Canterbury Water Management Strategy
Waimakariri Zone Committee

Agenda

Monday 2 December 2019
3.30pm

Council Chambers,
Waimakariri District Council,
215 High Street Rangiora

Members:
Michael Blackwell (Chair)
Cameron Henderson (Deputy Chair)
David Ashby
Erin Harvie
Carolyn Latham
Judith Roper-Lindsay
Wendy Main
Arapata Reuben (Te Ngai Tūāhuriri Rūnanga)
John Cooke (Te Ngai Tūāhuriri Rūnanga)
Sandra Stewart (WDC Councillor)
Megan Hands (ECan Councillor)
Chairperson and Members

CWMS WAIMAKARIRI ZONE COMMITTEE

Agenda for the meeting of the CANTERBURY WATER MANAGEMENT STRATEGY WAIMAKARIRI ZONE COMMITTEE to be held in the WAIMAKARIRI DISTRICT COUNCIL CHAMBERS, 215 HIGH STREET, RANGIORA on MONDAY 2 DECEMBER 2019 commencing at 3.30PM.

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

BUSINESS

1. BUSINESS

1.1 KARAKIA

1.2 APOLOGIES

1.3 WELCOME AND INTRODUCTIONS

1.4 REGISTER OF INTERESTS

Advice of any changes or updates.

1.5 CONFIRMATION OF MINUTES

Minutes of the Canterbury Water Management Strategy Waimakariri Zone Committee meeting – 9 September 2019

RECOMMENDATION

THAT the CWMS Waimakariri Zone Committee:

a) Confirms the minutes of the Canterbury Water Management Strategy Waimakariri Zone Committee meeting, held on 9 September 2019, as a true and accurate record.

1.6 MATTERS ARISING

2. OPPORTUNITY FOR THE PUBLIC TO SPEAK

2.1. WIL consultant Dan Cameron will provide an update to the committee on current biodiversity projects.
3. **ZIPA Recommendation Implementation Update – K Simpson (WDC 3 Waters Manager) and A Arps (ECan Zone Team Manager)**


3.2. ‘Cam River floodgate automation for saline intrusion prevention’ Report to Utilities and Roading Committee meeting of 19 November

3.3. ‘Urban stormwater water quality baseline results and issues identified’ Report to Utilities and Roading Committee meeting of 19 November

3.4. **Top 10 tips spotting and stopping sediment**

3.5. **Lifestyle Block Factsheet good management practices**

3.6. **Ecan Fish Screens Regional Update**

   **RECOMMENDATION**

   THAT the CWMS Waimakariri Zone Committee:
   a) Receives these six reports for review and their information.

4. **Stormwater Network Consent Applications Progress and Implications – J Fraser (WDC Utilities Planner)**

   **RECOMMENDATION**

   THAT the CWMS Waimakariri Zone Committee:
   a) Receives this Briefing paper.
   b) Notes the ongoing processing of stormwater network consent applications, introducing new regulation of stormwater quality and stormwater quantity.

5. **COMMITTEE UPDATES – M Griffin (CWMS Facilitator, ECAN)**

5.1. CWMS Regional Committee Update – 10 September meeting report from Carolyn Latham.

5.2. CWMS Regional Committee – Update on Plan Change 7

5.3. Waimakariri River flow regime and Rakahuri Algal blooms update from ECan Science

   **RECOMMENDATION**

   THAT the CWMS Waimakariri Zone Committee:
   a) Receives this update for its information and regarding the committee’s work programme and community engagement priorities for 2019.

6. **GENERAL BUSINESS**
KARAKIA

NEXT MEETING
The next meeting of the CWMS Waimakariri Water Zone Committee is scheduled for the 3 February 2020 at 3:30pm.
# WAIMEKARIRI WATER ZONE COMMITTEE
## Register of Interests – at 11 November 2019

<table>
<thead>
<tr>
<th>Name</th>
<th>Committee Member Interests</th>
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| David Ashby        | - Director/shareholder – Pineleigh Farm Limited  
                     - Director/shareholder – Dave Ashby Rural Consultants Limited  
                     - Shareholder – Waimakariri Irrigation Limited  
                     - Member – Cust Main Drain Water User Group |
| Michael Blackwell | - Director/Shareholder – Blackwells Limited, Kaiapoi  
                     - Treasurer – North Canterbury Clay Target Association  
                     - 4Ha property, Tuahiwi |
| John Cooke         | - Director/Shareholder – Executive Limousines 2015 Limited  
                     - Director/Shareholder – Express Hire Limited  
                     - Director/Shareholder – Secure Property Management Limited  
                     - Director/Shareholder – Testpro Limited  
                     - Director/Shareholder – Acropolis Wedding and Event Hire Limited  
                     - Director/Shareholder – Pines Beach Store Limited  
                     - Director/Shareholder – Coastal Dream 2005 Limited – 4Ha property, Kaiapoi  
                     - Interim Trustee – Section 6 Survey Office Plan 465273 Ahu Whenua Trust |
| Erin Harvie        | - Shareholder – Bowden Consultancy Limited, trading as Bowden Environmental  
                     - Member – NZ Hydrological Society  
                     - Associate member – NZ Institute of Primary Industry Management  
                     - Involvement with Cust River Water User Group |
| Cameron Henderson | - Dairy Farmer - Groundwater irrigator  
                     - Member – NZ Institute of Primary Industry Management  
                     - Member – NZ Dairy Environment Leaders Forum  
                     - Chairman – DairyCan - Canterbury Dairy Environment Leaders Forum  
                     - Chairman – North Canterbury Federated Farmers |
| Carolyne Latham    | - Farmer – Sheep, beef  
                     - Director – Latham Ag Ltd Consulting  
                     - Shareholder – Silver Fern Farms, Farmlands  
                     - Registered Member – New Zealand Institute of Primary Industry Management |
                     - Registered Nurse  
                     - Member Federated Farmers  
                     - Consent to Farm and related consents for water and effluent with ECan  
                     - Shareholder – Silver Fern Farms, Farmlands, LIC |
| Arapata Reuben     | - Chair – Ngāi Tūāhuriri Rūnanga  
                     - Trustee – Tuahiwi Marae  
                     - Trustee – Tuhono Trust  
                     - Trustee – Mana Waitaha Charitable Trust  
                     - Member – National Kiwi Recovery Group |
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<tr>
<th>Name</th>
<th>Roles and Roles Details</th>
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<tbody>
<tr>
<td>Rūnanga Rep and Chair – Christchurch/West Melton Water Zone Committee</td>
<td>- Rūnanga Rep and Chair – Christchurch/West Melton Water Zone Committee</td>
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<td>Rūnanga Rep – Ashburton Water Zone Committee</td>
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<td>Judith Roper-Lindsay</td>
<td>- Director/ecologist – JR-L Consulting Ltd.</td>
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<td>- Land-owner/small-scale sheep farmer, Ashley downs</td>
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<td>- Fellow – Environment Institute of Australia and New Zealand (EIANZ)</td>
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<tr>
<td>Sandra Stewart</td>
<td>- Self-employed journalist</td>
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<td></td>
<td>- Land-owner, 4Ha Springbank – sheep &amp; dogs</td>
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MINUTES FOR THE MEETING OF THE CANTERBURY WATER MANAGEMENT STRATEGY WAIMAKARIRI ZONE COMMITTEE HELD IN THE WAIMAKARIRI DISTRICT COUNCIL CHAMBERS, 215 HIGH STREET, RANGIORA ON MONDAY 9 SEPTEMBER 2019 AT 4.00PM.

PRESENT

Michael Blackwell (Chairperson), Dave Ashby, Erin Harvie, Carolyne Latham, Judith Roper-Lindsay, Wendy Main, Sandra Stewart (Councillor Waimakariri District Council), Claire McKay (ECan Councillor), and John Cooke (Te Ngai Tūhuriri Rūnanga representative)

IN ATTENDANCE

S Evans (Next Generation Farmers Trust), V Trayner (Next Generation Farmers Trust), N Brightwell (Plains Irrigators Ltd), B Stokes (Farmer), R Johnston (Farmer), S Dyer (Farmer), M Bate (For Water and Wildlife), J Ensor (Oxford-Ohoka Community Board), P Redmond (Kaiapoi-Tuahiwi Community Board), N Mealings (Ohoka Residents Association) J Benn (Department of Conservation), S Yong (Department of Conservation), G Cleary (WDC Manager Utilities and Roading), O Davies (WDC Drainage Assistant Manager), S Allen (WDC Water Environment Advisor) G Bennett (WDC Stormwater Engineer), A McLeod (ECan), S Bragg (ECan), A Arps (ECan), A Meredith (ECan), M Griffin (CWMS Facilitator, ECan) and T Kunkel (WDC Governance Team Leader).

1 BUSINESS

1.1 Karakia

S Bragg provided the karakia to open the meeting.

1.2 Apologies

Moved: C Latham Seconded: J Cooke

Apologies were received and sustained from Cameron Henderson and Arapata Reuben for absence.

CARRIED

1.3 Welcome and Introductions

The Chairperson welcomed all the members present. He requested the CWMS Waimakariri Zone Committee members introduce themselves to the people present. Officials and members of the public were also given an opportunity to introduce themselves.

1.4 Register of Interests

No changes or updates were made.
1.5 Confirmation of Minutes

Minutes of the Canterbury Water Management Strategy Waimakariri Zone Committee meeting – 12 August 2019

J Roper-Lindsay requested that the following amendment be made:

Page 10 of 10; paragraph 3 should be amended to read as follows:

“….It was agreed that consultation with the CWMS Waimakariri Zone Committee would be through Councillor S Stewart, who was the Chairperson of the Land and Water Working Group and a member of the Waimakariri Zone Committee”

C Latham requested that the following amendments be made:

Page 6 of 10; paragraph 3 should be amended to read as follows:

“…This would be done by requiring properties larger than five hectares, and properties adjoining to rivers/lakes, and has any irrigation and winter grazing of cattle to prepare an audited Farm Environment Plan.”

Page 9 of 10; paragraph 3 should be amended to read as follows:

“C Latham reported that a preliminary decision to grant the consent to the WIL Wright Road storage project, subject to additional requirements.”

Moved: D Ashby Seconded: C Latham

THAT the CWMS Waimakariri Zone Committee:

(a) Confirms the Minutes of the Canterbury Water Management Strategy Waimakariri Zone Committee meeting, held on 12 August 2019, as a true and accurate record.

CARRIED

1.6 Matters Arising

Nil.

2. OPPORTUNITY FOR THE PUBLIC TO SPEAK

2.1 V Trayner and S Evans - Next Generation Farmers Trust (NGFT)

V Trayner advised that the NGFT was currently focusing on aligning the education of their members with the requirements of proposed Plan Change 7 and also with the new National Policy Statement on Fresh Water. The NGFT has, therefore, established a working party whose aim would be to assist local industry bodies, businesses owners and farmers to meet the new proposed environmental requirements.

The NGFT Chairperson, S Evans stated that the farmers have united with a positive attitude to contribute to the environmental needs of the Waimakariri community. Farmers had local knowledge and wished to take a leadership role in implementing environmental changes in the Waimakariri. The Waimakariri community needed to unite, as at end of the day we all have the same aim, to ensure that the environment was protected for the future.

V Trayner advised that the NGFT working party would be reaching out to Fish and Game NZ and the local Iwi to identify environmental hotspots where they could initiate and/or lead projects. They wished the Waimakariri to serve as an example of environmental collaboration for other zones. They got numerous offers from farmers that wished to get involve at grass root level, and the NGFT therefore wished to
discuss opportunities with the CWMS Waimakariri Zone Committee as to where they could get involved and assist.

M Blackwell praised the NGFT for its initiative and ensured them that the CWMS Waimakariri Zone Committee would be willing to work with the NGFT on various environmental projects. The CWMS Waimakariri Zone Committee was always looking for non-regulatory actions that could benefit the environment.

In response to questions, V Trayner advised that the NGFT had now legally been established as a trust. Its membership had grown greatly and no longer only included farmers but also various businesses owners and industry bodies. V Trayner also confirmed that the farmers who belonged to the NGFT were located in various areas of the Waimakariri District.

S Evans stated that most farmers wanted to get involved with environmental projects, especially on their own properties, they however found the regulatory aspects of projects daunting and this hampered their efforts. NGFT was hoping to be able to assist farmers in implementing their initiatives.

M Blackwell urged the NGFT to get involved with the establishment of wetlands. Councillor C McKay and D Ashby congratulated the NGFT on the establishment of the trust and the work that they have been doing. They recommended that the NGFT should reach out to ECAN officials for assistance.

Councillor S Stewart congratulated the NGFT on its establishment and explained the concept of Arohatia te Awa that would link up and provide access to publicly-owned land along waterways in the Waimakariri. She suggested that the Land and Water Working Group and the NGFT could work together on various projects aimed at restoring the waterways and enhancing biodiversity.

C Latham invited the NGFT to attend CWMS Regional Committee meetings to gather information on any possible projects. She stated that the ECAN staff would be willing to share knowledge and to assist the NGFT to secure funding for projects that they might wish to undertake.

In conclusion, V Trayner stated that the funding for environmental projects seemed to be allocated on a project to project basis. The NGFT was, therefore, hoping to partner with the CWMS Waimakariri Zone Committee, ECAN and/or the District Council on existing projects.

2.2 M Bate - For Water and Wildlife

M Bate showed videos taken of the Waimakariri, Kaiapoi and Ashley Rivers over the last two weeks. He confirmed that the video of the Kaiapoi River was taken approximately 80 meters from the Lineside drain. The video of the Waimakariri River was taken between the motorway bridge and the SH1 bridge. M Bate expressed his concern regarding the high level of algae found in the rivers at this time of year.

Councillor S Stewart asked A Meredith if he might be able to provide additional information on the algae growth in the rivers. A Meredith stated that the videos were worrying, however the algae growth in the Waimakariri River between the motorway bridge and the SH1 bridge could be due to the tidal water becoming stagnant in this area. The nearby influx of the Ōtukaikino south branch and the effluent of various industries in the area might also have contributed to the algae growth in this area. This should, therefore, not be considered a true representation of the state of the lager rivers in the Waimakariri area.

A Meredith also stated that there seemed to be two or three algae communities featured in the videos such as the black mat algae, green algae and filamentous diatoms that could mostly be contributed to the relatively warm winter the Waimakariri had experienced. This was not good, and the proposed Plan Change 7 and Zone
Implementation Programme Addendum (ZIPA) were, therefore, focusing on alleviating the problems.

M Bate expressed his concerns that the in the 1970’s/80’s and 90’s there were no algae problems in the Waimakariri waterways. These problems could only be addressed by a large reduction in the nitrates in the Waimakariri waterways. According to M Bate, the main cause of the said nitrates was the use of fertilizer in the foothills. He expressed his doubts that the proposed Plan Change 7 and/or the new National Policy Statement on Fresh Water would be effective in solving the problems in the rapid manner that was needed.

In closing M Bate, expressed his disappointment with the previous work done by ECAn to resolve the abovementioned problems. He stressed the importance of fixing these problems quickly so that the residents of Waimakariri could live in a healthy environment.

2.3 R Johnston - Farmer

R Johnston stated that he was overjoyed by the establishment on the NGFT, but believed that it was just as worried about the environmental regulatory changes being proposed. He expressed his concern that ECAn considered the views of the CWMS Waimakariri Zone Committee to represent the views of the Waimakariri community. As there were a large number of community members that did not share the views of the CWMS Waimakariri Zone Committee.

R Johnston stressed that there were not enough public consultation with regards to proposed Plan Change 7. He stated that it took approximately two years to implement the new limits proposed by Plan Change 2, now proposed Plan Change 7 were proposing stricter limits that would have severe impacts on farmer communities. Because there was insufficient consultation regarding the proposed new limits, the whole Plan Change 7 process was not only unfair but also open for review. He also raised a concern that some of the maps being used during the consultation process seemed to be incorrect. He stated that imposing Plan Change 7 prior to the legislation being finalised was unjust, as it could only be challenged on a point of law and not on science.

R Johnston also expressed his disappointed in the work being done by the CWMS Waimakariri Zone Committee and ECAn with regard to proposed Plan Change 7. He suggested that the CWMS Waimakariri Zone Committee should rather be focusing on environmental hotspots in the Waimakariri zone, such as the erosion and vegetation along the Ashely River.

Councillor C McKay left the chamber at 4:55pm and returned at 5:10pm.

3. WAIMAKARIRI DISTRICT COUNCIL LAND AND WATER WORKING GROUP – UPDATE – S ALLEN (WATER ENVIRONMENT ADVISOR, WDC)

S Allen advised that the aim of the report was to update CWMS Waimakariri Zone Committee on several reports being addressed through the Council’s Land and Water Working Group. The reports were as follows:

(a) The WDC report on ‘Arohatia te Awa – Cherish the River’ project.
(b) The WDC report on the ecological values supporting mudfish, inanga, and trout habitats in the Waimakariri District prepared by Aquatic Ecology Ltd.
(c) The WDC report on the pilot study on nitrate levels in private wells.
(d) The WDC report on the review of practices for the use of Glyphosate.

S Allen also reported on the proposed Memorandum of Understanding (MOU) between ECAn and Waimakariri District Council staff, regarding the roles and responsibilities and prioritisation to deliver the ZIPA. The MOU would focus in
particular on recommendations that were implemented through non-statutory actions, rather than actions achieved through Plan Change 7. The Council compiled a schedule of ZIPA recommendations with the Council’s role, responsibilities and priorities (including budget allocation). ECan staff have also compiled a schedule of ZIPA recommendations with their role, responsibilities and priorities. The MOU brought these schedules together in one document for clarity of implementation, and would be attached as Schedule 1 of the MOU.

G Cleary advised that the proposed MOU would be implemented to ensure no overlapping of responsibilities and/or roles occurred between the Council and ECan response. S Allen stated that Schedule 1 of the MOU would be revised annually to ensure that it stayed relevant.

In response to questions, G Cleary stated that the Council did acknowledge that drains were in fact waterways and should therefore form part of waterway management. The Council was, therefore, in the process of appointing a Drainage and Waterway Manager and developing Drainage and Waterway By-laws. The Council was also recruiting a Biodiversity Officer that would ensure all biodiversity concerns were being addressed.

With regard to ‘Arohatia te Awa, C Latham cautioned that the increase of the number of visitors to the waterways could have a negative impact to the values that he Council wished to protect. The Council should also be mindful of opening private property to public trespassing. S Allen confirmed that these issues were being taken into consideration by the Council.

E Harvie, enquired about the criteria used for choosing the private well to be tested as part of the pilot study on nitrate levels. She asked if consideration would be given to the wells proximity to surface waterways and/or septic tanks. S Allen stated that the testing of the private wells would be done in conjunction with the property owners, who should be able to advise on the location of the sewerage system on the properties. However, she undertook to investigate the matter further.

In response to questions, S Allen advised that the pilot study would be a once-off sample taken in spring. The study would be concentrating on areas with known high levels of nitrates this year. It was however envisaged that the testing would be extended to other areas in year two of the study.

Moved: J Roper-Lindsay  Seconded: C Latham

THAT the CWMS Waimakariri Zone Committee:

(a) Receives these the following reports for review and their information:

(i) The Waimakariri District Council’s report on ‘Arohatia te Awa – Cherish the River’ Project.

(ii) The Waimakariri District Council’s report on the ecological values supporting mudfish, inanga, and trout habitats in the Waimakariri District prepared by Aquatic Ecology Ltd.

(iii) The Waimakariri District Council’s report on the pilot study on nitrate levels in private wells.

(iv) The Waimakariri District Council’s report on the review of practices for the use of Glyphosate.

(b) Notes the intention of Environment Canterbury and Waimakariri District Council to sign a Memorandum of Understanding for the Zone Implementation Programme Addendum, to provide clarity of roles, responsibilities, and priorities for implementation.
4. COMMITTEE UPDATES – M GRIFFIN (CWMS FACILITATOR, ECAN)

4.1 CWMS Regional Committee

C Latham advised that the previous Regional Committee meeting was held on Tuesday 13 August 2019. The next Regional Committee meeting would be held on Tuesday 10 September 2019.

4.2 PC7 and Coastal Protection Zone

W Main enquired about how many members of the public attended the Drop-in Session held on Tuesday 27 August 2019 at Woodend Community Centre. M Griffin confirmed that the twenty one members of the public attended. The summary notes on the information provided at the drop-in session were forwarded to the members of the public that attend and was also included in the CWMS Waimakariri Zone Committee Agenda.

M Griffin confirmed that the said Drop-in session was hosted by ECan and focused on the Resource Management Act (RMA) process, proposed by Plan Change 7 to the Land and Water Regional Plan, including the proposed Ashley Estuary/Te Aka Aka and Coastal Protection Zone. Members of the public were also advised on the process for making submissions on proposed Plan Change 7.

D Ashby stated that in light of the concerns raised by R Johnston, it should be minuted that the CWMS Waimakariri Zone Committee had no pecuniary interest in the Drop-in session that was hosted by ECan.

4.3 Zone Committee member representation on Kaiapoi River Rehabilitation Working Party

M Griffin advised that G Edge previously represented the CWMS Waimakariri Zone Committee on the Kaiapoi River Rehabilitation Working Party. However, G Edge was no longer a member of the CWMS Waimakariri Zone Committee and a new representative on this working party had been requested.

After discussion, it was agreed that M Blackwell would represent the CWMS Waimakariri Zone Committee at the Kaiapoi River Rehabilitation Working Party meeting to be held at 4.30pm on Wednesday 25 September 2019 at the Kaiapoi Service Centre.

4.4 WDC Drain Maintenance Contract presentation to Zone Committee

M Griffin confirmed that the presentation on the District Council’s drain maintenance contract, made at the CWMS Waimakariri Zone Committee meeting held on 13 August 2019, was included in the Agenda.

4.5 ECAn CWMS and Zone Delivery

A Arps provided a short update on ECAn CWMS and Zone delivery. He highlighted the following:

- The ECAn Cultural Land Management Advisor, Makarini Rupene, would be shifting his focus to the Waimakariri Zone and could work with the NGFT on identifying projects. He would also be focusing on the Catchment Management Plan and the Waimakariri Greater River Plan.
- During maintenance on the floodgates in the Taranaki Creek a ‘fish letterbox’ would be installed.
- They were currently investigating the possibility of installing ‘fish friendly’ gates with counter weights in the Courtney Stream. The funding for theses
would be provided by Regional Biodiversity Initiative for Fish Habitat and other flood gates in the low land area would also be investigated.

A Arps undertook to provide the CWMS Waimakariri Zone Committee with further information, the schematics of the ‘fish letterbox’ and the proposed implementation timetable.

D Ashby enquired about the projects ECan’s Cultural Land Management Advisor would be undertaking in the Waimakariri Zone. A Arps advised that an ongoing programmes would be undertaken that included shared talks and one-on-one sessions. He would mostly work with local farmers and industry groups, to understand the importance of mahinga kai and how they could incorporate mahinga kai values in the management of their farms.

4.6 Waimakariri River Flood Protection Project

A McLeod advised that the workshop was very successful and well received. Councillor C McKay reported that the Waimakariri River Flood Protection Project was a massive undertaking that began more than 13 years ago. In the beginning it was estimated that the project would cost approximately $40 million, however the project was coming in under time and under budget.

It was envisaged that through the improvement of the primary stopbanks, and the development of a comprehensive secondary stopbanking system would protect parts of Canterbury from flooding, thus preventing more than $8 billion worth of damage. It was a very important investment that could aid in the protection of Christchurch against sever weather events and future climate change.

J Roper-Lindsay expressed a concern regarding the loss of native vegetation during the development of the stopbanking system. She suggested that there should be long term land and water planning with ecologists and engineers prior to planning such a major project.

Moved: D Ashby Seconded: E Harvie

THAT the CWMS Waimakariri Zone Committee:

(a) Receives these the updates for its information and regarding the committee’s Work Programme and Community Engagement Priorities for 2019.

(b) Agrees that M Blackwell would represent the CWMS Waimakariri Zone Committee at the Kaiapoi River Rehabilitation Working Party meeting to be held at 4:30pm on Wednesday 25 September 2019 at the Kaiapoi Service Centre.

5. GENERAL BUSINESS

5.1 Minimum flow of the Waimakariri River and irrigation cutbacks

Councillor S Stewart reported that she received a complaint that last summer the minimum flow in the Waimakariri River, as measured at the old highway bridge, was at 25 cubic meters and that irrigation was only cutback by 50%. This was of concern in light of the fact that the recommended minimum low for the river was 41 cubic meters. She, therefore, requested a report from ECan to explain the calculation of the minimum flow of the river and the criteria for determining irrigation cutbacks.

Councillor C McKay held the opinion that CWMS Waimakariri Zone Committee members should not be directly answering questions regarding the minimum flow in the Waimakariri River and irrigation. She agreed, however that the CWMS Waimakariri Zone Committee should be provided with information on the calculation of the river data and the criteria for determining irrigation cutbacks. A Meredith stated
that this matter had been raised previously by the committee and that an ECan Hydrologist would be in the best position to answer these questions.

5.2 **Fieldtrip to the Selwyn Te Waihora catchment area**

M Griffin reminded the CWMS Waimakariri Zone Committee members that they have been invited by the CWMS Selwyn Waihora Zone Committee to undertake a fieldtrip on 1 October 2019. They would be primarily visiting part of the Selwyn Te Waihora catchment area. Members would however be provided with additional information closer to the date.

5.3 **Third year course on catchment areas, Lincoln University**

M Griffin also reported that he was contacted by a lector of Lincoln University, Steve Urlich, who was teaching a third-year course on catchment management. One of the catchment areas that the students would be studying was the Ashley Rakahuri catchment. The students would, therefore, be undertaking fieldtrips to this area and might be interested in the work that the CWMS Waimakariri Zone Committee had been doing.

5.4 **Stepping down of Councillors**

M Blackwell advised that the Councillors S Stewart and C McKay would be stepping down from this committee for the local government elections. He thanked both of the Councillors for their significant contributions as part of the CWMS Waimakariri Zone Committee.

Councillor S Stewart stated that she has found her time on the CWMS Waimakariri Zone Committee challenging but interesting. She was hoping that after the election they would be delivering on the programmes that the community were expecting.

Councillor C McKay reported she had been a member of the CWMS Waimakariri Zone Committee since 2010 and had enjoyed the challenge. She stated that the CWMS Waimakariri Zone Committee had dealt with many tough issues, particularly through the sub-regional planning process. She thanked the members of the CWMS Waimakariri Zone Committee, and the support staff from ECan and WDC, as the work was a combined effort.

6. **NEXT MEETING**

M Griffin advised that the next meeting of the CWMS Waimakariri Water Zone Committee would be scheduled after the Local Body Elections. There would, therefore, not be no formal meeting during October 2019.

In conclusion, M Blackwell thanked members for their attendance and advised that they would be notified of the date of the next CWMS Waimakariri Water Zone Committee meeting.

There being no further business, the meeting closed at 5.45pm.

CONFIRMED

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Chairperson
Waimakariri Land & Water Solutions Programme – Update

Background

The Zone Implementation Programme Addendum (ZIPA) for the Waimakariri Water Zone was adopted by Waimakariri District Council and Environment Canterbury in December 2018. This report outlines progress on implementation of ZIPA recommendations up until the 21 November 2019.

Summary of key progress

Waimakariri District Council

- Stormwater Network Discharge Consent monitoring programmes have been drafted, with Rangiora and Woodend monitoring programmes lodged with Environment Canterbury. Oxford and Kaiapoi at to be lodged by the end of 2019. These programmes are due to commence mid-2020. (ZIPA Rec. 1.4-J)

- Stormwater quality baseline sampling from 2014 and 2016 has been summarised in a 19 November 2019 Utilities and Roading Committee report (circulated to WWZC for information). (ZIPA Rec. 1.4-J)

- Forestry overspray and sedimentation incident at the WDC-owned Forrestdale Wetland investigated. Advice provided by Environment Canterbury. Remediation response undertaken by forestry company to replant and create 10m planting buffer. (ZIPA Rec. 1.5)

- Drainage review report of WDC drainage management scoped in a memo to Drainage Asset Manager. Review scheduled Dec 2019 – Feb 2020. $20K allocated. (ZIPA Rec. 1.7, incl. 1.7 a & b)

- Fish survey work undertaken November 2019 to establish fish passage issues and design requirements for remediation at Plaskett’s Road (No. 3 Drain) and Cust Main Drain. (ZIPA Rec. 1.8c)

- ‘Drain shading’ pilot proposed by WDC drainage team i.e. native planting along problematic drains with the purpose of reducing high cleaning frequency. Pilot drains yet to be decided. $20K allocated in 2019-20. (ZIPA Rec. 1.14)
• WDC-managed drains are included in the Drainage Review (Rec 1.7), which includes a discussion of mahinga kai, wāhi tapu and wāhi taonga. (ZIPA Rec. 1.20)

• Below the Ashley Rakahuri gorge is proposed to be listed at a Significant Amenity Landscape, and Te Aka Aka as an Outstanding Natural Feature in the District Plan – Boffa Miskell report. (ZIPA Rec. 1.22)

• Upper Catchment of the Ashley Rakahuri (Puketeraki Ranges above the gorge, excluding the plain) recommended to be an Outstanding Natural Landscape in the District Plan – Boffa Miskell report. (ZIPA Rec. 1.24)

• $20K allocated in 2019-20 towards public education and awareness campaigns aimed at improving the water quality and health of urban waterways. To be scoped. (ZIPA Rec. 1.25)

• Native planting and public amenity projects in the South Brook and Taranaki Stream. Weeding work commenced in November 2019. Culvert installation, planting, and path construction to be completed by 30 June 2019. $70K allocated in 2019-20. (ZIPA Rec. 1.26)

• Cam River Enhancement Fund:
  o Three minor sediment traps have been installed on Tuahiwi Stream, and bank stabilisation works have been carried out. Waiting for a district-wide ‘Maintenance and Minor Works in Waterways’ consent to undertake further works. This consent application is being processed by Environment Canterbury. (ZIPA Rec. 1.27)
  o $10K allocated in 2019-20 for Kaiapoi River tidal plantings with wetland plants, to narrow the channel and create greater flushing flows. A project brief has been written, and plant list prepared for a planting in February 2020 by contractors. (ZIPA Rec. 1.27)

• WDC has created a new full-time role of Ecologist – Biodiversity. This role has been recruited, with a projected start date of the successful candidate in mid-January. (ZIPA Rec. 2.2c). Ecologist-Biodiversity will work with the Water Environment Advisor to support landowners. (ZIPA Rec. 1.18)

• $10K has been allocated in 2019-20 towards climate change and sea level rise impacts on indigenous biodiversity in the Waimakariri Water Zone. To be scoped. (ZIPA Rec. 2.4)

• $10K has been allocated in 2019-20 for ecological survey work of ecological values (on an as-required basis), that can inform Council planning and operational activities. Survey work was carried out for the North Brook wai kōura population in September 2019 by Wildlands Ltd, which showed positive news; that no trout were present above the protective weir. (ZIPA Rec. 2.5)

• On-going discussions with WDC planners for the District Plan, such as rates rebates and a draft policy on awarding ‘transferable development lot’ rights (an ability to subdivision and sell a lot) in exchange for biodiversity protection. (ZIPA Rec. 2.10)

• Inanga spawning area improvements have been scoped for Taranaki Stream, McIntosh Drain and Courtenay Stream. Pampas, gorse and willow removal due to
be carried out in late-November at McIntosh and Courtenay Stream, with native re-
planting after 1 June, due to no disturbance of the sites during the inanga spawning
window. Taranaki Stream will be undergo improvements in 2020-21, when a
consent is in place for bank regrading. Environment Canterbury has supported WDC
inanga spawning area improvements with funding from the Regional Fish Habitat
Improvement Fund. (ZIPA Rec. 2.11)

- WDC has allocated $10K in 2019-20 towards the testing of private drinking wells.
  WDC has contacted landowners of 20 wells for the pilot nitrate study in Cust and
  Eyreton and is obtaining final permission letters. Sampling is due to take place in
  late-November. (ZIPA Rec. 3.16a)

- WDC has distributed information about nitrate health impacts to landowners in the
  nitrate study. (ZIPA Rec. 3.16b)

- WDC has drafted a pamphlet with guidance on well depth and well-head security, in
  collaboration with ECan Groundwater. This will be independently reviewed and
  formatted by a graphic designer in 2020. $5K allocated towards this in 2019-20.
  (ZIPA Rec. 3.17)

- Management structure of the Land and Water Committee created within Council in
  November 2019. Memorandum of Understanding drafted between ECan and WDC
  for ZIPA Implementation at the staff-level. (ZIPA Rec. 3.25)

Reports

- **WDC report on the 2019/20 ZIPA Capital Work Programme, September 2019** –
  this report details the proposed capital works programme developed by WDC from
  the Waimakariri Zone Implementation Programme Addendum (2018). This report is
  provided as agenda item 3.1.

- **Cam River Floodgate Report** – This report details a proposal from the Kaiapoi
  River Rehabilitation Working Party to investigate the feasibility for automation of the
  Cam River Floodgate to become a tidegate, for prevention of saline incursions
  upstream. This report is provided as agenda item 3.2.

- **Urban Stormwater Water Quality Baseline Results and Issues Report** – This
  report summarises baseline water quality data for urban stormwater areas of
  Rangiora, Woodend, Kaiapoi, and Oxford, and raises issues identified. Comparison
  was made to exceedance levels in Schedule 5 of the Canterbury Land and Water
  Regional Plan, (LWRP), or the ANZECC Water Quality Guidelines for Fresh and
  Marine Water Quality, (2000). This report is provided as agenda item 3.3.

Environment Canterbury

Science

- Counter-weight levers have been installed on the Courtenay and Kairaki Creek
  floodgates. This is to promote extended opening times and fish passage on the low
  tide. Monitoring of gate opening durations prior to fixes were undertaken by a
  summer student. This will be followed up in due course to measure the effectiveness
  of the levers.
A new floodgate has been built to replace the existing Taranaki Creek floodgate. The new floodgate is designed with an adjustable aperture near the top. Once installed, this will allow improved passage of inanga on the surface during all tidal cycles. Limited fish monitoring was undertaken upstream of the gate in early 2019. Fish passage efficiency will be monitored on the new gate.

- Scoping the feasibility, benefits/detriments, and requirements for converting the Cam River Flood gate into an electrically operated Tide gate.

- Commissioned inanga spawning surveys in lower Kaiapoi Catchment to inform WDC inanga spawning habitat improvements.

- Initial discussions and planning around connecting of Kairaki Creek with Pines Beach Wetlands to promote habitat connection held in November.

- Commission trout spawning surveys in the Kaiapoi River catchment, specifically the Cust River fishery.

- Community education – Lincoln University student field trip, led by Environment Canterbury, focused on awareness of aquatic and mahinga kai values, and issues in the Waimakariri Zone. Visits to Ashley River / Rakahuri – Saltwater Creek Estuary, Taranaki Creek and lower Ashley River / Rakahuri.

- Additional recreational water quality monitoring site picked up at Ashley River / Rakahuri at SH1.

- Ongoing salinity monitoring of Kaiapoi River to increase the database to enable a model/relationship between salinity intrusion and Kaiapoi River Flows/Waimakariri River flows/ and High tide height.

- Continuous Nitrate data logger re-established on the upper Silverstream catchment.

- Age tracer data for streams, and modelled particle tracking for drinking water supplies, have been completed in support of Plan Change 7. This monitoring addressed lag times between land use and nitrate concentration changes in wells and spring-fed streams and transport pathways towards key receptors such as spring-fed streams, community water supply wells, and the Christchurch aquifer system. Link to this report: https://api.ecan.govt.nz/TrimPublicAPI/documents/download/3626251

- Members of the ECan Science team continue to work with WIL on the infiltration trial at Silverstream.

**Zone Delivery**

- **Ashley Rakahuri River**
  Currently developing a landscape scale conservation, recreation and mahinga kai lead “On the ground Action Plan” to protect and revitalise the Ashley Rakahuri river and educate and activate others with regard to its importance as a source of health, happiness and heritage. The preparation of this will be completed in the first quarter of 2020 with on the ground work commencing in the second quarter.

As a subset of this work the following initial recommended actions have been made.
## SITE NAME & ECOsystems Type

<table>
<thead>
<tr>
<th>Site Name &amp; Ecosystem Type</th>
<th>Values</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashley River – Saltwater Creek Estuary Taranaki Stream</td>
<td>The site includes the river, the river mouth and estuary as well as the key tributaries Saltwater Creek and Taranaki Stream. The Saltwater Creek Estuary is a wetland of international significance. Inanga spawning, populations.</td>
<td>Weed control. Enhance Inanga spawning habitat through fencing and restoration of riparian vegetation. Fish passage and control of non-native fish Pest control Weed control Protect/enhance nesting sites through island creation where appropriate Support the work of the River care group.</td>
</tr>
</tbody>
</table>

### References:

FENZ IBA Rivers, Estuaries, Lagoons – 2016

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- **Clean and Green Silverstream**
  Riparian and Forrest planting projects are progressing well at Giles Road Reserve and the connecting land between Waimakariri Regional park and Silverstream reserve. Combined with existing planting this creates 85% uninterrupted planting and setback for the first 9 kilometres on Silverstream through to the Silverstream sub Division. More planting of larger species will take place in Autumn 2020 and then the maintenance programme will commence.

- **Caring for the Cam**
  A copy of the Top 10 Tips brochure for managing sediment in the Ruataniwha / Cam River is provided as **agenda item 3-4**.

- **Education**
  In addition to on farm Business as Usual engagement, a series of monthly Drop-In sessions have arranged to assist landowners with GMP and Education.
  
  A copy of the Lifestyle Block Good Management Practice factsheet is provided as **agenda item 3-5**.

- **Fish Screen Report**
  An update report is provided as **agenda item 3-6** on work undertaken to date, our new approach to fish screens, and our 5-year plan to address the current state of non-compliance across the region.
WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR INFORMATION

FILE NO and TRIM NO: WAT-10-14 / 190718101047

REPORT TO: Land and Water Working Group

DATE OF MEETING: 26 September 2019

FROM: Sophie Allen – Water Environment Advisor

SUBJECT: Zone Implementation Programme Addendum Capital Works Programme – 2019-20

1. SUMMARY

1.1 This report details the proposed Waimakariri District Council capital works programme for 2019-20 as developed from the Zone Implementation Programme Addendum (ZIPA) including:

a. fish passage improvements projects

i. on the No.3 Drain outlet (along Plaskett Road) into the Cust Main Drain, to install mussel spat rope or ramp to allow indigenous fish, such as bluegill bully, to pass.

ii. on the Ashworth Road Drain outlet into the Cust Main Drain, to install mussel spat rope or ramp to allow indigenous fish, such as bluegill bully, to pass.

b. fencing, biodiversity and amenity improvements for the South Brook and the Taranaki Stream;

c. tidal plantings within the Kalapoi River;

d. improvements to inanga (whitebait) spawning areas located on land owned by Waimakariri District Council on the Courtenay Stream, Taranaki Stream and McIntosh Drain;

1.2 There is an existing allocation of $100k for 2019-20, from the Zone Implementation Programme Addendum (ZIPA) budget, from the general rate, for these proposed works.

Attachments:

i. Inanga spawning habitat proposals for Environment Canterbury Regional Fish Habitat Improvement Fund (190731107334- Taranaki Stream, 190731107405- Macintosh Drain, 190820108229- Courtenay Stream)

2. RECOMMENDATION

THAT the Land and Water Working Group:

(a) Receives report No. 190718101047.
(b) **Approves** the proposed 2019-20 Waimakariri District Council capital expenditure work programme based on the Zone Implementation Programme Addendum (ZIPA) recommendations.

(c) **Circulates** this report to Council, Community Boards, the Waimakariri Water Zone Committee and Taranaki Stream Advisory Group for their information.

3. **BACKGROUND**

3.1 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). Three options were presented to Council.

3.2 Option A, called Option 2 in the report was adopted by Council for the 2019-20 Annual Plan on 28 May 2019 (refer to TRIM 190501081992), with total allocation of $305,000; an additional $205,000 per annum for two years for 2019/20 and 2020/21 above $100,000 per annum that was already allocated in the Long Term Plan.

4. **ISSUES AND OPTIONS**

4.1. Of the $305,000 per annum total allocation for ZIPA implementation, $100,000 was allocated to capital expenditure (CAPEX) projects (see Table 1), and $205,000 to operational expenditure.

Table 1: Summary of capital expenditure for 2019-20 for WDC ZIPA works

<table>
<thead>
<tr>
<th>CAPEX project</th>
<th>ZIPA recommendation</th>
<th>Budgeted amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish passage improvements</td>
<td>1.8</td>
<td>$20,000</td>
</tr>
<tr>
<td>Fencing, biodiversity and amenity</td>
<td>1.26</td>
<td>$60,000</td>
</tr>
<tr>
<td>Tidal plantings on the Kaiapoi River</td>
<td>1.27</td>
<td>$10,000</td>
</tr>
<tr>
<td>Inanga spawning habitat improvements</td>
<td>2.11</td>
<td>$10,000 (excludes an additional approx $15,000 requested from the ECAn Regional Fish Habitat Improvement Fund)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>$100,000</strong></td>
</tr>
</tbody>
</table>

*Fish passage improvements*

4.2. The No.3 Drain outlet is located along Flasket Road (see Figure 1). The outlet of the drain is at the junction of the WDC managed section (No. 3 Drain) with the Cust Main Drain that is maintained by Environment Canterbury. The outlet to the No. 3 Drain has a ‘staircase’ of three steps, that are thought by WDC staff to be preventing passage for indigenous fish that move as ‘climbers’ and ‘swimmers’. An example of a species that may be prevented from migrating to complete its lifecycle is the bluegill bully, which is listed by the DOC threat...
classification system as ‘declining’ (Dunn 2017), and was noted in an Aquatic Ecology report prepared for WDC in 2017 to have been found in the Cust Main Drain.

![Image](image1.jpg)

Figure 1: No.3 Drain outlet to the Cust Main Drain showing the probable fish passage obstruction.

4.3. The Ashworths Road Drain outlet empties into the Cust Main Drain (see Figure 2). The outlet of the drain is at the junction of the WDC managed section (Ashworths Road Drain) with the Cust Main Drain that is maintained by Environment Canterbury. The outlet to the Ashworth Road Drain has a ‘staircase’ of three steps, that are thought by WDC staff to be preventing indigenous fish that move as ‘swimmers’ past obstacles, similar to the No 3 Drain outlet, which it is directly opposite.

![Image](image2.jpg)
Figure 2: Ashworths Road outlet to the Cust Main Drain showing the probable fish passage obstruction.

4.4. Both the No. 3 Drain and Ashworths Road Drain receive significant spring-fed flows, therefore there is sufficient baseflow throughout the year to support fish populations, and good water clarity under normal flows.

4.5. WDC propose to undertake fish survey work to identify fish species above and below both ‘staircase’ structures, then to design a suitable solution, likely to be a ramp and/or mussel spat rope installation.

4.6. WDC staff intend to work in collaboration with Environment Canterbury river engineers and freshwater ecologists for consultation and installation of the design.

**Fencing, biodiversity and amenity**

4.7. The allocated ZIPA budget for Recommendation 1.26 will increase access and amenity to riparian areas, such as WDC esplanade reserves, as well as an opportunity for the community to actively restore areas for biodiversity, creating ecological corridors.

4.8. This budget allocation aligns with the aims of the Arohatia te Awa project, adopted by Council on 3 September 2019 (Trim 190801107756), however Arohatia te Awa projects are yet to be scoped by the Land and Water Working Group. Therefore, these capex projects are initial steps in along waterway corridors that could link with Arohatia te Awa projects in the future.

4.9. The assessment criteria used to prioritise budget allocation included:

4.9.1. ecological benefits, such as stream shading and fish habitat creation or protection;

4.9.2. ability and desire to be accessed by the public;

4.9.3. WDC-owned land; and

4.9.4. priority catchments as stated in the ZIPA (Cam, Kaiapoi, Taranaki, and Ashley Rakahuri catchments).

4.10. Budget for plant maintenance, such as releasing around plants and weed control (e.g. blackberry) is available under the ZIPA operational budget for 2019-21.

**South Brook**

4.11. A WDC-owned esplanade reserve on the South Brook beside the Townsend Fields Stormwater Management Area (see Figure 3) is recommended for planting with eco-sourced indigenous plants, and development of a rough loop path following both the north and south banks.

4.12. The surrounding area is undergoing development of urban housing, including the potential placement of a nearby retirement village. The area on the south side was recently cleared of willows in August 2019 on the south side, and therefore has bare areas suitable for planting. The planting areas are suitable in terrain for community planting events to be held.

4.13. There are two bridges already in place. A further, smaller wooden footbridge could be installed to allow for a rough loop path, (i.e. a mown grass and dirt track) to be completed.

4.14. Tall vegetation, mostly of exotic trees, shade the waterway, however could be selectively replaced with native species over time.
4.15. The loop path could be improved to a wider built-up gravel footpath suitable for wheelchairs and strollers at a later date, particularly if an esplanade reserve was created along an adjacent section of the South Brook that currently without an esplanade reserve, for example if the land was subdivided. That would complete the link for access to the west through to Lehmanns Road. There is also potential in the future to extend biodiversity works and a path along the South Brook in the reach across Townsend Road to the east, to connect to the South Brook Dog Park. This area to the east has a proposed esplanade reserve in draft resulting from a subdivision application that has been lodged.

Figure 3: Indicative planting (red areas), existing bridges (red rectangles) and possible wooden footbridge (blue rectangle) on the South Brook, beside the Townsend Fields Stormwater Management Area.

Taranaki Stream

4.16. A WDC-owned drainage reserve along the Taranaki Stream between Waikuku Beach Road and the Ashley Rakahuri River Stopbank (see Figure 4) is recommended for planting with eco-sourced indigenous plants, and development of a rough path, connecting to existing trails to the north and south.

4.17. Two wooden footbridges or culverts are proposed to be installed across existing drains to provide access to the public and to enable planting.

4.18. The planting areas are suitable in terrain for community planting events to be held. The Woodend–Sefton Community Board together with the Greenspace team has carried out a planting at the northern end of the site, together with community members from the Taranaki Stream Advisory Group. There is community interest to extend the plantings along the Taranaki Stream. WDC staff will engage and involve the Taranaki Stream Advisory Group and adjacent landowners on works proposed in this report.

4.19. Existing Greenspace budget of $2,000 in 2019-21 for native planting will be incorporated into the budget for the proposed works in Figure 4. Funding given by Fonterra to Environment Canterbury for waterway restoration in the Taranaki Stream catchment, may
also be available to supplement current budgets, however this is pending discussion with Environment Canterbury and Fonterra.

4.20. This reach of the Taranaki Stream is also a site for proposed for inanga spawning habitat improvements, such as regrading of the true left bank (see section 4.24).

![Map of re-grading the true left bank](image)

**Figure 4:** Indicative planting (red areas) and two possible wooden footbridge or culvert installation (blue rectangles). A connector path (orange line) connecting the Ashley Rakahuri River stopbank walkway to a trail along Waikuku Beach Road is shown.

**Tidal plantings on the Kaiapoi River**

4.21. WDC staff recommend to continue intertidal planting on the margins of the Kaiapoi River, building on two previous years of successful planting. The plantings constrict flows, to increase flushing that prevent sediment build-up, and also provide fish habitat. The work is partially as earthquake recovery work, as water plant beds were lost in the 2010-2011 earthquakes.

4.22. Greenspace has produced a spatial planting plan for 2019-20, which incorporates both terrestrial and aquatic tidal plantings. This plan takes into consideration Kaiapoi town planning, Kaiapoi Regeneration Zone planning, and Environment Canterbury priorities.
The $10,000 of allocated funds for the ZIPA are in addition to a $9,000 budget that has been allocated by the Kaipori River Rehbilitation Working Party towards planting.

4.23. Trial tidal planting in 2017 and 2018 have indicated suitable plant species and water depth. *Schoenoplectus tabernaemontani* and *Reupu* (Typha australis) are the two species which have been the most successful, and therefore will be used exclusively for tidal planting in 2019-20.

**Inanga spawning habitat improvements**

4.24. There are significant inanga spawning sites located on WDC land, which have been identified for improvements to increase spawning success by Aquatic Ecology Ltd.

4.25. Proposals for co-funding for inanga habitat improvements have been submitted by Waimakariri District Council staff to the regional Fish Habitat Initiative fund, with $100,000 of contestable funding available from Environment Canterbury. A decision on whether WDC is successful with securing funding for these proposals is due in October 2019.

4.26. Aquatic Ecology Ltd (AEL) reviewed inanga spawning sites and quality of habitat in the Waimakariri District in reports from 2017 and 2019. Recommendations from AEL are proposed to be carried out by WDC staff:

4.26.1. Re-grading of true right bank of Taranaki Stream directly above the tidegate, followed by planting with suitable native vegetation for inanga spawning (see proposal Trim 190731107334).

4.26.2. Removal of gorse and willow at McIntosh Drain on the true right above the tidegate. Re-grading of the true left bank above the tidegate, followed by suitable native vegetation for inanga spawning (see proposal Trim 190731107405).

4.26.3. Removal of pampas and willows at Courtenay Stream on the true left above the tidegate (see proposal Trim 190802108229).

4.26.4. A budget for follow-up weed maintenance as operational expenditure, to ensure that willow and gorse do not re-grow.

4.27. The Management Team have reviewed this report and support the recommendations.

5. **COMMUNITY VIEWS**

5.1. **Groups and Organisations**

5.1.1. Waimakariri Water Zone Committee – An update on the capital expenditure projects will be presented in a WDC update at the 11 November 2019 meeting.

5.2. **Wider Community**

5.3. 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. **IMPLICATIONS AND RISKS**

6.1. **Financial Implications**

6.1.1. There are no new financial implications of this report, as budget has been already allocated for the 2019-20. This report is for more detailed information of the intended projects only.

6.2. **Community Implications**
6.2.1. The community will benefit from opportunities to engage with waterway restoration (increased wellbeing and connection to the local environment), improved amenity, improved indigenous fish populations and habitat, for their intrinsic value and fishing, such as whitebaiting.

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

6.4. Health and Safety
6.4.1. 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. CONTEXT

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

7.2. Legislation
7.2.1. Resource Management Act (1991). Consent to undertake works within the bed of a river, lake or wetland may require resource consent, unless permitted under the Canterbury Land and Water Regional Plan. All capital expenditure works requiring consent are anticipated to be covered by a ‘Maintenance and Minor Works in Waterways’ global consent that WDC has lodged with Environment Canterbury.

7.3. Community Outcomes
7.3.1. There is a healthy and sustainable environment for all
  • Harm to the environment from the impacts of land use, use of water resources and air emissions is minimised.
  • Cultural values relating to water are acknowledged and respected.
  • The demand for water is kept to a sustainable level.
  • Harm to the environment from the spread of contaminants into ground water and surface water is minimised.

7.3.2. There are areas of significant indigenous vegetation and habitats for indigenous fauna
  • Conservation and restoration of significant areas of vegetation and/or habitats is encouraged.

7.3.3. Public spaces and facilities are plentiful, accessible and high quality
  • People enjoy clean water at our beaches, rivers and lakes.
  • There is a wide variety of public places and spaces to meet people’s needs.
  • There are wide-ranging opportunities for people to enjoy the outdoors.

7.4. Delegations
7.4.1. No delegations apply to this report. It is a report for information only.
WAIMAKARIRI DISTRICT COUNCIL

REPORT FOR DECISION

FILE NO and TRIM NO: DRA-19 / 191017145159

REPORT TO: Utilities and Roading Committee

DATE OF MEETING: 19 November 2019

FROM: Gerard Cleary – Manager Utilities and Roading, on behalf of the Kaiapoi River Rehabilitation Working Party

SUBJECT: Cam River floodgate automation for saline intrusion prevention

SIGNED BY:

(For Reports to Council, Committees or Boards)

Department Manager

Chief Executive

1. SUMMARY

1.1 This report details a proposal from the Kaiapoi River Rehabilitation Working Party to investigate the feasibility for automation of the Cam River Floodgate to become a tidegate, for prevention of saline incursions upstream.

1.2 This report seeks consideration of a $15,000 budget in 2020-21 to investigate the feasibility of this proposal, such as producing a concept design, detail of required resource consents and permissions, as well as preliminary consultation with Te Ngāi Tūāhuriri Rūnanga. As this is a generalised expenditure that could benefit a range of users, it is proposed for the budget to come from the general rate.

1.3 The intent of the automated floodgate operation is to avoid or limit saline intrusion into the lower Cam River during times when there is high salinity on the incoming tide. This would retain a freshwater environment in the lower Cam River, with possible complex benefits. However, there are also multiple possible disadvantages for ecological species and the local community.

1.4 The Cam River Floodgate is an Environment Canterbury asset, therefore any modifications would require their approval.

Attachments:

i. Kaiapoi River Rehabilitation Working Party meeting minutes 25 September 2019 (191029150331)

2. RECOMMENDATION

THAT the Utilities and Roading Committee recommends:

THAT the Council:

(a) Receives report No. 191017145159.

(b) Considers inclusion of a budget of $15,000 in the Draft Annual Plan from the general rate for 2020-21 to scope feasibility of automating the Cam River Floodgate, to be used as a tidegate against saline incursions.
(c) **Notes** that a report summarising findings from the feasibility study will be presented to the Utilities and Roading Committee and Environment Canterbury in early 2021, for a decision whether to proceed, and costings in order to obtain required consents / permissions and construct the design.

(d) **Notes** that any modifications to the Cam River floodgate would require the approval of Environment Canterbury as the asset owner.

(e) **Circulates** this report to the Kaiapoi-Tuahiwi Community Board and Waimakariri Water Zone Committee.

### 3. BACKGROUND

3.1 The Kaiapoi River Rehabilitation Working Party has proposed that the Cam River floodgate could be modified to be used approximately up to four months of the year as a tidegate, for prevention of saline water from progressing upstream during a high tide. Environment Canterbury has conducted preliminary investigations that confirmed that automation of the Cam River Floodgate is possible, however with many required considerations.

3.2 The Kaiapoi River Rehabilitation Working Party has fully allocated a budget of $105,000 for 2019-20, and 2020-21 to projects in the Kaiapoi River (sediment trap construction, planting and river bank realignment), therefore there is no unallocated funding currently at the discretion of the Working party to allocate.

3.3 The Cam River Floodgates were designed and built in 1971/72 to prevent floodwater from the Waimakariri River overtopping the stopbanks upstream of the Floodgates. The Cam River Floodgates are an Environment Canterbury – owned and managed asset. When the water level at the Waimakariri River Gorge gauge reaches 3.5m the floodgates are lowered manually. Once the flood levels have receded the floodgates are raised again. The floodgates were designed for rare, temporary flooding.

3.4 A report into the cause of saline incursion by Adrian Meredith at Environment Canterbury, entitled ‘Assessment of the state of a tidal waterway – the Lower Kaiapoi River’ (March 2018), concluded that observed changes were mostly likely due to increasing episodes of saline water intrusion flowing into the lower Kaiapoi River. This conclusion is supported by salinity measurements taken by Environment Canterbury.

3.5 The saline intrusions are thought to be a result of bed level changes following the 2010-11 Canterbury earthquakes. Saline intrusion episodes in the lower Kaiapoi River are also hypothesised by Meredith (2018) to result from low flows in the Waimakariri River, generally in summer and autumn, allowing saltwater to penetrate further up the mouth of the Kaiapoi and Cam Rivers, with flow data supporting this hypothesis.

3.6 A report on the ecological and wider implications of saline incursions in the Kaiapoi River, including the Cam River catchment was presented to the Utilities and Roading Committee in April 2019 (190115003326[v2]). An agreed response strategy to the increasing saline incursions, such as to protect against (for example with a tidegates), or to accommodate (for example with provisions in the District Plan), has not been decided upon by the Waimakariri District Council. The saline incursions will likely be exacerbated by sea level rise, and modelled decreasing flows in the Waimakariri River in the summer time.

3.7 Environment Canterbury is continuing to undertake salinity monitoring during summer months in the Kaiapoi River, to assess when saline incursions occur, and further assess the level of relationship of saline incursions in the Kaiapoi and Cam Rivers to the minimum flow levels in the Waimakariri River.
4. **ISSUES AND OPTIONS**

**Options**

4.1. Options that have been discussed by the Kaiapoi River Rehabilitation Working Party include:

(1) Maintaining the status quo, with use of the floodgates only during floods in the Waimakariri River, with manual operation.

(2) Using the flood gate as a tide gate during periods of saline incursion, with manual operation, as and when there are low flows in the Waimakariri River. Manual operation however is labour intensive.

(3) Modifying the flood gate for automated use as a tide gate for periods of saline incursions (i.e. low flow in the Waimakariri River). Automated salinity meters downstream of the floodgate, would transmit information of saline incursions occurrences via telemetry. This is the option recommended by the Kaiapoi River Rehabilitation Working Party, and therefore has been detailed further in this report.

4.2. Other combinations of the options are also possible, as such automated salinity meters downstream, however to retain the manual operation of the floodgate.

4.3. As Environment Canterbury is the asset-owner, any decisions for design and budget allocation for modification of the floodgate would need to be in consultation with Environment Canterbury.

*Issues for automation of the Cam River Floodgate*

4.4. The adoption of the floodgate to be used as a tidegate has many engineering, economic, ecological and cultural considerations.

*Engineering and hydrology*

4.4.1. The floodgate would be required to be modified to enable ease of opening and closing, to withstand corrosion from saline water, and to be submerged for longer periods. Winch motors have been proposed to be installed by Environment Canterbury as an opening and closing mechanism, with a modification to the lifting mechanism.

4.4.2. A power supply to the floodgate would be required to be installed for automation of the gate. Saline telemetry meters could operate off a mains, battery or solar supply.

4.4.3. Back-up power would need to be considered, as well as the increased cost of ongoing maintenance, due to salinity exposure, increased use and more components.

4.4.4. Telemetry would need to be installed for the salinity meters, with a party, such as Environment Canterbury or Waimakariri District Council, who would receive and monitor the information. The telemetry meters would need to be carefully placed to ensure that salinity changes were detected within appropriate timeframes.

4.4.5. Security of the tidegate and salinity meters from vandalism or any activities that could endanger the public would need to be considered.

4.4.6. An assessment of the hydraulic and capacity effects on the Cam River and other waterbodies, such as the Kaiapoi River would need to be carried out. This should specifically examine what the effect of a fresh or flood in the Cam River would
have if the tidegate was closed, whether there would be sufficient flushing flows to clear built-up sediment behind the tidegate when opened, and salinity effects for the Kaiapoi River. Potentially the mechanism for the tidegate could be designed to have an override function to be open if floodwater needed to drain downstream, to not flood properties upstream of the Cam River Tidegate.

4.4.7. Hydrological investigations should consider the potential effect of raised groundwater levels upstream of a Cam River Tidegate. Investigations should also consider the effect of a Cam River tidegate for consequential effects on flood conveyance of the lower Ohoka Stream, lower Cust River and Silverstream and associated flood risk for properties adjoining the lower reaches of these waterways with higher tidal inflow as a consequence of less upstream conveyance into the Cam River system.

Economic

4.4.8. There is potential that preventing saline incursions with a tidegate would protect an area of productive land or with infrastructure upstream of the tidegate from saline effects in the medium term, but potentially not in the longer term, due to sea level rise. It had not been investigated in this report how substantial this area could be.

4.4.9. There is an opportunity cost to pursuing a feasibility study for automating the floodgate i.e. the budget could possibly be allocated to other projects to achieve the intended benefits, however a wider scope of potential options has not been carried out.

Ecology

4.4.10. Some species, such as the introduced Canadian oxygen weed (*Elodea Canadensis*) do not tolerate prolonged periods of saline water. Therefore these species would benefit from prevention of saline incursions through the operation of the tidegate. However many species, often thought of as freshwater species, such as brown trout, īnanga and eels, also inhabit saline estuarine environments. Freshwater mussels (*Echyridella menziesii*), that are known to be present in the Kaiapoi river above the mouth of the Cam River, and therefore potentially also around the Cam River Floodgate, are saline tolerant to some degree. Saline tolerant weedbed species, such as the native plant *Ruppia megacarpa* would naturally establish from seed source nearby if a tidegate was not in operation.

4.4.11. The tidegate would likely create a fish passage barrier that could prevent migratory fish (both introduced and native species) from completing their lifecycle. However, to what severity the tidegate would be a barrier requires further investigation of the time of year and length of time that the tidegate would be operating. A fish passage facility, such as a ‘window’, as that designed for the Taranaki Floodgate, could be a potential solution to enable fish passage. However, it should be noted that the Taranaki Floodgate ‘window’ is a novel design, yet to be monitored for results.

4.4.12. The tidegate, by changing the location of the saltwater wedge, where freshwater overlays saline water, would likely change the location of īnanga spawning habitat, located in 2019 by Aquatic Ecology Ltd for around the confluence of the Cam River with the Kaiapoi River. It would recommended, and potentially a consent condition, to monitor the new location(s) of the spawning habitat, and ensure that an appropriate vegetation cover of grasses, with low shading is provided at these locations.
4.4.13. One of the hypothetical benefits of a tidegate is reducing inflow of high suspended sediment backwash from the Waimakariri River flowing into the Cam River system, where it removes habitat for invertebrates and fish species that use interstitial spaces on and around rocks.

4.4.14. Potentially the current ecosystem and species present have already adapted to the saline incursions due to the length of time that they have been occurring.

Cultural

4.4.15. There are potential effects to mahinga kai, such as changes in the abundances of species that are available for harvest.

4.4.16. There are potential effects on silent files areas, such as the changes to water levels behind the Floodgate location, upstream of the Cam River.

Social

4.4.17. The social benefits, of maintaining a freshwater environment versus allowing an increasing estuarine environment to establish, have not been assessed with the local community. The preference for a freshwater environment or tidal / estuarine is a subjective question that would likely have a range of views.

4.5. The feasibility studies that are proposed to be carried out with the budget request of $15,000 are:

4.5.1. Assessment / advice on all consents and permissions that would be required to undertake the modification to a tidegate, with status of each proposed activity in each plan (i.e. permitted, restricted discretionary, controlled activity).

4.5.2. A concept design and costing of the works by a suitably - qualified engineer.

4.5.3. Preliminary consultation with Te Rūnanga Ngāi Tūāhuriri (potentially via Mahaanui Kura Taiao Ltd and/or directly).

4.6. The Management Team have reviewed this report and support the recommendations.

5. **COMMUNITY VIEWS**

5.1. **Groups and Organisations**

5.1.1. Kaiapoi River Rehabilitation Working Party

The Working Party agreed with a motion at a meeting on the 25 September 2019 that it would request funding for a formal investigation and engineering options and implications report into future floodgate automation, with funding to be sought for this from the WDC annual plan budget.

5.2. **Wider Community**

5.2.1. The wider community has not been consulted on the proposal to automate the Cam River Floodgate. Individual members of the community have raised the idea with the Kaiapoi River Rehabilitation Working Party and Waimakariri District Council.

6. **IMPLICATIONS AND RISKS**

6.1. **Financial Implications**
6.1.1. It should be noted that this report requesting $15,000 is for a feasibility study only. This is recommended to come from the District-wide rate.

6.1.2. Environment Canterbury estimates the cost of full automation of the floodgate, including link to an electronic salinity sensor is approximately $45,000 to $50,000. An additional cost is the resource consents to approve the changed floodgate operation, estimated at $30,000, project management fees, and project contingencies. These estimates include costs of the investigations needed to support the consent processing (see Table 1).

6.1.3. A cost-sharing agreement with Environment Canterbury is recommended to be discussed, particularly if the project proceeded to construction stage.

**Estimate of Costs for Full Automation (provided by Environment Canterbury)** Note these estimates are a high level first approximation. Costs for investigations and consenting could be quite different, and excludes the on-going increased cost of maintenance.

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigation/Design – Mechanical/Electronics/Safety/Security</td>
<td>$10,000</td>
</tr>
<tr>
<td>Downstream Salinity Meters/Data Loggers/Telemetry</td>
<td>$5,000</td>
</tr>
<tr>
<td>Power to downstream Salinity Meter – 240V/Battery/or potentially solar</td>
<td>$3,000</td>
</tr>
<tr>
<td>Upstream Salinity Meter/Data Logger/water level recorder/Telemetry</td>
<td>$5,000</td>
</tr>
<tr>
<td>Power to upstream Salinity Meter and Cam Floodgates</td>
<td>$6,000</td>
</tr>
<tr>
<td>Power winches (2)</td>
<td>$2,000</td>
</tr>
<tr>
<td>Fitting and modification – lifting mechanisms</td>
<td>$5,000</td>
</tr>
<tr>
<td>Fish Passage modifications</td>
<td>$3,000</td>
</tr>
<tr>
<td>Over-ride systems and back-up power</td>
<td>$5,000</td>
</tr>
<tr>
<td>Electronics</td>
<td>$3,000</td>
</tr>
<tr>
<td>Investigations for Consenting</td>
<td>$15,000</td>
</tr>
<tr>
<td>Consents for converting to a tidegate as well as for Salinity Meters</td>
<td>$15,000</td>
</tr>
<tr>
<td>Professional fees for project management</td>
<td>$30,000</td>
</tr>
<tr>
<td>Contingencies (30%)</td>
<td>$32,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$139,000</strong></td>
</tr>
</tbody>
</table>

**Table 1**: Estimate of costs to automate the Cam River Floodgate

6.2. **Community Implications**

6.2.1. The implications for community members would be varied, with advantages and disadvantages depending on;

6.2.1.1. The subjective preference for freshwater or estuarine environments;

6.2.1.2. The degree of environmental effects (yet to be established in an Assessment of Environmental Effects), such as the level of saline inundation prevented, and effect on local ecology, flooding and sedimentation for the Cam River and surrounding waterways.

6.3. **Risk Management**

6.3.1. It is recommended to lead a wide community discussion with our coastal communities in the District regarding response strategies for increasingly saline environments from sea level rise, and for any advocacy to change minimum flows set for the Waimakariri River. Otherwise, there is a risk that budget could be allocated to conflicting response strategies, such as to protect the lower Cam River freshwater environment from saline incursions with a tidegate, or
encouraging saline-tolerant weedbeds to establish, which could provide coastal erosion protection in the future.

6.3.2. In the longer term, it cannot be assumed that a tidegate would be sufficient to maintain a freshwater environment, with increasing sea level, and potential saltwater inundation of groundwater along the coast. There is a risk that installation of a tidegate would incorrectly signal to the community that a freshwater environment could be maintained into the future.

6.4. Health and Safety

6.4.1. A health and safety risk assessment to the public of more regular opening and closing of the floodgate, as a tidegate, would be included as part of the feasibility study.

6.4.2. Assessment of Environmental Effects of the automated tidegate proposal would require a contractor conducting fieldwork to meet health and safety requirements.

7. CONTEXT

7.1. Policy

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

7.2. Legislation

7.2.1. Consents would be required under the Canterbury Land and Water Regional Plan, District Plan (under the Resource Management Act 1991). These could potentially be notified or non-notified consent applications.

7.2.2. Permission to obstruct fish passage would be required under the Freshwater Fishery Regulations 1983 (Part 6).

7.2.3. Additional consents and permits would likely be required, such as signalled by the proposed National Policy Statement—Freshwater Management from the Ministry for the Environment regarding fish passage.

7.3. Community Outcomes

7.3.1. Our district has the capacity and resilience to quickly recover from natural disasters and adapt to the effects of climate change.

7.3.2. There is a healthy and sustainable environment for all

7.3.3. Harm to the environment from the impacts of land use, use of water resources and air emissions is minimised.

7.3.4. Cultural values relating to water are acknowledged and respected.

7.4. Delegations

7.4.1. The Council holds the authority to allocate budget in the Annual Plan.
MINUTES JOINT WORKING PARTY
KAIAPOI RIVER REHABILITATION PROJECT
ENVIRONMENT CANTERBURY AND WAIMAKARIRI DISTRICT COUNCIL

MEETING IN THE KAIAPOI SERVICE CENTRE COUNCIL CHAMBERS
176 Williams Street, Kaiapoi
Wednesday 25 September 2019 at 4:00pm – 5:30pm

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Oversee the work required to scope in-stream proposals for improving water quality, navigability, flood hazard management, amenity and recreation in the Kaiapoi River.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Party Members</td>
<td>Neville Atkinson (apologies for lateness); Claire McKay (Environment Canterbury); Michael Blackwell (Waimakariri Zone Committee); Kevin Felstead (Waimakariri Deputy Mayor – Chair of this Meeting); Sandra Stewart (Kaiapoi-Tuahiwi Community Board).</td>
</tr>
<tr>
<td>Staff Advisors (as required)</td>
<td>Adrian Meredith; Andrew Arps; Brian McIndoe (Environment Canterbury) Grant McLeod, Sophie Allen, Duncan Roxborough, Janet Fraser, Gerard Cleary (Waimakariri District Council)</td>
</tr>
<tr>
<td>Apologies</td>
<td>Position vacant (Mahaanui Kurataiao Ltd); Position vacant (Te Ngāi Tūāhuriri Rūnanga). Owen Davies, Chris Brown (Waimakariri District Council)</td>
</tr>
<tr>
<td>Attachments</td>
<td>Finalised Comprehensive Planting Plan Prepared by Tori Stableford Notes: Cam River Floodgates to Tidegates Prepared by Brian McIndoe</td>
</tr>
</tbody>
</table>

Key Objective for the Working Party:

Oversee preparation of a report, initially for consideration by the Kaiapoi Community Board, and then by Environment Canterbury and Waimakariri District Council, setting out a possible costed programme of work that would be required to meet the water quality objectives, navigability requirements, flood hazard management, amenity and recreation imperatives for the Kaiapoi River.
Business

1. Welcome and Apologies

Cr. Kevin Felstead chaired the meeting. Also present were Michael Blackwell (Waimakariri Water Management Zone Committee), Sandra Stewart (Kaiapoi Tuahiwi Community Board), Neville Atkinson (Kaiapoi Tuahiwi Community Board – apologies for lateness), Claire McKay (Environment Canterbury).

Apologies were received from Jason Eden on behalf of Ngāi Tūāhuriri and Mahaanui Kurataiao Ltd.

Moved: Sandra Stewart  Seconded: Kevin Felstead

CARRIED

2. Confirmation of Minutes

Minutes of a meeting of the Kaiapoi River Rehabilitation Working Party held on Wednesday 20 March 2019

RECOMMENDATION

That the Working Party:

(a) Confirms as a true and correct record the minutes of a meeting of the Working Party held on Wednesday 20 March 2019.

Moved: Sandra Stewart  Seconded: Kevin Felstead

CARRIED

3. Review of Comprehensive Planting Plan

Janet provided an overview of the plan to the Working Party. During the meeting the plan was workshopped and its provisions were generally agreed among all present.

Brian confirmed that ECan will undertake willow control through the Kaiapoi River between the Coastguard and the Askeaton Reserve in January and February 2020. Dead trees will be removed and damaged trees will be pruned. Stumps will be left in the lower banks to stabilise them.

Brian noted the risk of wave lap erosion destabilising the river stopbanks in the areas where the willows are removed.

It is intended that the WDC terrestrial and wetted edge planting programme will provide infill around the areas where willows have been removed later in 2020, as shown in the plans.

For placement of plantings, Brian notes that flax and other “heavier” plants and shrubs need to be at a distance of 1m from the toe of the stopbank to maintain their stability. Other lighter/smaller plants including grasses can be planted up to the toe of the stopbank. No plants should be placed directly on the side of the stopbanks.

Andrew noted that Riverside Nurseries (Natural Habitat Landscapes) have a large number of low cost wetland plants that will need to be planted out shortly.
Action: Sophie to follow up with Riverside Nurseries regarding the suitability of these plants for the Kaiapoi River planting and for other pending WDC wetland planting projects.

Note: the plant list was subsequently reviewed by Sophie and was not considered suitable for the pending Kaiapoi aquatic or terrestrial plantings.

An updated version of the planting plan will be recirculated to all participants following the meeting.

The plan is a “live” document, intended for ongoing update as a working document.

Note that the programme outlined in Section 7 includes funding to implement much of the comprehensive planting plan in 2019/20 and 2020/21. Note that some decisions on shrub/tree removal will however be referred to the Kaiapoi – Tuahiwi Community Board for decision.

4. **Ongoing Plant Maintenance & Weed Control**

The Working Party agreed to recommend that an ongoing plant maintenance programme be established which will undertake:

a) Ongoing removal of juvenile exotic trees (including juvenile willows) and weeds, including ivy and yellow flag iris, inside the stopbanks
b) Infill planting as required to fill gaps and replace dead plants
c) Promote viability of existing terrestrial native plantings
d) Remove raupo cages from the previous year aquatic wetland plantings

Note that ongoing willow control is a function of Environment Canterbury and will not be included in the proposed Waimakariri District Council plant maintenance programme, other than for growth of juvenile plants.

It is suggested the Working Party recommend that the Waimakariri District Council include an ongoing budget of approximately $2,000 per annum commencing in 2020/21. The budget will be revised once detailed cost estimates from Delta Parks Contractors are received and an appropriate budget is recommended to be included to cover this work.

This programme would continue for a period of at least 4 years and be used for ongoing maintenance inside the stopbanks. This is intended to protect the viability of the newly establishing native plants, continue infill planting as required and provide ongoing removal of noxious or other problem weeds.

Action: Grant to include budget in 2020/21 Annual Plan.

Note: subsequent to the meeting Delta declined to undertake the proposed plant maintenance works. Therefore Wai-Ora Landscapes (or similar ecological restoration company) will now be approached to undertake the works. The works will be funded from the Greenspace Account and rated district wide as a component of the Parks Maintenance Programme.

5. **Option to use Dredged Spoil to Widen Stopbanks**

There is an option to utilise some of the dredged river spoil to widen stopbanks. To date the marina basin dredging has excavated material that is approximately half gravelly sand and half fine silts. The gravel/sand material is sitting in stockpiles adjacent to the dewatering basin and is ready for further reuse. The silty material remains within the basin to further dry before it will be extracted and stockpiled.

Brian advises that the area between Hall Street and the Corcoran Basin is suitable and desirable for stopbank widening. The compaction and stopbank design would involve
commencing a bench at 1m below the top of the current stopbank (e.g. the bench highest point at approximately 3mRL), with a 3:1 side batter from the existing stopbank to the newly formed outer bank toe. The bench would be in the form of a wider ramp extending from the landward side of the existing stopbanks.

However there is a stormwater asset traversing the toe of the stopbank for the full distance between Hall Street and the Corcoran Basin.

**Action:** Janet will follow up with the drainage team about potential use of the dredged spoil to widen this area of stopbank.

Other possible uses of the dredged spoil are:

- Build-up of slumped land at the Askeaton Reserve
- Wetland in-fill in the Kaiapoi wastewater treatment plant
- Build up other low lying land in the Regeneration Zone

The reuse of material for any of the above options is subject to pending contamination and salinity testing which will determine suitable future land uses.

A further factor is spoil composition. This will determine whether the material is able to be suitably compacted for reuse in widened stopbanks or other types of land use.

If no particular areas are identified for stopbank widening, then a default option for use of the balance of spoil not required for other purposes is for it to be bulldozed into the side of the stopbanks along Charles Street. Any material incorporated into the stopbanks will be suitably compacted.

### 6. Updates

**Adrian Meredith – Update on salinity monitoring in Kaiapoi River**

Adrian noted the salinity probes are now being put back in the Kaiapoi River to record saline incursions this summer. These will show any effects of the dredging on degree of saline intrusion affecting the river as a result of the deepened river bed contours.

**Sophie Allen – Waimakariri District Council views on salinity report/ pigeon control options**

*Kaiapoi River salinity* - Sophie commented on the discussion among the Utilities and Roading Committee about the considerations raised in Adrian’s report on increasing salinity in the Kaiapoi River. The uncertainties concerning future effects were recognised. The Committee did not take a position on preferred response strategies at this stage. However it acknowledged that the future Council/ community response will likely involve a need for local adaption to the new conditions in the river including adapting to potential effects in the lower tributaries which are also affected by ongoing saline intrusion.

**Pigeon control** – The Roading department is seeking a price from SICON to implement the potential options to prevent pigeons from nesting beneath the Williams Street Bridge. The investigations are in progress but the pigeon removal operation may not be undertaken this financial year.

The options include blocking nesting locations with mesh wiring or with solid inserts. Various design options to block the pigeon access are being considered by the Roading team. The trapping of pigeons is required in advance in conjunction with the works so the colony does not immediately relocate to an alternative location. The accumulated faecal matter beneath the bridge will also need to be removed before the barriers are installed.
Andrew Arps – Update on Environment Canterbury terrestrial planting

Andrew is awaiting an update from Park Ranger Greg Stanley who undertook the river terrestrial planting over the previous year. Once provided this update will be circulated to the Working Party. Information on any further terrestrial planting to be undertaken by ECan along the Kaiapoi River will also be provided.

Grant McLeod - War Memorial Redevelopment

Grant described the proposal for the War Memorial area is likely to be in the form of an investigation paper or concept design presented to the Kaiapoi Community Board for consideration.

Specific feedback during the meeting was provided about the existing shrubbery surrounding the War Memorial. This area was noted to be providing current habitat for Tui and other native birdlife. It also provides shelter for people walking along the river during easterly winds. A design proposal or discussion document will be taken by Grant to the Kaiapoi Tuahiwi Community Board in the 2019/20 financial year. This could include the following considerations:

- Protecting currently established bird habitat
- Establishing view shafts over the river if/ where appropriate
- Consultation with the Kaiapoi RSA
- Retaining pedestrian shelter from easterly winds
- Opening up the existing walkway through the existing shrubs down to the water’s edge

Brian McIndoe – Willow removal and automating the operation of the Cam Floodgate

Willow Removal – Brian noted the ECan willow control will be undertaken in January and February 2020 between the Coastguard Ramp and the Askeaton Reserve.

Cam Floodgate- ECan staff have identified that it is technically possible to fully automate the Cam floodgate. The gate could be electronically linked to a salinity gauge that could automatically lower the gate into the river during times of saline incursion.

Brian estimates the cost of full automation of the flood gate including link to an electronic salinity sensor is approximately $45,000 to $50,000. An additional cost is the resource consents to approve the changed floodgate operation, estimated at $30,000. These estimates include costs of the investigations needed to support the consent processing. A further update paper was provided by Brian subsequent to the meeting and is attached to these minutes, for information.

The intent of the automated floodgate operation is to avoid or limit saline intrusion into the lower Cam River during times when there is high salinity on the incoming tide. This would retain a freshwater environment in the lower Cam River for longer periods and minimise effects on its freshwater species. The gate automation would improve habitat for freshwater species such as freshwater mussels.

A further benefit is reducing inflow of high suspended sediment backwash from the Waimakariri River flowing into the Cam River system, where it then sloshes back and forth with the tide.

Some implications of the floodgate operation that would need to be assessed through the Environment Canterbury consent process are:

- The requirement to obtain Environment Canterbury (and Department of Conservation) resource consent/ approval to block fish passage
- Design of a suitable fish bypass, ensuring fish passage into the Cam River system whilst minimising saline encroachment
- Maintain freshes and outflow / conveyance from the Cam River during wet weather in the foothills catchment, which can assist to flush sediment and weeds from the system
- Consequential effects on salinity in the Kaiapoi River mainstem and upstream tributaries, if saline water is pushed further upstream in the Kaiapoi River
Consequential effects on flood conveyance of the lower Ohoka Stream, lower Cust River and Silverstream and associated flood risk for properties adjoining the lower reaches of these waterways with higher tidal inflow as a consequence of less upstream conveyance into the Cam River system.

The Working Party agreed that it will request funding for a formal investigation and engineering options and implications report into future floodgate automation. Funding will be sought from the WDC annual plan budget.

**Action:** Sophie to work with Brian McIndoe to draft a report to the Utilities and Roading Committee, then to Council requesting budget for the 2020/21 annual plan to formally investigate engineering options and implications of automating the Cam River floodgate for saline incursion response.

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**Duncan Roxborough – Kaiapoi River Dredging**

The dredging of the marina basin is near complete, with the Riverview Pontoon installed and a deep berthing pocket established for vessels berthing at the pontoon. The pontoon can be used now, but its full construction will be complete once its services (lights and power) are installed.

A small pocket of dredging adjacent to the wharf was not completed and final dredge depths in the marina basin have not yet been reached.

The dredging will recommence next year in the period from 1 June to 15 August. During this time the Council will complete the balance of the marina basin berthing dredging and will excavate the navigation channel from the Coastguard to the Kaiapoi / Waimakariri confluence.

Navigation dredge channel volumes are less than originally anticipated. The minimal channel dimensions (10m wide flat bottom channel at -2.5mRL) could potentially be widened further from the original channel design plans, within the existing contracted extraction allowance.

**Janet Fraser – Alternative Backhoe Dredge Consents**

The Council is discussing consent conditions with Environment Canterbury for alternative backhoe dredging consents. These will be needed to dredge small pockets (with a long reach digger on a barge) where larger boulders and gravels in the river cannot be sucked into the suction pump hose and pumped to the dewatering basin. This will enable the Council to complete all of the intended dredging next winter.

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**7. General Business**

**7.1 Proposed Forward Work Programme for Waimakariri District Council**

It is proposed to continue to implement the previously scoped Kaiapoi River Rehabilitation Projects. The identified projects and updated proposed implementation dates (and indicative budgets) are outlined in the following table.

Combining available Kaiapoi River aquatic planting budgets, the Waimakariri District Council currently has approximately $18,000 budget available in 2019/20 to continue aquatic planting, terrestrial planting and weed control works between the Mafeking Bridge and the Courtenay Confluence.

A further site visit of the planting trial area is proposed with the Working Party in November 2019. This will be held prior to commencing the summer planting and weed control programme and will finalise the 2019/20 aquatic and terrestrial planting locations.
The following locations and activities are currently proposed:

**Table 7.1: Summary Proposed Kaiapoi River Rehabilitation Programme**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extend aquatic planting to Courtenay Confluence</strong></td>
<td>Extend aquatic planting from Mafeking Bridge to Courtenay Confluence</td>
<td>2018/19</td>
</tr>
<tr>
<td></td>
<td>Augment previously successful planting trial areas with additional plantings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weed and willow control to ensure available light wells</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yellow flag iris control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Augment existing terrestrial planting with new native planting on lower river banks</td>
<td></td>
</tr>
<tr>
<td><strong>Kaiapoi River Navigation Dredging</strong></td>
<td>Complete navigation channel safety component of Kaiapoi River dredging</td>
<td></td>
</tr>
<tr>
<td><strong>Gravel Beach/Wetland</strong></td>
<td>On raised shelf at corner of Charles and Smith Street adjacent to fishing hole</td>
<td></td>
</tr>
<tr>
<td><strong>Sediment trap at Mafeking Bridge</strong></td>
<td>Create a slow flow channel and major sediment trap with central planted island</td>
<td></td>
</tr>
<tr>
<td><strong>Realign River Bend at Smith/Charles St Corner</strong></td>
<td>Requires earthworks and further consultation with Fish &amp; Game and Ngāi Tūāhuriri.</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Includes $10,000 per annum from Waimakariri Water Management Zone biodiversity funds, with the balance from the Kaiapoi urban drainage account.

The proposed funding allocation is indicative. It is likely that funding for some projects may exceed the above estimates and for other projects may be less than estimated.

The Working Party has progressed proposals on the basis that a 50% cost share will be provided by the Waimakariri District Council and Environment Canterbury for each project. The programme above is currently budgeted by Waimakariri District Council, including underwriting the requested 50% Environment Canterbury cost share to enable the works to proceed.

The $10,000 per annum allocated from Waimakariri Water Management Zone biodiversity funds are a Waimakariri District Council contribution to the Zone Committee work programme. These are not Environment Canterbury Immediate Steps funds.

The Working Party may wish to reiterate its previous request to Environment Canterbury to provide a 50% cost share to contribute to the continuation of the river rehabilitation programme (see previous meeting minutes).
8. **Recommendations**

THAT the Working Party:

(a) **Endorses** the continuation of the Kaiapoi River Rehabilitation programme as outlined in Table 7.1.

(b) **Notes** the proposed funding in Table 7.1 is indicative, and final allocations may differ among the recommended projects following more detailed planning with the project contractor/s.

(c) **Recommends** the Waimakariri District Council includes an ongoing inner stopbank maintenance programme potentially with Wai-Ora Landscapes or other selected contractor, estimated at $2,000 per annum or other price as agreed with the selected contractor, and be ongoing for at least four years. This programme is to cover weed removal, provide for infill planting as required and protect the viability of existing plants.

(d) **Recommends** that Environment Canterbury consider through its Annual Plan process provision of a $25,000 budget in 2021/22 to contribute to the cost of establishment of the slow flow channel, central-island and major sediment trap formation upstream of the Mafeking footbridge.

(e) **Requests** Waimakariri District Council staff prepare a report that requests Annual Plan 2020/21 budget provision from the Waimakariri District Council to cover investigation of issues and options to automate the Cam River floodgate, electronically connected to a salinity sensor.

(f) **Notes** recommendation (e) would seek in kind support from Environment Canterbury of specialist advice regarding the automation of the floodgate.

(g) **Notes** a Working Party site visit will be arranged in November 2019, to review specific sites for Waimakariri District Council aquatic and terrestrial planting in the 2019/20 year.

Moved: Neville Atkinson  Seconded: Sandra Stewart  CARRIED

9. **Other General Business**

Sandra queried how the Waimakariri River minimum flow allocation is currently measured and restrictions applied. For instance, how is the 41 cumecs cut off point for abstractions measured and how are the in-river flow gauge devices calibrated. Environment Canterbury staff have agreed to provide an explanation report on this process to the next meeting of the Waimakariri Water Management Zone Committee.

10. **Closing and Next Meeting Date and Time**

It was raised that this meeting may potentially be the last meeting of the Kaiapoi River Rehabilitation Working Party, with a proposal to incorporate the Party into the WDC Land and Water Working Group – to be discussed by the newly-elected Council. Gerard Cleary thanked the Party for their hard work over many years.
1.1 This report summarises baseline water quality data for urban stormwater areas of Rangiora, Woodend, Kaiapoi, and Oxford, and raises issues identified. Comparison was made to exceedance levels in Schedule 5 of the Canterbury Land and Water Regional Plan, (LWRP), or the ANZECC Water Quality Guidelines for Fresh and Marine Water Quality, (2000).

1.2 Waimakariri District Council undertook baseline water quality sampling in 2014 (Rangiora) and 2016 (Woodend, Kaiapoi, Oxford) to inform network stormwater consent applications. Environment Canterbury also undertakes regular (monthly) water quality sampling in some of the downstream receiving environments, which has also been summarised in this report where applicable.

1.3 It should be noted that water quality sampling carried out by Waimakariri District Council was for a limited time period (either 2014 or 2016), therefore results should be noted with caution that they may not be representative of the current state. WDC Stormwater monitoring programmes, a condition of the comprehensive network consents, will provide more information on general water quality and the source of contaminants.

1.4 In general, a number of the contaminants are sourced rurally and the guidelines are exceeded prior to entering an urban area. However for some contaminants there was an increase in concentration through the urban area, indicating that the urban discharges contain these contaminants also.

1.5 It is recommended that contaminants such as *E. coli*, and phosphorus should be investigated further by Environment Canterbury within the rural part of each catchment. It is also recommended that Environment Canterbury consider investigating nitrogen contamination sources in the rural areas as rural catchments consistently exceed the ANZECC guidelines for Total Nitrogen.

1.6 As expected, moderate rain events (such as a ‘first flush’ event) were when exceedances of contaminants were often measured.

1.7 Specific issues identified from the water quality results include:

*Rangiora*
Most exceedances of contaminants occurred during a moderate wet weather event (in May), which was much larger than a first flush rainfall event.

**Woodend**

Most of the contaminants tested exceeded the guidelines in at least one of the sample rounds. Most exceedances of contaminants levels (as per the LWRP) occurred in a first flush rainfall event (December 2016), which was the largest rainfall event captured during the sampling period. Phosphorus and *E. coli* were found to be urban and rural sourced in Woodend.

**Kaiapoi**

Most of the contaminants tested exceeded the guidelines in at least one of the sample rounds. Most exceedances occurred from a first flush rainfall event, (December 2016 sampling round), which was the largest rainfall event captured during the sampling period.

Exceedances of zinc and copper from an industrial catchment that enters the Kaikanui Stream has been identified by WDC staff as a ‘hot spot’ for follow-up investigations.

**Oxford**

Most of the contaminants tested exceeded the guidelines in at least one of the sample rounds. Most exceedances occurred from a first flush rainfall event, (December 2016 sampling round), which was the largest rainfall event captured during the sampling period. Some exceedances were also during a minor wet weather event in August 2016.

Exceedances of zinc and copper, possibly from an rural overland flow that enters the Finley’s Drain, has been identified by WDC staff as a ‘hot spot’ for follow-up investigations in conjunction with Environment Canterbury staff.

**Attachments:**

Summary of sample sites and graphs

i. Rangiora Stormwater Quality Monitoring Baseline Programme (Trim 140728079529)
ii. Woodend Stormwater Quality Monitoring Baseline Report (Trim 180822095021)
iv.

**RECOMMENDATION**

THAT the Utilities and Roading Committee recommends

THAT the Council:

(a) **Receives** report No. 190618085491.

(b) **Notes** the issues raised in stormwater quality baseline monitoring reports, summarised in this report, for;

   i. Rangiora (TRIM 140728079529);
   ii. Woodend (TRIM 180822095021);
   iii. Kaiapoi (TRIM 190709096637); and
   iv. Oxford (report to be completed).
(c) **Notes** that WDC staff are investigating some issues raised by the stormwater quality baseline monitoring results, in conjunction with Environment Canterbury staff where appropriate.

(d) **Notes** that a report on the progress on the stormwater network consent applications, associated monitoring programmes, and proposal for data management will be presented to the Utilities and Roading Committee in early 2020.

(e) **Notes** that budget allocation for urban stormwater quality improvements is anticipated to be presented to Council as part of the Long Term Plan process in 2020-21.

(f) **Circulates** this report to the Waimakariri Water Zone Committee and Community Boards.

**BACKGROUND**

Environment Canterbury has requested each of the Territorial authorities within the Canterbury region to submit comprehensive urban stormwater network consents for all major towns in each district. The Rangiora urban stormwater consent application, was the first to be lodged in the Waimakariri District in May 2019. Woodend was lodged in June 2019, with Kaiapoi and Oxford soon to follow by the end of 2019. Consent application requires the Waimakariri District Council (WDC) to propose a stormwater monitoring programmes for each urban area. The monitoring programmes focus on the urban stormwater discharge impact on the waterway, however also include stream health as non-compliance measures.

WDC has undertaken baseline sampling programme, with the purpose demonstrate of identifying the source of the waterway contaminants (see Table 1) and the current health of the waterways. Four sample rounds were completed, in both wet (including first flush) and dry conditions for each urban area.

In Rangiora, eight sites were sampled for Rangiora in the North Drain, North Brook, Middle Brook and South Brook.

In Kaiapoi, twelve sites were sampled for the baseline sampling programme in following waterways, Silver Stream, Kaiapoi River, Cam River Courtenay Stream and the McIntosh Drain.

In Woodend, seven sites were sampled in the Taranaki Stream, Waiora Stream, McIntosh Drain, Box Drain and a channel adjacent to the state highway at the south of Woodend.

In Oxford, seven sites were sampled in the Finleys Drain, Cust Main Drain, Cust Drain, Pearsons Drain and Flanagans Drain.

Oxford drains differ from the other town centres (Rangiora, Woodend and Kaiapoi), as they are often dry between rain events, and have hill-fed runoff. The drains in Rangiora, Woodend and Kaiapoi primarily have a spring-fed baseflow. This results in a difference in how contaminant loads are flushed into the receiving environment.

**Sources of contaminants**

Table 1: Sources of common urban contaminants.

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Major Contributing Activities (within Urban Limits)</th>
</tr>
</thead>
</table>

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| **Total Suspended Solids (TSS)** | **Earthworks and construction**  
| | **Residential gardening/soil disturbance**  
| | **Break down of organic material (e.g. leaf litter) in the kerb and channel**  
| | **Airborne particulates**  
| | **Sewerage overflows**  
| | **Sediment distributed via roads**  
| **Dissolved zinc** | **Commercial and residential roofs (unpainted/deteriorating galvanised)**  
| | **Vehicle use on roads – including vehicle tyre wear**  
| **Dissolved copper** | **Vehicle brake pads**  
| | **Industrial machinery operations and construction**  
| | **Exterior building surfaces (facades, down pipes, spouting)**  
| **E.coli** | **Wastewater overflows – human urban source**  
| | **Avian (bird droppings into open drains or urban properties) – natural urban/rural source**  
| | **Canine or feline (dog or cat faecal matter) – largely urban source**  
| | **Ruminant (cattle/sheep/deer droppings) – rural source**  
| **Hazardous substances** | **Industrial activities – various chemicals, risk of spills and leaks**  
| | **Residential activities (disposal of oil and paint residues, fuel leaks etc.)**  
| | **Hydrocarbons from vehicle use on roads and driveways**  
| **Dissolved Lead** | **Dissolved lead primary sources include but are not limited to road runoff (auto parts) and construction wastes (paints).**  
| **Nitrogen (i.e. nitrate, nitrite, ammonical – N, and Total Kjeldahl Nitrogen)** | **Nitrogen primary sources include but are not limited to fertilizers and sewerage.**  
| | **Note: Total Nitrogen is the sum of TKN + Nitrate-N + Nitrite-N and DIN is the sum of Total Ammoniacal-N + Nitrate-N + Nitrite-N.**  
| **Phosphorus** | **Phosphorus primary sources include but are not limited to fertilisers and sewerage. Phosphorus tends to attach to soil particles and moves into surface-water bodies from runoff.**  |
ISSUES AND OPTIONS

WDC staff have assessed what will be addressed as a rural and/or urban contaminant for each of the network stormwater consent applications (Table 2). WDC could be challenged to meet guideline levels of phosphorus and \textit{E. coli}, if the guideline values are used as a consent condition, due to the significant rural contributions of phosphorus and \textit{E. coli}.

Table 2: Definition by WDC staff of rural and/or urban primary contaminant sources for WDC network stormwater discharge consent applications. (Note: this classification is based on limited sampling, and includes assumptions made by WDC staff).

<table>
<thead>
<tr>
<th>Location</th>
<th>TSS</th>
<th>Dissolved zinc</th>
<th>Dissolved copper</th>
<th>\textit{E. coli}</th>
<th>Dissolved Reactive Phosphorous</th>
<th>Dissolved Inorganic Nitrogen</th>
<th>Total Ammoniacal Nitrogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rangiora</td>
<td>Urban/ Rural</td>
<td>Urban</td>
<td>Urban</td>
<td>Urban/Rural</td>
<td>Urban/Rural</td>
<td>Rural</td>
<td>Rural</td>
</tr>
<tr>
<td>Kaiapoi</td>
<td>Urban/Rural</td>
<td>Urban</td>
<td>Urban</td>
<td>Urban/Rural</td>
<td>Urban/Rural</td>
<td>Rural</td>
<td>Rural</td>
</tr>
<tr>
<td>Woodend</td>
<td>Urban/Rural</td>
<td>Urban</td>
<td>Urban</td>
<td>Urban/Rural</td>
<td>Urban/Rural</td>
<td>Rural</td>
<td>Rural</td>
</tr>
<tr>
<td>Oxford</td>
<td>Rural</td>
<td>Urban</td>
<td>Urban</td>
<td>Urban/Rural</td>
<td>Urban/Rural</td>
<td>Rural</td>
<td>Rural</td>
</tr>
</tbody>
</table>

Lead and Total Hydrocarbon levels were far below guideline values. Therefore they are not considered as priority contaminants for stormwater monitoring programmes.

Management of WDC water quality data is recommended to be improved with automation of data management processes, and an examination of what database will be fit for purpose with increased water quality monitoring for urban stormwater network consent compliance.

**Rangiora**

It was found that the bulk of the contaminants are sourced rurally and the guidelines are exceeded prior to the township. However for some contaminants there was an increase in concentration through the township, indicating that the urban area discharges these contaminants also, but in smaller quantities.

The concentrations of contaminants discharging from springs sometimes exceeded the guidelines, particularly in the Middle Brook. These springs source groundwater from rural recharge areas.

The baseline monitoring has shown that the rural areas have a significant impact on the health of the Rangiora waterways, and possibly others in the district. It is recommended that Environment Canterbury undertakes monitoring upstream of the townships to identify the source of these containments as many contaminant concentrations are exceeded prior to the urban limits.

Generally the TSS concentrations were below the LWRP guideline value, though they are increasing through the township, indicating that the township is contributing suspended solids to the waterways. The North Brook is the exception, where higher TSS concentrations seem to be discharging from a water race. As TSS concentrations were not elevated, TSS is not predicted to be adversely affecting aquatic life.

Generally the dissolved copper concentrations increased within the township; although it is also noted that the rural runoff appears to have copper concentrations higher than the guideline values. Dissolved copper is a proven urban contaminant and the 2014 WDC baseline programme has shown that the concentrations can exceed the guidelines in high runoff events.

The LWRP guideline for zinc (0.015mg/L) was exceeded in many of the wet weather sample rounds. In the dry weather sample round the dissolved zinc concentrations did not exceeded the guideline value.
Generally the dissolved zinc concentrations increase within the township; although it is also noted that the rural runoff appears to have zinc concentrations higher than the guideline values.

The ANZECC guideline for Total Nitrogen (0.614mg/L) was exceeded generally in both the dry and wet weather samples. For Dissolved Inorganic Nitrogen the LWRP guideline (1.5mg/L) was generally exceeded in both the dry weather sample (June) and the wet weather sample (May). Results indicated that nitrogen is not an urban contaminant. The nitrogen levels in the North and South Brooks are higher in the dry weather flow sample round than the wet weather samples. This indicates that water races and spring heads are contributing nitrogen to the Brooks.

The ANZECC guideline for Total Phosphorus (0.033mg/L) and the LWRP guideline for Dissolved Reactive Phosphorus (0.016mg/L), were exceeded generally in the wet weather samples. Results indicated that phosphorus can be an urban contaminant. An increase in concentrations of phosphorus through the township are thought to be caused by spring inflow and mobilising of the bed sediments in high runoff conditions.

Results suggest that rural runoff is a main contributor of *E.coli*, but also urban run-off to some degree, with concentrations of *E.coli* increasing through the urban area. During dry weather days there are generally very low levels of *E.coli* in the waterways, indicating that the springs do not contribute *E.coli* to the waterways. It is recommended that Environment Canterbury undertakes further monitoring of the rural catchments to locate the source of *E.coli*.

**Woodend**

It is recommended that contaminants such as *E. coli*, and phosphorus should be investigated further by Environment Canterbury within the rural catchment. Both of these contaminants exceed the LWRP guidelines in the rural zones, upstream of the urban limits.

Phosphorus was found to be more of an issue in Woodend’s waterways than nitrogen. In contrast to the distribution of nitrogen, it is the urban-fed waterways that demonstrate higher levels of phosphorus than the rural waterways. The majority of phosphorus in the samples is in the form of DRP (the more readily bioavailable form) rather than particulate or organic forms. This indicates the majority of phosphorus entering the stream is in a form which could readily contribute to eutrophication. TSS levels have a strong linear correlation with DRP and a noticeably weaker correlation with TP suggesting entrainment of sediment is not the main contributor to elevated levels of phosphorus.

There was a spike in zinc concentration in a minor rain event (August 2016), west of Rangiora Woodend Road (Box Drain). This is thought by WDC staff that it could be related to the low base flow (i.e. stagnant water) in this drain.

A ‘hot spot’ area for Total Phosphorus, Dissolved Reactive Phosphorus, and dissolved Zinc was found during a moderate rainfall event (December 2016) at Corner of Woodend Beach and Main North Road. This is thought by WDC staff to possibly be due to vehicle traffic on State Highway 1. However, test results to-date cannot definitively confirm the cause.

The concentrations of *E. coli* in the 2016 samples exceed the guideline values in seven instances, or 24% of the samples captured. Exceedances were particularly prevalent in the first flush event seen in December. Aside from the December event, the smaller October rain event was the only other event to result in an exceedance of the guideline value. The sites sampled during the minor wet weather event in August and dry weather event in September both demonstrated levels of *E. coli* comfortably below the guideline value.

1.1.1. Although less than half the guideline value, it is worth noting that the two sites in the Taranaki stream demonstrated the highest and most consistent base levels of *E. coli* levels observed during dry events. This is likely to be the result of consistent contamination upstream in the rural land areas. The urban areas generally exhibited low to no *E. coli* during dry weather events with extremely high levels after the first flush event in December.

**Kaiapoi**
Total suspended solids tended to be relatively low in Kaiapoi waterways, except for sites that are possibly influenced by tidal and/or tailwater from the Waimakariri River during high flows. Results showed that TSS is mainly an urban contaminant.

Copper was only detected almost exclusively in the first flush (December 2016) event. The results suggest inflows from Woodend (via Macint’s Drain) and runoff from the State Highway One are contributing copper to Kaiapoi waterways. The Oaks Reserve site, the only sample site to show detectable levels outside of the first flush (December 2016) event, is directly downstream of a Kaiapoi industrial area. The results show that copper is mainly an urban contaminant.

Dissolved Zinc is present in the majority of the urban-fed waterways however at relatively low concentrations at most of these sites. The notable exception to this is at the Oaks Reserve site on the Kaikanui Stream which significantly exceeded the guideline during both the wet weather events (August and December 2016). The results show that zinc is mainly an urban contaminant.

Dissolved Inorganic Nitrogen and Total Nitrogen shows elevated levels in the rural-sourced waterways such as Silverstream, Kaiapoi River and Courtenay Stream.

Phosphorus levels were highest in the first flush event (December 2016). Urban-fed waterways demonstrated higher levels of phosphorus (Total Phosphorus and Dissolved Inorganic Phosphorus) than the rural waterways. Sample sites in Silverstream and upper site on the Cam River returned TP and DRP levels below the guideline levels whereas the urban fed waterways all demonstrated phosphorus levels in exceedance of the guidelines.

**Oxford**

Oxford had a higher level of exceedances for particular contaminants than for the other town centres, particularly for Total Suspended Solids, Total Reactive Phosphorus, zinc and copper. This is thought to be due at least in part to the dry baseflow condition of most of the drains between rain events, but also potentially point source contamination and or wastewater entering the stormwater network (such as through a cross-connection).

**Pegasus**

A comprehensive stormwater network consent is already in place for the Pegasus urban area, therefore baseline water quality sampling has not been not carried out. Due to the design standards used for Pegasus, it is not anticipated that there would be any significant stormwater discharge issues. Potentially fertiliser application, for example from the golf course, could be contaminating stormwater, however this has not been investigated.

Next steps for WDC staff is to complete lodgement of all network stormwater consents, and continue to working on any point source issues identified from the sampling. A future report to the Utilities and Roading Committee, to be drafted early in 2020, will examine budget allocation in the Long Term Plan for stormwater improvements. These improvements are anticipated to be implemented from 2025-2035.

Reallocation of staff time, or additional staff resourcing is anticipated at this early stage to be able to lead the stormwater monitoring programmes, and implement stormwater improvement work for issues identified. As a recognition of the increasing resourcing needed for stormwater resourcing, the Stormwater Engineer position was created within the 3 Waters team in 2019.

The Management Team have reviewed this report and support the recommendations.

**COMMUNITY VIEWS**

**Groups and Organisations**

This report will be circulated to the Community Boards for their information and feedback.
**Wider Community**

There has been no consultation to-date for the wider community regarding the results and implications of baseline network stormwater quality monitoring results. WDC has contacted one landowner of a property that has been identified as potential point sources of contaminants, with a few other individual potential point sources to be followed-up.

**IMPLICATIONS AND RISKS**

- Financial Implications
- Community Implications
- Risk Management
- Health and Safety

**CONTEXT**

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

- **Legislation**
  
  (Resource Management Act 1991) – WDC has lodged a comprehensive urban stormwater consents are applied for under Section X of the RMA, and Section X of the Canterbury Land and Water Regional Plan.

- **Community Outcomes**
  
  There is a healthy and sustainable environment for all
  
  Harm to the environment from the impacts of land use, use of water resources and air emissions is minimised.
  
  Cultural values relating to water are acknowledged and respected.
  
  Harm to the environment from the spread of contaminants into ground water and surface water is minimised.

- **Delegations**
CARING FOR THE CAM
RUATANIWHA/CAM RIVER

To improve freshwater life in the Cam/Ruatanuiwa we need to stop excessive amounts of sediment entering the waterways. Environment Canterbury and Waimakariri District Council investigations show high levels of sediment are adversely affecting stream health. Action is needed.

What is being done
TRAPPPING AND TREATING - The Waimakariri District Council is installing sediment traps and drainage wetlands to help trap and remove sediment.
STREAM HEALTH - Environment Canterbury is monitoring instream health and has done a stream walk to assess the effects of current land management.

What you can do
SPOTTING AND STOPPING
Identify areas on your property where sediment enters waterways – and stop this happening.
Over the page you will find some top tips for spotting and stopping sediment from entering our waterways.

Check with staff at Waimakariri District Council and Environment Canterbury if you are considering carrying out larger-scale riparian enhancement on your property.

Make a start
You don’t have to do everything all at once, but it is really important that you make a start. Identify those areas with the most risk - follow these 3 key steps:

1 Keep animals out

2 Identify hotspot areas
- where sediment easily enters waterways on your property

3 Ensure a continuous buffer
- leaving long grass is just as effective as native planting

Make contact to discuss your ideas:
Anna Veltman
Land Management Advisor
Environment Canterbury
027 549 7646
anna.veltman@ecan.govt.nz

Sophie Allen
Water Environment Advisor
Waimakariri District Council
027 209 3210
sophie.allen@wmk.govt.nz

What’s GOOD
WATER QUALITY MONITORING: Low instream nutrients
STREAM WALKS: Stock are mostly kept well back from waterways and there are clear cobbles with strong flow. Good numbers of tuna (eel) and kōura (crayfish).

What’s NOT SO GOOD
WATER QUALITY MONITORING: Aquatic health
STREAM WALKS: Bank slumping and stock trampling was noticed in places

What’s BAD
WATER QUALITY MONITORING: Sediment & E coli
STREAM WALKS: An excessive amount of sediment is entering waterways. This has a detrimental impact on in-stream health, including native species.
Top 10 tips for SPOTTING AND STOPPING sediment entering waterways

1. Fence stock out of waterways including springheads and drains
   - Where land is used for stock grazing, erect fences at least 3m back from waterway / drain
   - Fences should be at least 3m back from top of streambank on flat ground, wider if on sloping ground
   - Where permanent fencing is still to be erected you can use a hot wire and portable trough system
   - Consider stream meander and stream flood paths when designing and placing fencing

2. Provide a permanent reticulated stock water supply
   - Use movable troughs when breakfeeding
   - If using stock drinking pads:
     » fence stock back to allow restricted access only
     » have a gravel or concrete standing pad with bund or mound to stop pugging and dung entering water
     » look to phase out and replace with troughs
   - A good stock water system helps improve stock health and productivity

3. Ensure regular stock crossing points have culverts or a bridge
   - Install culverts or bridges at stock crossing points
   - Get sizing and installation of culverts right to avoid failure and need for replacement
     - contact Waimakariri District Council or Environment Canterbury for advice on where to locate your bridge and about design requirements
   - Ensure bridges and culverts have raised sides or bunding to prevent direct run-off into waterway
   - Stop run-off from low points besides culverts and bridges - install low bunds to divert flow away from entering waterway

4. Check farm tracks, stock crossing points, culverts and bridges for runoff to waterways
   - If track is beside waterway, slope in opposite direction to avoid effluent and sediment flowing directly into waterway
   - Divert any track run-off away from waterway
   - Use regular cut-offs to direct water into bunded ponding areas in paddocks away from waterways
   - Consider riparian planting and permanently fencing out bunded ponding areas
   - Remove debris or sediment obstructions blocking free flow of water in waterways and drains - eg. wood debris collecting around culverts, broken or overhanging tree branches etc.

5. Make sure stream/drain banks are stable and well vegetated
   - Do not spray vegetation on streambanks
     - avoid bare banks as these are vulnerable to collapse
   - Consider battering back drain banks to reduce bank collapse – seek advice from local drainage engineers
   - Understand requirements if you are in a land drainage area – check with Waimakariri District Council and Environment Canterbury

6. Manage dry lands to avoid pugging and bed erosion
   - If intensively grazed, consider permanent fencing and leave well vegetated
   - Alternatively run a hotwire to fence out when stock are grazing
   - Or allow light grazing by:
     » either permanently or temporarily fence out lower end before it enters main drain/waterway
     » and consider riparian planting with native grasses

7. Locate hotspots and critical source areas
   - Identify hotspots where sediment run-off into waterways occurs most frequently – prioritise for action!
   - Hint – look carefully at:
     » drainage swales
     » bank slumping
     » wet spots / boggy areas in paddocks
   - Run a temporary hot-wire fence around low-lying wet areas in winter - graze area last if possible

8. Improve flood management
   - Remove debris blocking free flow of water or causing back eddy and bank erosion
     eq broken or overhanging willow tree branches etc
   - Trim trees alongside streams so they don’t cause blockages
   - Remove unwanted fallen branches in or near a waterway and dispose of away from the stream floodway area
   - Don’t stockpile fencing or building material, rubbish piles, or locate garden sheds and containers in areas prone to flooding
   - Keep drains, culverts, and bridges free of debris and sediment obstructions
   - Clear debris from boundary fences or floodgates as soon as possible following high flows.

9. Improve drainage management
   - Avoid spending your money on removing instream weeds if there is no need
   - For smaller drains walking up the channel in waders can create a fast moving zone
   - Cut weeds by hand and remove
   - Consider riparian planting to shade the drain so weed growth is permanently suppressed seek advice
   - Ensure good access to drains so they are easy to get to if you do need to clear them
   - If machine cleaning - use weed rake, not a bucket

10. Pro-actively plan and manage winterfeed blocks and arable crop paddocks
   - Avoid using paddocks with riparian margins for winterfeed cropping if at all possible
   - Follow GMP winter grazing tips provided by B+LNZ and DairyNZ
   - If cultivating paddocks for arable crops, leave a reasonable vegetated grass buffer between crop and waterway - top if necessary for weed control
   - Have a ‘Plan B’ for extreme high rainfall events
     - place straw bales in low spots such as gateways or drainage swales in winter feed blocks

A LITTLE DEBRIS CAN BE HELPFUL
Some woody debris is great for stream habitat and small stream animals that fish feed on, but too much can cause trouble.

CONSIDER RIPARIAN ENHANCEMENT
With indigenous plants - shade from taller growing species, especially on the north banks will help prevent weed growth - ask for advice!

KEEP ANIMALS OUT
The fence needs to be at least 3m back from top of streambank to maintain a grass filter of at least 2m (allowing for stock grazing under bottom wire)

DON’T STRIP-SPRAY HERBICIDE ALONG DRAIN EDGES AS THIS RESULTS IN BANK EROSION.
- carry out spot spraying only for woody weed control.

SPOT AND STOP Locate hotspot areas of sediment entering waterways

*This can be an offence under the Waimakariri District Council Stormwater Drainage and Watercourse Protection Bylaw 2018
Lifestyle Block
GOOD MANAGEMENT PRACTICES

Be a good neighbour

Maintain boundary fences so that stock can’t stray (check the Fencing Act to know your responsibilities at www.legislation.govt.nz)

Have a weed control programme to reduce and keep on top of problem areas

Carry out rodent control where a problem – particularly associated with offal and rubbish pits and feed storage areas

Site offal and rubbish pits as far away from waterways and your property boundary as is possible, and the bottom of the pit should be at least 3 metres above the winter high water table

Dispose of rubbish by taking to a transfer or recycle station, including tanalised timber waste and plastics, as burning can release toxic substances

Dry green waste first before burning and burn only when low fire risk

Maintain your on-site sewerage system regularly and in accordance with the manufacturers’ recommendations

Keep shelter belts well-maintained and topped

Identify the flood risk areas on your property remove any materials or obstructions that may cause problems for yourself or downstream neighbours during a flood:

» Trim trees alongside streams so they don’t cause blockages

» Remove unwanted fallen branches in or near a waterway – and dispose of away from the stream floodway area

» Don’t stockpile or locate in areas prone to flooding fencing or building material, rubbish piles, or locate garden sheds and containers

Keep drains, culverts, and bridges free of debris and sediment obstructions

Clear debris as soon as possible from boundary fences or floodgates across waterways following high flows

What are Lifestyle Good Management Practices?

While small holdings are not significant contributors to water quality issues, they make up a reasonable proportion of rural Canterbury, so collectively do contribute. Even though the area of land being managed may be small, poor soil and waterway management practices can still have significant effects on water quality.

Lifestyle block owners are therefore encouraged to take the same care in managing their land as larger-scale farmers are being asked to, by having Farm Environment Plans.

The Good Management Practices described here will help lifestyle block owners identify actions they can take to improve their own blocks, and ensure they are good neighbours.

Lifestyle block owners are also encouraged to complete a Lifestyle Block Management Plan (www.canterburywater.farm/fep) to record current good management practices and plan new actions to ensure good environmental management is being practiced.
Assess soil moisture, based on the soil’s ability to bind together.

- Use the ‘Feel Method’ (see below) to know when to start or stop irrigating.

**The FEEL METHOD**

Are you irrigating too much or not enough? Use the ‘Feel Method’ to decide. Squeeze a handful of soil from the root zone 3 or 4 times, attempting to make a ball.

1. No ball formed - too dry, and irrigation is long overdue
2. Weak ball formed - needs irrigation now
3. Firm ball formed - probably ok, but will need irrigation soon
4. Moisture on hand - close to field capacity, and no irrigation required at present
5. Water visible, soil oozes - too wet, above field capacity, no irrigation required at present

(See source: The NZ Irrigation Manual 2001)

**Irrigation and stockwater systems**

- Consider putting in a stockwater system if you don’t have one already, or use a portable trough system to keep stock out of waterways
- Check troughs regularly and fix leaks immediately to ensure good stock health and save water
- Check the irrigation system at the start of each season – start at the pumphouse and work your way right through to hydrants, sprinklers and nozzles – get an expert in if necessary
- Mark out accurate sprinkler placements to avoid overwatering and keep a schedule of sprinkler or pod movements throughout the season (start/finish time, date and block)
- Use the ‘Feel Method’ (see below) to know when to start or stop irrigating

**Soil**

- Maintain good groundcover at all times, as to stay healthy, soil needs plant life to help feed it
- Monitor soil condition for healthy worm life and good soil structure (nice soil clumps with lots of plant roots)
- Seek advice from qualified advisors if concerned
- You can find out what your soil type is by going to S-Maps (smap.landcareresearch.co.nz)
- Consider getting a soil test done every few years and apply fertiliser at the right rate and time – e.g. for phosphate fertilisers – do not apply when soil is really wet or when rain is forecast in the next 7 days; for nitrogen fertilisers – apply only when plants are actively growing and when rainy
- If you run your block intensively – e.g. have horticultural crops, lease for intensive pasture grazing or winter fodder crops – get an OVERSEER® nutrient budget done
- Ensure your fertiliser sprayer is well maintained and calibrated – use this on-line calibration tool (www.fertspray.nz)
- As far as practicable, ensure fertiliser is not spread on areas close to or in waterways

**Erosion**

- Plant trees on steeper slopes susceptible to tunnel gully erosion (also known as underrunners) and slumping,
- Carefully manage stock around the lowland and foothill waterways to minimise damage to vegetation growing along the stream edge, and to stream banks
- Set permanent fencing far enough back to avoid bank erosion and allow for changing stream meanders.
- Alternatively use temporary hot-wire fences when grazing larger stock classes such as cattle and horses

**Grazing management**

- Manage stock grazing carefully throughout the year to maintain good groundcover and avoid heavy pugging
- A good option to renew pasture is to direct drill or overdrill – contact rural servicing firms to get advice
- If you grow fodder crops for intensive winter grazing:
  - Select paddocks that are drier and not stony and less likely to pug
  - Leave a wide grass strip between the crop and any waterway to act as a buffer to stop sediment run-off into the waterway
  - Cultivate across the slope
- Always start strip grazing the crop furthest away from waterways, or from the top to the bottom of the paddock, to reduce sediment and phosphorus runoff

**Waterway, wetland and biodiversity**

- Exclude stock from waterways wherever practicable – permanent fencing is best (if in a floodway area, a two wire electric fence may be better to minimise catching flood debris)
- Run a temporary hot-wire fence around low-lying wet areas and swales in paddocks in the winter
- Identify hotspots where sediment run-off occurs most frequently e.g. springheads, seeps, swales or boggy areas, gullies and streams with eroding banks sides.
- Prioritise these areas for fencing and planting
- Maintain stock crossing areas and use cut-offs on sloping tracks to direct water into paddocks and away from waterways
- Consider permanently retiring springhead and swampland areas by fencing these out
- Put bridges or culverts in areas with high vehicle or stock movement – get advice from experts to ensure appropriately sized for likely flood events
- Maintain a wide buffer strip back from waterways to filter sediment and contaminants getting into the waterway by:
  - Erecting permanent or temporary fences well back from the waterway - the steeper the slope, the wider the buffer strip should be
  - Planting riparian areas with indigenous plants
- Fence out remnant bush areas to stop stock damage and help rejuvenation and enhance biodiversity
3 Focus for 2019/20 and beyond

Following the pilot from the previous year, the 2018-19 programme comprised: we have redesigned our programme. Our approach will now:

1. Define an increased role for industry to develop solutions to issues
2. The development of a five-year programme

The five-year programme will include a catchment-based approach which looks at multiple fish screens on the same surface water source. In this scenario a collaborative approach of just installing one functional fish screen may be a better and more cost-effective solution than multiple screens.

2019-20

- Working towards the creation with industry of an 'Action Planning' process that will see Industry take on a greater role in developing solutions for approval by Environment Canterbury
- Environment Canterbury Action Plan Approval and Monitoring
- Trial New Action Planning Process
- Inspection and Consent Monitoring Report (CMKR)
- Recomence Inspections and Monitoring of Action Plans

2020 onwards

- Inspections of Fish Screens
- Monitoring of Action Plans

4 In Summary

Following the pilot from the previous year, the 2018-19 programme comprised:

- Focusing on the top 50 takes
- Developing systems and processes

The results of the programme to date will inform a package of improved solutions focusing on a greater role for industry and addressing the complex technical and legal issues highlighted.

The programme for 2019-20 will comprise:

- Addressing all consents in progress – ensuring action plans are in place to address compliance issues
- Defining areas where industry resources can be utilised to resolve issues (instead of Environment Canterbury resources)
- Development of a five-year programme that will address fish screens on over 95% of the consented surface water takes.

"The five-year programme will include a catchment-based approach which looks at multiple fish screens on the same surface water source."

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FISH SCREENS UPDATE
2018/19

1 What is this issue?

What are fish screens?

Fish Screens are mechanical structures, usually designed and engineered for a specific surface water take to ensure fish remain in the waterway from where water is being abstracted, without being harmed.

What are the issues?

- There have been requirements for fish screens on surface water takes since 1967, when the Water and Soil Act was enacted.
- These rules were strengthened when the Land and Water Regional Plan (LWRP) introduced new rules for fish screens in 2004. Because these rules have only applied to fish screens consented from 2004, meaning fish screen standards vary – many older screens may be compliant older consent conditions, but of limited effectiveness in protecting fish.
- Installing an effective Fish Screen is complex due to the many variables present at any surface water take. The LWRP, which regulates any new fish screen installation outlines (in Schedule 2) seven factors required for a fish screen to be effective.
2 What has been done to date?

Prior to 2018-19 season

Prior to 2018-19, when a shift to Audited Self-management of land-use consents made resource available for new compliance projects, Environment Canterbury’s priority focus had been implementation and compliance of stock in waterways, dairy effluent, high-risk consents and water metering. When resource became available Council added fish screens to the list as the next most important priority, following stakeholder and community feedback. This led to a fish screen pilot programme to inform further work.

Pilot programme

The 2018 pilot programme was informed by a pilot project undertaken in early 2018. It highlighted a higher than anticipated number of issues with fish screen compliance and effectiveness.

The 922 consents with conditions relating to fish screens in Canterbury were prioritised by removing inactive consents and intakes below 10 litres per second (l/s), as takes with greater volume had more environmental impact. Overall, 85% of the water taken by volume is via 50 consents, which was a key factor in prioritising fish screen assessments and monitoring from a list of 150 provided to stakeholders for feedback.

As well as stakeholder input, the pilot programme also involved

- continued support and engagement with the Fish Screen Technical Working Group. Environment Canterbury participates in the Fish Screen Technical Working Group separate to the Council’s work on fish screen compliance. The FSTWG reports to the CVMS Regional Committee and works on the improvement of technical standards for fish screens.

- as well, a workshop was held with the engineering industry to discuss the Fish Screen Programme of works and constraints faced by the industry in upgrading ineffective and/or non-compliant fish screens.

Progress to date:

- Development of Standard Operating Procedures, including Health and Safety protocols.
- 32 screens were inspected in the pilot study.
- 20 of the top 50 screens have been visited and compliance assessments made.
- 10 new screens have been submitted for design review.
- Compliance assessment times have dropped from an initial 80 staff hours per screen to about 10 hours now.

<table>
<thead>
<tr>
<th>2017-18</th>
<th>2018-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring visits</td>
<td>32</td>
</tr>
<tr>
<td>In progress</td>
<td>-</td>
</tr>
<tr>
<td>Compliance achieved</td>
<td>-</td>
</tr>
<tr>
<td>Design reviews completed (i.e. new fish screen designs to be installed)</td>
<td>-</td>
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</tbody>
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Insights and Learnings

The programme has highlighted several key insights:

- Screen compliance and effectiveness – and the assessment of it – is technically and legally complex
- The majority of fish screens visited can be deemed non-compliant
- There are significant implications for industry in terms of the scale of upgrades likely to be required, and the related investment required by consent holders
- There is limited industry skill, knowledge and capacity to design and install improved screens.
- Action is therefore focused on addressing these gaps.

More detail of the Fish Screen programme is provided in the table over the page.
Purpose

This paper updates the Waimakariri Water Management Zone Committee on progress preparing and lodging the district’s stormwater network discharge consent applications. It also outlines implications of the consenting for the Council as network operator, residents and businesses discharging stormwater and for the receiving environment.

The Rangiora stormwater network consent application was lodged in May 2018 and the Woodend application lodged in June 2019. Processing of the Rangiora application by Environment Canterbury is now almost complete with draft consent conditions to be available shortly for Waimakariri District Council review.

The Kaiapoi and Oxford applications are prepared. Lodgement of these applications is subject to receipt of their respective Cultural Impact Assessments. Both applications are on schedule to be lodged by 20 December 2019.

Requirement for Discharge Consents

The district stormwater consent applications are a requirement of the Canterbury Land and Water Regional Plan (CLWRP). The CLWRP requires the Council as network operator to obtain consent for all its existing urban reticulated stormwater network discharges into the receiving environment (land and water) in the District. All applications must be lodged with Environment Canterbury by 30 June 2018 or later date as agreed between Environment Canterbury and the Waimakariri District Council (the current lodgement extension timeframe is until 20 December 2019).

The stormwater network discharge consents are sought for a term of 35 years.

Water Quality Implications

During the period from 2020 to 2025 the Council will develop a comprehensive stormwater management plan – including a water quality strategy which will set out how the Council will improve the quality of the stormwater discharges. This strategy will also determine how the Council will achieve CLWRP water quality standards for all the district’s urban stormwater network discharges by or before 2040.

This strategy will include mitigation projects that are developed following review of results from a comprehensive stormwater monitoring programme. The programme proposes to take multiple samples/surveys of the following:

- surface water from selected major network outlets and receiving streams or drains
- stormwater basin sediment toxicity accumulation
- stream bed sediment toxicity
- stream bed fine sediment depth and % cover
- ecological surveys in receiving streams
This data is to be gathered and analysed in the period 2020 to 2025. There is a proposed budget of $65,000 per annum over the next five years provided to enable this work. The monitoring programme from 2025 onwards will have a revised focus of tracking progress from implementing the physical stormwater quality improvements toward achieving the targets.

There is a budget of $20 million across the district to implement the water quality proposals for the district stormwater in the period 2025 to 2035. Baseline sampling from 2014 to 2016 has indicated particular urban sub-catchments now known to be generating exceedances of CLWRP standards. Results of baseline sampling for Rangiora, Woodend and Kaiapoi have been previously reported to the Water Zone Committee. Oxford baseline results will be presented at this meeting in a separate power-point presentation.

“Hot spots” indicated in the baseline will now be verified through more comprehensive sampling and potential future solutions investigated.

The monitoring programme will inform the prioritisation within towns and between towns of where the expenditure is best allocated to achieve the CLWRP standards. This will take into account where the expenditure would have the greatest benefit in reducing the discharge of the urban contaminants, thereby improving the stream water quality and protecting the aquatic habitat.

The Council’s target is to ensure all urban network discharges comply with all applicable plan standards by or before 2040.

**Water Quantity Assessments**

In each of its consent applications the Council undertakes to provide a 5 yearly localised flood model update to Environment Canterbury for each town. This will demonstrate changes over time to its peak network discharges at the major outlets from any future increase in urban hardstand area. The flood models show interaction between up-gradient catchment rural runoff and urban runoff from hardstand areas.

It is not anticipated that these model updates will show any increase in discharges as a result of any increase in any urban hardstand between each 5 yearly review period. This is because the model presents a *full development scenario* for every urban zone. The model assumes that all existing urban zones are fully developed, including that maximum permitted hardstand area and site coverage are achieved for every lot. Therefore any increase in peak network discharge would be from other factors such as non-complying urban infill or unapproved rural drainage diversion.

If the 5 yearly model update did show an increase in hardstand that had occurred within existing District Plan zone rules that increased peak discharges, then the Council would need to explain how the increase had occurred and may need to address downstream effects (if any identified).

Any proposed District Plan zone change or resource consent application for development or increased urban infill would have effects assessed via that process. All developments are required to provide attenuation to match pre-development flows.

The Council could require mitigation to be provided by any person undertaking any non-complying activity that affects urban stormwater drainage conveyance via its Stormwater Drainage and Watercourse Protection Bylaw.

It is uncertain whether rising groundwater which will increasingly inundate the Kaiapoi stormwater network over time will be captured in the future Kaiapoi flood hazard model. It is also uncertain whether this would be linked to any future consent mitigation requirements.
Stormwater Management Plans

An interim stormwater management plan has been prepared and lodged with each application. Key proposals include:

- Investigating source control options for identified contaminants.
- Investigate low impact design options to improve treatment at a sub-catchment level.
- Where practicable, incorporating measures to improve stormwater treatment as part of the capital works programme.
- Phase in use of pollution prevention plans through the district towns to manage discharges from medium risk premises.
- Phase in a new Council approval process for stormwater discharges from high risk sites by 1 January 2025. At this time the Council will assume responsibility for managing quality of discharges from these sites into and from its network.

General Implications

- Achievement of Canterbury Land and Water Regional Plan standards will likely require a combination of at source controls and new sub-catchment treatment systems to capture diffuse contaminant discharges of zinc, copper and sediment.
- A significant increase in drainage team workload from approving on-site pre-treatment systems for high risk sites and approving medium risk site pollution prevention plans.
- Review of the Stormwater Drainage and Watercourse Protection Bylaw before 1 January 2025, to include a new process for the Council to approve discharges from high risk sites into the stormwater networks.
- A significant increase in drainage team and Water Unit workload, for implementation of the stormwater monitoring programme.
- Development of a basic contaminant load model to estimate and identify diffuse source/s of each contaminant.
- A review and upgrade on the current water quality management database functionality is required – potentially from MS Access to something like Water Outlook or the ECan Water 2020 based on Hilltop with improvements.
- Additional costs associated with investigation and design of new stormwater treatment.
- Stormwater baseline sampling indicates potential wastewater overflows or wastewater cross connections occurring in Kaiapoi, Oxford, Rangiora and Woodend. There may be future requirements for the wastewater operator to more directly manage, report on and reduce overflows or wastewater to stormwater cross connections in line with the MfE Action for Healthy Waterways consultation.
- Note that developers in other districts are awaiting issue of network consents to enable their future stormwater discharges to be approved by the relevant territorial local authority and accepted through the network consent. There is an assumed reduction of costs and simplification of requirements for developers.
- Need to encourage central Government to “lead” on certain issues, including:
  - reduction of copper discharges from the stormwater networks, by introducing a national ban on use of copper brake pads in vehicles
  - introduce a national “behaviour change” website and other promotional material to inform communities of necessary changes.
Recommendations
That the Waimakariri Water Management Zone Committee:
1. Receives this briefing paper.
2. Notes the ongoing processing of stormwater network consent applications, introducing new regulation of stormwater quality and stormwater quantity.

Janet Fraser, on behalf of Waimakariri District Council
AGENDA ITEM NO: 5  
SUBJECT: Committee Updates

REPORT TO: Waimakariri Water Zone Committee  
MEETING DATE: 2 December 2019

REPORT BY: Murray Griffin, CWMS Facilitator – Waimakariri, ECan

PROPOSAL
This agenda item provides the committee with an overview of updates for review.

RECOMMENDATIONS
The Zone Committee are asked to receive these updates for its information and regarding the committee’s work programme and community engagement priorities for 2019/20.

COMMITTEE UPDATES
The following updates are tabled for the committee:

1. CWMS Regional Committee

The previous Regional Committee meeting was held on Tuesday 10 September. Summary notes from this meeting are provided by Carolyne Latham as agenda item 5-1. The next Regional Committee meeting will be on Tuesday 10 September.

The link to the CWMS Regional Committee papers is provided below:

2. Plan Change 7 (Waimakariri) Update
The final submissions count is 558 for PC7 and 28 for PC2 (586 in total). Please refer to the following link to review these submissions:

Hearing timeline – it is anticipated the hearing starting sometime in the first half of next year, but the actual timing has not yet been set by the Independent Hearing Panel.

A Summary of Decisions Requested – has been published on the ECan website, and the opportunity to lodge a further submission is now available until 6 December. To do so, go to:

3. Waimakariri River Minimum Flow and Irrigation Cutbacks
Tim Davie, ECan Chief Scientist will be present at this meeting to explain the calculation of the minimum flow of the Waimakariri River and the criteria for determining irrigation cutbacks.
4. Ashley/Rakahuri Biodiversity – Algal Blooms
Adrian Meredith, ECan Principal Scientist – Water Quality and Ecology, will provide an update on the effects of algal blooms on biodiversity in the Ashley Rakahuri River.
CWMS Regional Committee Meeting Report
10th September 2019

1. **Removal of Exemption by Auditor-General** – similar to the briefing received by WZC. Additional points:
   - Any prosecution is personal to the committee member and a fine of $100 can be imposed.
   - The committee member is removed from their position.
   - The decision associated with the prosecution would have to be re-visited.

2. **Targets Progress Report** - The Targets Progress Report has been distributed. Challenges and opportunities were discussed. The Chair noted that the major achievement of the last 10 years has been getting the LWRP and sub-regional plans in place, and implementation was now becoming the focus. Gaps were identified, such as baseline wetland information and nitrates monitoring data. It was also felt the use of data across Ecan needs to improve and current reporting doesn’t reflect the role of partners eg TA’s, other government departments. A comment was made about whether the oversight role of the RC was sufficient in some situations, and whether consideration should be given to cross-representation. An example given was whether CCC should have a representative on the Waimakariri ZC as nitrates coming under Waimakariri River could potentially impact on the water supply of a large population in Christchurch.

2. **Fish Screen Update** – Ecan staff confirmed that the Fish Screen Standard is out of date and it is highly likely most screens will be non-compliant with regard to protecting native fish and salmonids. Standard Operating Procedures are now in place, an app is under development, and compliance checks now take 4 hours per check compared with up to 80 hours previously. The key learnings are that it has been much more technical and legally complicated than anticipated, taking much longer than expected to progress. Implications for water take permit holders are that upgrades will be required at some cost. Action Plans will be prepared in 2019/20 for industry to follow, and Ecan will monitor the AP’s under a 5 year plan to ensure compliance. This is currently being trialled and will address 95% of consented surface water takes. A key part of the process is the re-design of fish screens and Irrigation NZ and MPI are leading NZ with this project.

3. **Recreation & Amenity Report Update** – A work programme had been proposed as a result of the report Ecan commissioned in 2018. However there were numerous questions about the need for the programme recommended and it was agreed to invite a presentation to the next meeting.

4. **Zone Committee Reports** – ZC reps were also asked to provide an example of a recreation and amenity project in the zone, and the Clean Green Silverstream was the example provided for Waimakariri.

   - **Kaikoura** – Biodiversity planting is supporting recreation and amenity, in particular to help the community reach the goal of making the lower Lyell Stream swimmable. Some progress has also been made with wetlands and enabling public access. Freedom camping is a big problem and limiting numbers at popular sites is not working. KDC has a low ratepayer base and limited resources to deal with it.

   - **Hurunui** – The Hurunui Splash project excavated several safe public swimming holes near popular sites, and a reduction in the number of black backed gulls in large colonies upstream has had a positive impact on water quality. The HWZC will be refreshing alongside the RC community representatives. IMS projects include fencing lakes Sumner and Mason, and the restoration of Dry Creek which has seen the return of freshwater mussels.

   - **Christchurch/West Melton** – IMS projects include plantings to enhance Albert Stream at Mt Vernon Park a popular walking and rock climbing area, riparian planting on Otukaikino Stream a popular walking and picnic area, and protection of dryland biodiversity values in the Waimakariri River Regional Park where there is a range of recreation and amenity values. Long term plans are to link some of the planting projects and include educational signage.

   - **Selwyn Te Waihora** – A big focus on Coes Ford, a popular recreation, swimming and camping area on Waikirikiri/Selwyn River. The proposal is to increase fencing and planting and reduce contaminants, particularly from the immediate Silverstream catchment where a new sampling site has been added to measure water quality so that improvements can be quantified.

   - **Banks Peninsula** – Mahinga kai and Lake Forsyth water quality are key focuses. The lake will be part of the Lake 380 5 year research project which is undertaking sediment sampling on 380 New Zealand lakes to try and determine what have influenced them over the last 1000 years.
Ashburton – Focussing more on biodiversity planting rather than swimming in the big rivers.

OTOP – Still focussed on PC7 and understanding its implications.

Lower Waitaki – Wainono Lagoon is an on-going project and improvements are becoming evident. Parking and toilets have been put in to improve recreation facilities. Island work on Waitaki River to provide Tern nesting sites is also continuing, and across the zone, catchment groups are being promoted to link everything together.

Upper Waitaki – The area is struggling with a massive increase in the use of Mackenzie and Waitaki lakes by recreation users and tourists. Mackenzie canals are now the most fished water bodies in NZ, and annual visitors to Mt Cook exceeded one million people. This is leading to increases in rubbish and human waste and many reports of irresponsible behaviour from a broad cross section of users, which territorial authorities are struggling to cope with. The ZC is advocating for a national tourism strategy, along with targeted education such as the Love Your Lakes project.

7. Events
On 25th September 2019 James Renwick will be delivering a seminar at Lincoln on “Our land and changing climate”, more information to come.
On 1st October 2019 the Waimakariri and Selwyn Te Waihora ZC and guests have a field trip to the Castle Hill area to consider recreation and general water management issues in the high country.

Carolyne Latham
Waimakariri Water Zone Committee RC Rep