb and channel and footpath.

- 3.2. New Zealand Post own the property at No. 55 Charles Street. They have plans to redevelop their vehicle entrance, and the project team understand that this will result in the removal of their planter box, and a wider vehicle entrance than they currently have. This will result in the need to relocate the current mobility park which is located immediately adjacent to the post-box.
- 3.3. The existing parking layout in front of No. 55 Charles Street allows for angle parking. This angle parking results in a very poor level of service for pedestrians due to vehicles overhanging the footpath, effectively reducing the available footpath width for pedestrians (refer to photo 1 below).



Photograph 1: Vehicle over-hang over the footpath associated with the current angleparking layout.

- 3.4. The Walking & Cycling Network Plan identifies Charles Street as an important connection. The option to install cycle lanes on Charles Street as part of this project was workshopped with the Community Board, however due to the competing needs in this section of Charles Street, it was the Boards preference to not proceed with the installation of these lanes at this time.
- 3.5. Parking surveys are carried out weekly in our town centres. The Kaiapoi Town Centre as a whole is demonstrating that on average, there is 30% of the parking spaces available.
- 3.6. A workshop was held with the Kaiapoi-Tuahiwi Board on 18 November 2024. This workshop sought feedback from the board on the above issues, and priorities.
- 3.7. As a result of this workshop, staff have developed the recommended option which seeks to address the footpath width restriction and retain the existing angle-parking. To achieve this, the existing 2.5m median will need to be reduced to 2.0m.

3.8. Council's parking enforcement team has advised that the existing P120 signage on the southern side of Charles Street (from Paris for the Weekend to Tom Ayres Drive) is currently unable to be enforced, as the existing parking restrictions are not documented in the Council's schedule of parking restrictions. It is not known when these signs were installed, however street view goes back as far as 2008 and the P120 restriction signs are visible at that time.

4. ISSUES AND OPTIONS

- 4.1. The mobility park impacted by the planned works at No. 55 Charles Street is proposed to be relocated to a new location in front of Paris for the Weekend. This would be completed in conjunction with the renewal of the adjacent kerb and channel and footpath.
- 4.2. The presence of the painted median is a typical feature in busy arterial roads, providing a safe space for right-turning vehicle to wait for a gap in oncoming traffic in order to make their turn. Charles Street, between Williams Street and Jones Street has a current AADT of 1038. There is little need to retain the painted median at this location. Feedback from the Board suggested that a reduction of painted median width would be an acceptable trade-off to ensure that the existing angle parking is retained, but still allowing the footpath to be widened slightly outside the NZ Post building.
- 4.3. Therefore, the options available are:
 - 4.3.1. Option One Retain the current kerb alignment and shift the Mobility Park

This option would result in the following:

- Relocates the mobility park to new location outside Paris for the Weekend
- Approve the implementation of recommended parking restrictions.
- Replaces the kerb and channel in existing location, and make no changes post reseal in 2025 / 2026, retaining the status quo.

This option is <u>not</u> the recommended option as there is an opportunity to reallocate the existing road space to better address the needs of the community using this area.

4.3.2. Option Two – Approve the Proposed Scheme Design (as per attachment i)

This option would result in the following:

- Relocates the mobility park to new location outside Paris for the Weekend
- Replaces the kerb and channel in the proposed new alignment that provides additional footpath width (increasing from 2.10m to 3.10m) for pedestrians, within this busy town centre environment.
- Retains the existing angle parking (noting the existing "P15" parking restriction to remain)
- Reduces the width of the existing painted median to 2.0m
- Approve the formalisation of existing "P120" parking restrictions between No. 55 Charles Street and Tom Ayres Drive.

Note: the footpath dimensions above a full width, and does not account for vehicle over-hang, which can result in a reduction of up to 0.8m in useable width. It is still anticipated that vehicles will continue to overhang the footpath on completion of this project.

This is the <u>recommended option</u> as it considers the feedback and priorities of the board following the November workshop. It provides the greatest level of safety for pedestrians, while retaining the existing angle parking layout.

4.4. Implications for Community Wellbeing

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

Providing high amenity, and high-quality pedestrian facilities within the town centre will encourage pedestrian movement throughout the township.

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

5. <u>COMMUNITY VIEWS</u>

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.

There are four businesses located within the NZ Post building at No. 55 Charles Street that will be impacting by the proposed layout changes. Staff have informally approached each of these businesses with the Scheme Design, and they have no concerns to report.

Staff also spoke to neighbouring businesses, all of which had no concerns with the proposal.

The full list of businesses that have been spoken to is as follows:

- NZ Post
- KiwiBank
- Kaiapoi Legal Ltd
- Paris to the Weekend Café
- RW Design
- New World Kaiapoi
- The Salvation Army Store
- PLC Group (Jedd Pearce)

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, however it is not considered necessary to consult the wider community on the changes.

The wider community will be informed of the works, and the changes, via Social Media.

6. OTHER IMPLICATIONS AND RISK MANAGEMENT

6.1. **Financial Implications**

There are financial implications of the decisions sought by this report, with the following budgets being available for the project(s):

BUDGET NAME	PJ Code	Budget Amount (\$)
Drainage Renewals K&C	100180.000.5133	\$35,000
Morgan Williams Reserve	100243.000.5014	\$106,100 ¹

Note:

1. This is the allocated budget amount for the Morgan Williams Reserve / Charles Street project only. The parent account has an overall budget of \$574,803.00

These budgets are included in the Annual Plan/Long Term Plan, and generally cannot be used for components of works other than their intended specified project. The exception to this is the Morgan Williams Reserve budget, that may be used to "enhance" the streetscape in conjunction with the identified projects.

6.2. Sustainability and Climate Change Impacts

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

6.3 **Risk Management**

There are risks arising from the adoption/implementation of the recommendations in this report, however staff have already discussed the options with these businesses to mitigate the risks.

There is a risk that cyclists have not specifically been accommodated within the revised road layout despite Charles Street being on the approved Walking and Cycling Network Plan for cycle lanes, and the nearby Motorhome & Caravan Park demonstrating demand for cyclists.

6.4 Health and Safety

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

Physical works risks will be managed within the construction contracts.

7. <u>CONTEXT</u>

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

Local Government Act 2002

7.3. **Consistency with Community Outcomes**

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

Public spaces and facilities are plentiful, accessible and high quality, and reflect cultural identity.

- There are wide-ranging opportunities for people to enjoy the outdoors.
- The accessibility of community and recreation facilities meets the changing needs of our community.

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

• Climate change considerations are incorporated into all infrastructure decisionmaking processes.

Transport is accessible, convenient, reliable, and sustainable.

- The standard of our District's transportation system 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.

7.4. Authorising Delegations

As per Part 3 of the WDC *Delegations Manual*, the Community is responsible for representing, and acting as an advocate for, the interests of its community.

The Utilities and Roading Committee is responsible for roading and transportation activities, including road safety, multimodal transportation, and traffic controls.

The District Planning and Regulation Committee is responsible for Parking Enforcement.



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REV	REVISION DETAILS	DRN	CHK	APP	DATE	SURVEYED		//2020	PROJECT No	PD002084	
А	SCHEME DESIGN	SS	KS		14/01/2025	DRAWN	SS	09/09/2024	CON No	CON202502	
						DRAWING CHKD	KS	08/10/2024	SCALE (A3)	1:250	
						DESIGNED	SS	13/01/2025	DATUM ORIGI	DATUM ORIGIN	
						DESIGNED CHKD	KS	14/01/2025	HORIZONTAL	NZTM GD2000	
						APPROVED	JM	//2020	VERTICAL	NZVD 2016	



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