Canterbury Water Management Strategy
Waimakariri Zone Committee

Agenda

Monday 12 December 2016

2.00pm

Function Room,
Rangiora Town Hall
303 High Street, Rangiora

Members:

Grant Edge (Acting Chairperson)
David Ashby
Claire McKay
Carolyne Latham
Judith Roper-Lindsay
Gary Walton
WDC Councillor Sandra Stewart
Clare Williams (Te Ngai Tūāhuriri Rūnanga)
Cherie Williams (Te Ngai Tūāhuriri Rūnanga)

Chairman and Members
CWMS WAIMAKARIRI ZONE COMMITTEE

AGENDA FOR THE MEETING OF THE **CANTERBURY WATER MANAGEMENT STRATEGY WAIMAKARIRI ZONE COMMITTEE** TO BE HELD IN THE **FUNCTION ROOM** OF THE **RANGIORA TOWN HALL, 303 HIGH STREET, RANGIORA** ON **MONDAY 12 DECEMBER** AT **2.00PM.**

Adrienne Smith
Committee Advisor

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

BUSINESS PAGES

1 KARAKIA

APOLOGIES AND INTRODUCTIONS

REGISTER OF INTEREST

5

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

2 WAIMAKARIRI ALTERNATIVE PATHWAYS SCENARIOS WORKSHOP – M Dodson (Hydrogeologist, ECan)

6-8

RECOMMENDATION

THAT the CWMS Waimakariri Zone Committee:

(a) **Confirms** the key elements of the Alternative Pathways scenario.

(b) **Agrees** to the proposed new timelines for presenting of the results of the Alternative Pathways scenario being from mid-February 2017 to mid-March 2017.

(c) **Agrees** to the proposed new timelines for solutions phase being from April 2017 to September 2017, and publication of the Zone Implementation Programme Addendum being October 2017.

3 CONFIRMATION OF MINUTES

3.1 **Minutes of the Canterbury Water Management Strategy Waimakariri Zone Committee meeting – 7 November 2016**

9-18

RECOMMENDATION

THAT the CWMS Waimakariri Zone Committee:

(a) **Confirms**, as a true and accurate record, the circulated minutes of the Canterbury Water Management Strategy Waimakariri Zone Committee meeting, held 7 November 2016.

MATTERS ARISING

4 **WORKING GROUP AND COMMITTEE UPDATES** – Zone Committee Members, M Griffin (Facilitator, ECan) and A Arps (Waimakariri Zone Delivery Team Leader, ECan)

19-20

- Zone Committee Appointments – Update
- Previous meeting (7 November 2016) briefings – links and reports
- Committee Working Groups
- Engagements
- Communications
- Action List

4.1 **Summary of Status of Council Water Supply Schemes – Colin Roxburgh (Water Asset Manager, WDC)** – Memo to Waimakariri District Council, 12 September 2016

21-27

4.2 **Waimakariri zone current pathways technical overview – October 2016**

28-39

4.3 **Waimakariri Zone "Current Pathways" Planning Overview – November 2016**

40-56

4.4 **Waimakariri Zone Team Update**

57-61

RECOMMENDATION

THAT the CWMS Waimakariri Zone Committee:

(a) **Receives** these updates for its information and with regard to the committee's 5 Year Outcomes and 2017 work programme.

5 **OPPORTUNITY FOR PUBLIC TO SPEAK**

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WORKSHOP

6 **DAIRYNZ RELEVANT INTIATIVES AND ACTIVITES BRIEFING** – A Harvey and P Edwards (DairyNZ)

62

7 **NOVEMBER COMMUNITY MEETINGS FEEDBACK BRIEFING** – J Stapleton (Senior Planner, ECan)

63

7.1 **Community Feedback – Current Pathways November 2016**

64-72

7.2 **Current Pathways Questions**

73-76

8 **WALK FOR THE PLANET INITIATIVE UPDATE** – D Hill (Central South Island Methodist Synod)

77-78

9 **GENERAL BUSINESS AND FUTURE MEETING PRIORITIES** – G Edge / Zone Committee Members

WAIMAKARIRI ZONE COMMITTEE

Register of Interests – at December 2016

Name	Committee Member Interests
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
Grant Edge	- Director: Edge Landscape Projects Ltd, Edge Plants Ltd, and Edge Products Ltd - Member: NZ Institute of Landscape Architects - Member: Urban Design Forum - Member: QEII National Trust - Member: NZ Forest & Bird - Member: Heritage NZ - 1ha property Fernside (shallow bore user)
Carolyne Latham	- Farmer: Sheep, beef and racehorse agistment - Director of Latham Ag Ltd Consulting - Shareholder: Silver Fern Farms, Farmlands - Registered Member: New Zealand Institute of Primary Industry Management - Member: Canterbury Ice Hockey Association
Claire McKay	- Dairy Farmer - Irrigator and shareholder: Waimakariri Irrigation Ltd - Holder of Groundwater take and use consents in Cust groundwater allocation zone - Holder of Effluent discharge consents - Member: Federated Farmers - Member: DairyNZ Dairy Environmental Leaders forum - Member: P21 Canterbury Industry Advisory Group
Judith Roper-Lindsay	- Director/ecologist: JR-L Consulting Ltd. - Land-owner/small-scale sheep farmer, Ashley downs - Fellow: Environment Institute of Australia and New Zealand (EIANZ)
Sandra Stewart	- Self-employed journalist - Land-owner, 4ha Springbank – sheep & dogs
Gary Walton	- Director, Walton Farm Consulting Ltd - Director & Shareholder, Loburn Irrigation Co - Trustee, Rugby World Heritage Trust - Ashley Rugby Football Club (Inc.) - Farmer, sheep & cattle, Loburn
Cherie Williams	- Member: Mana Whenua Working Party - Tangatiaki / Kaitiaki - NZTA Northern and Southern Bypass Rūnanga Representative
Clare Williams	- Chair, Te Ngāi Tūāhuriri Rūnanga Inc. - Selwyn/Waihora Zone Committee – Te Ngāi Tūāhuriri Rūnanga representative - Member: Mana Whenua Working Party - Trustee: Central Plains Water Trust

AGENDA ITEM: 2	SUBJECT: Waimakariri Alternative Pathways scenario – briefing
REPORT TO: Waimakariri Water Zone Committee	**MEETING DATE:** 12 December 2016
REPORT BY: Matt Dodson, Hydrogeologist & Technical Team Lead, ECan	

RECOMMENDATIONS

1. That the Waimakariri Water Zone Committee confirm the key elements of the Alternative Pathways scenario.
2. That the Waimakariri Water Zone Committee agree to the proposed new timelines for presenting of the results of the Alternative Pathways scenario (from mid-February 2017 to mid-March 2017).
3. That the Waimakariri Water Zone Committee agree to the proposed new timelines for solutions phase (from April to September 2017) and publication of the Zone Implementation Programme Addendum (being October 2017).

WORKSHOP PURPOSE

To discuss and confirm the key elements of the Alternative Pathways scenario and the proposed new timelines for the Waimakariri Land and Water Solutions Programme.

BACKGROUND

A scenario is a projected set of events that is used to explore what the future likely looks like if we did certain things. The purpose of scenarios in the Waimakariri Land and Water Solutions Programme is to highlight some of the challenges and issues so that people can make informed decisions around the management of land and water in the zone.

The Alternative Pathways scenario is the second of two scenarios and builds on the first. The purpose of the Alternative Pathways scenario is to explore the consequences of changing some of the ways land and water is managed in the zone. Later in this paper I will briefly discuss the key elements of the Alternative Pathways scenario.

Originally the results of the Alternative Pathways scenario were scheduled to be presented to the community in mid-February however, based on our learnings from presenting the Current Pathways scenario, we recommend holding community meetings mid-March 2017. This will not cause any significant delays in the timetable and the Zone Committee will continue to have six months for the solutions phase of the programme.

KEY ELEMENTS OF THE ALTERNATIVE PATHWAYS SCENARIO

1. Potential water storage (as per the Waimakariri Water Zone Committee Zone Implementation Programme recommendations) in the upper Ashley River/Rakahuri catchment. Consider associated environmental flows and changes in irrigated area.
    - *If this proposal was to be put forward as a solution it would require extensive consultation with and agreement from the Rūnanga.*

- *Includes approximately 50 million m^3 per year of water for environmental flows.*
- *Includes an increase of up to 12,750 ha of irrigated area (approximately 500 ha in the Lees Valley, 3,500 ha in the Loburn and up to 8,750 ha over the Cust, Ashley and Eyre management zones. Zone locations are illustrated in Figure 1).*

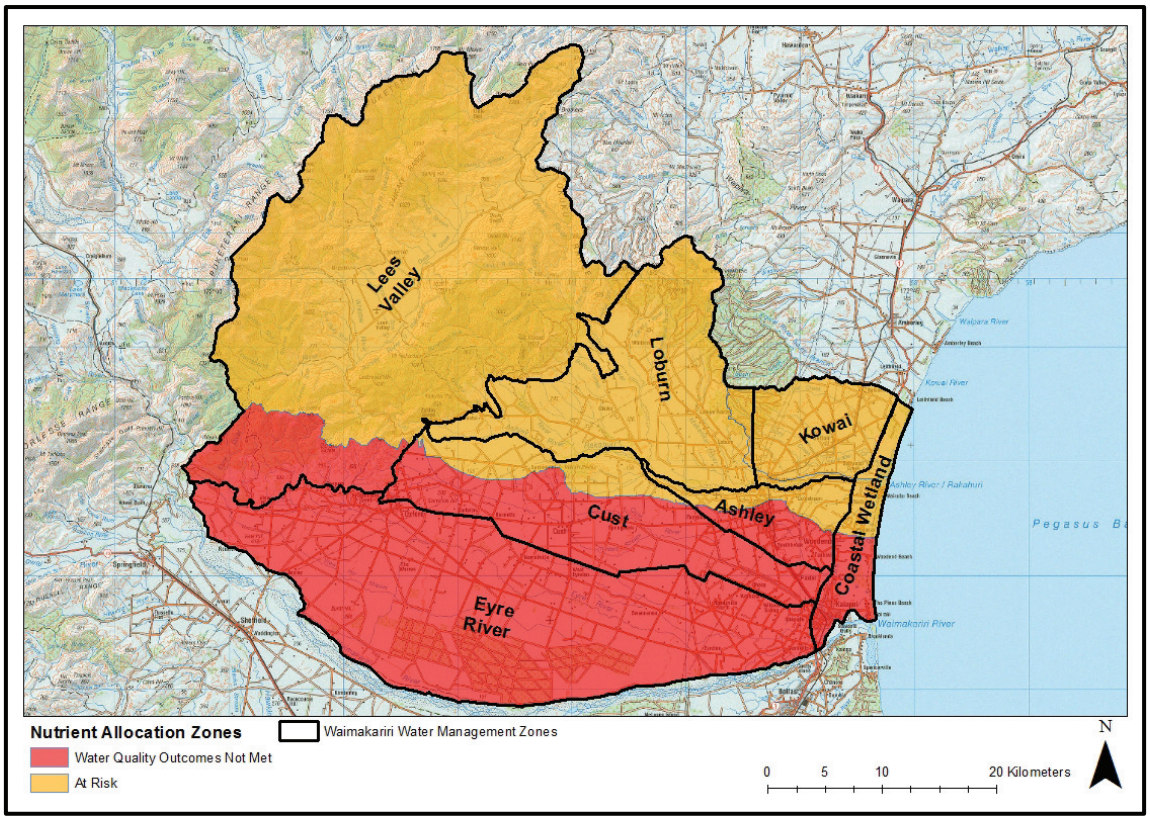


Figure 1: Map of the Waimakariri zone, the Waimakariri Water Zone Committees Water Management Areas and the existing Nutrient Allocation Zones.

2. Examine the effects of changing the Waimakariri River Regional Plan stream depletion assessment criteria to those the Land and Water Regional Plan (Schedule 9 – Assessment of Stream Depletion Effect).
    - *High level assessment of impact of changes to the stream depletion rules (affects flows in waterbodies, surface/ groundwater allocation and consents requiring minimum flows).*
    - *Indication of numbers of older groundwater consents that would likely require a minimum flow restriction regardless of which regional plan is in place.*

3. Provide some high level indications of the impact of targeted stream augmentation and Eyre River recharge.
    - *Would require sign off/consultation with Rūnanga due to mixing of water concerns if to be considered as part of the solutions package.*
    - *Water would be sourced from upper Ashley River/Rakahuri storage.*
    - *From the Current Pathways scenario results we know that nitrate concentrations will increase in groundwater and surface waters. Specifically, the nitrate concentrations in the Silverstream, Ohoka and*

Cust Main Drain will exceed the NPSFM national bottom line of 6.9 mg/L before any increases in irrigated area. This high level assessment will provide an indication of how much water is required to dilute flows to the required nitrate nitrogen threshold.

- *It will also indicate if other interventions are required, such as further % reductions in on-farm nitrogen losses beyond Good Management Practice.*

4. Testing the ecological and cultural preference flows for spring-fed streams and rivers.
    - *Testing the impact of different minimum flows and comparison against current surface water allocation.*

5. Elements of the current pathways (being; LWRP PC5 [MGM] fully and successfully implemented; Median climate change projection at 2040; Current consents fully exercised; Nutrient loads "in the post" are realized; Population growth).

PROPOSED NEW TIMELINES

We have taken on-board a number of valuable lessons from presenting the Current Pathways scenario to the Zone Committee and community. We believe more time between the scenarios is key; so that the technical team can undertake the assessments, document them, provide a suitable briefing to the Waimakariri Water Zone Committee and prepare the presentations to take to the community.

We are also conscious of the fact that the Waimakariri Water Zone Committee require up to six months to develop their solutions so are also proposing changing some of the other timelines to maintain period for this solutions and options phase. We propose the following timelines:

- 21 February 2017 – pre-circulation of the Alternative Pathways scenario documentation to the Waimakariri Water Zone Committee
- 27 February 2017 – Waimakariri Water Zone Committee briefing on the results of the Alternative Pathways scenario.
    - The intention of this briefing is for a detailed run through of the results
- 13 March 2017 – Waimakariri Water Zone Committee meeting
    - The intention of this presentation is to re-affirm the key messages of the Alternative Pathways scenario
- 15, 20 and 22 March 2017 – Community meetings
- April to September 2017 – Solutions phase
- October 2017 – Zone Implementation Programme addendum
- Mid 2018 Plan Change notification and on the ground actions

WHO

This workshop review will be led by Matt Dodson, Hydrogeologist and Technical Lead (Science) for the Waimakariri Sub Regional Plan, Environment Canterbury.

MINUTES FOR THE MEETING OF THE CANTERBURY WATER MANAGEMENT STRATEGY WAIMAKARIRI ZONE COMMITTEE HELD IN THE FUNCTION ROOM OF THE RANGIORA TOWN HALL, 303 HIGH STREET, RANGIORA ON MONDAY 7 NOVEMBER AT 3.30PM.

PRESENT

Grant Edge (Acting Chairperson), David Ashby, Carolyne Latham, Judith Roper-Lindsay, Claire McKay, Gary Walton and WDC Councillor Sandra Stewart

IN ATTENDANCE

Murray Griffin (Zone Facilitator, ECan), Andrew Arps (Waimakariri Zone Team Leader, ECan), Jill Atkinson (Director Strategy and Programmes, ECan), Matt Dodson (ECan), Jo Stapleton (Senior Planner, ECan), Amelia Ching (Planner, ECan), Maureen Whalen (ECan), Mary Sparrow (ECan Contractor), Alistair Picken (ECan), Gerard Cleary (WDC), Renay Weir (ECan), Adrian Meredith (ECan), Geoff Meadows (Policy Manager, WDC), Stephen Bragg (ECan), Zeb Etheridge (ECan), Gina McKenzie (Real Communications), Treena Davidson (TRoNT), Ryan Hepburn (TRoNT), Bev Bray (Policy Planner, WDC), Rachel McClung (Policy Analyst, WDC), Owen Davies (Drainage Manager, WDC), Michael Bate (Kaiapoi), James Ensor (Oxford-Ohoka Community Board), John Benn (DOC), Cam Henderson (Dairy Farmer, Oxford) and Emma Stubbs (Minute Secretary, WDC).

1 KARAKIA

Nil.

APOLOGIES AND INTRODUCTIONS

Claire and Cherie Williams

G Edge acknowledged the contribution of ECan Commissioner Rex Williams and WDC Kevin Felstead who had been with the committee since its beginning.

REGISTER OF INTEREST

As per agenda.

2 WAIMAKARIRI DISTRICT COUNCIL STORMWATER AND NATURAL HAZARD PLANS BRIEFING – G CLEARY (MANAGER UTILITIES AND ROADING, WDC)

S Stewart queried why there was not a report in the agenda for Items 2 and 3 in the agenda as they were major pieces of work that required some consideration prior to the meeting. G Cleary commented that there was a misunderstanding of what he was providing which was a briefing and update rather than a report. There was no request for a decision. M Dodson advised that the briefing he was providing had only come together over the weekend.

G Cleary provided a copy of the report to the WDC Utilities and Roading Committee which was a summary of the status of the Council Water Supply Schemes and provided a brief overview.

- Pegasus-Woodend scheme connection – there had been a lot of public consultation. The chlorination of the Pegasus supply would cease. Biological treatment would continue to remove manganese. This was an aesthetic rather than health issue.
- Ohoka upgrade was complete.

- Mandeville-Fernside scheme connection – improve the water supply for Fernside which was currently a shallow well. All rural schemes that went into tanks were chlorinated.
- Oxford Rural No. 1 – Council is currently looking at options. The first bore was unsuccessful and another only partially successful. Looking to drill another bore – highlighted the challenge of access to water due to the possible adverse effect on an existing well. G Cleary highlighted the future challenge in weighing up the community good versus existing use rights for consents.

G Cleary provided an update on flood protection work following the June 2014 event with a PowerPoint presentation. The Council had allocated $4 million for immediate works which were now almost complete. There had been good success at relieving bottlenecks for relatively low cost. The current projects were noted. There was $17 million in the current 10 year plan cycle for upgrades. G Cleary commented that not all initiatives were capital works, for example, tightening up the LIM and Building Consent process, forecasting and guidance on planting alongside drains. G Cleary showed an image of the 500 year flood hazard as an example of the sophisticated mapping tools now available.

G Cleary provided an overview of upcoming challenges for the 3 Waters Team including:

- District wide rate investigation for wastewater schemes, water supply schemes and drainage schemes. Smaller schemes were becoming cost prohibitive on a ratepayer basis whereas on a district wide basis they were not unaffordable. Also there were inconsistencies in terms of how schemes were rated and whether rated or not.
- Water quality and environmental – for example Rangiora storm water significantly exceeded NPS/LWRP requirements with exceedances in copper and zinc. Solutions were expensive to retrofit.
- Completing earthquake recovery work in Kaiapoi.

G Cleary introduced District Plan Change 27: Natural Hazards to the committee noting it was a planning response to new information around flood risk, liquefaction, faults and coastal erosion. An interactive map was on the website which the committee was encouraged to view. B Bray provided an overview of the next steps and noted that there had already been good community feedback. The documents 'Questions and Answers – Natural Hazards Management' and 'Natural Hazards – What you need to know' were tabled.

J Roper Lindsay referred to her submission to the LTP and asked what extent staff were investigating catchment wide solutions for slowing and retention of flood flow. G Cleary commented with the sort of flow coming from rural areas there was limited opportunity to try and capture this. He added it was also an unnatural thing to do as the area was a floodplain. It had been considered and was applied in any new development. J Atkinson commented the Mayoral Forum was taking a regional approach to natural hazards and considerations like stormwater infrastructure.

G Edge noted that the zone committee Land and Water Solutions Programme could have aspects of stormwater management and G Cleary commented that a lot of what they were doing related directly or indirectly to the Zone Committee, and it was important to make sure they were aligned.

C Latham referred to the option of an urban issues water group and queried if the zone committee wanted to further this. G Cleary commented he struggled to envisage what that group might look like.

Moved G Edge seconded D Ashby

THAT the CWMS Waimakariri Zone Committee:

(a) **Receives** this briefing, for its information and consideration, with regard to its 5 Year Outcomes and Milestones, and the Waimakariri Land and Water Solutions Programme.

CARRIED

3 CURRENT PATHWAYS SCENARIO FOR WAIMAKARIRI LAND AND WATER SOLUTIONS PROGRAMME WORKSHOP – M DODSON (HYDROGEOLOGIST AND SCIENCE TECHNICAL LEAD FOR WAIMAKARIRI, ECAN)

M Dodson advised he was working hard to provide information to the team as quickly as possible and understood concerns around not receiving a report prior to the meeting. The information would be posted on the ECan website so it would be available to the public. The presentation today would be similar to that presented at the community meetings and looked at what the future might be if things carried on the current trajectory.

M Dodson acknowledged the complexity of the issues and noted that there was no 'right answer'. It was a matter of balancing multiple values and there would be tension as decisions would have real implications.

M Dodson provided an overview of the 'exploring scenarios' stage the Zone Committee was now in. He noted next year the committee would move into the development stage of a Solutions Programme. M Dodson encouraged committee members to express their views and provided options for committee members to do so.

The key points of current pathways were

- Increase in nitrogen concentrations
- Decrease in sediment and E coli. getting into streams
- PC5 permitted activity rules could offset gains
- Climate change
- Wrights Road storage – irrigation efficiency for WIL
- Population expected to increase

M Dodson explained groundwater lag as the time it takes for water to travel through a catchment's groundwater to lowland areas near the coast. M Dodson used the example of water falling closer on the foothills taking around 60 years to reach spring-fed streams, whereas it would take around 10 years from further down the plains. This had implications for agriculture as nitrate levels were not reflective of current land use, which in some areas had intensified further in recent decades. It meant nitrate concentrations will get higher with time.

C Latham queried why levels in Waimakariri zone streams were not at levels elsewhere and M Dodson replied it was a combination of factors – soil type, contribution losses from water races and recharge from the Ashley/Rakahuri River.

J Roper-Lindsay queried if there was an idea of the timeframe in which things would get worse and M Dodson expected a gradual decline over decades.

D Ashby referred to WIL's leaky irrigation races having a dilution effect on nitrates in the zone and asked if that had been accounted for in calculations. M Dodson advised that current pathways assumed leakage to the best estimation. D Ashby noted that moving toward GMP with tools such as soil moisture monitoring would reduce irrigation. This would reduce the effect of nitrate dilution and lead to higher concentrations of nitrates in the soil.

D Ashby asked about the attenuation factor and ability of certain soils to denitrify. M Dodson noted that the team had completed detailed technical work on the denitrification and had found conditions were not optimal for the process. Consequently, denitrification would not remove a significant level of nitrates.

S Stewart noted the nitrates levels would increase and asked if it was known what that number would be. M Dodson advised the model looked at relative change and direction of change. A lot more work was required for a definitive number.

S Stewart referred to the beneficial effect of the leaky WIL scheme and asked whether it could be looked at to quantify as an environmental benefit. G Edge commented that could be considered in the solutions phase.

M Dodson introduced the topic of 'permitted activity' under Plan Change 5 of the Canterbury Land and Water Regional Plan (LWRP). For the Current Pathways scenario it was assumed that every property that could intensify as a permitted activity did so, as that defined what had been effectively allocated. It was also assumed the Ngai Tahu conversion had been completed. No more takes were allowed in the red zone, however, water was available elsewhere. Current nutrient allocation limits were used. Land use was mapped and a converted N loss layer applied. M Dodson advised the difference between current practice and GMP, in terms of overall nutrients in the scheme, was 15%. S Stewart requested a report to provide more detail.

M Dodson advised that the biggest influence on change in N loss was winter grazing. G Walton commented that care was needed in terminology as there was a difference between 'winter grazing' and 'intensive winter grazing of heavy animals'. C McKay commented that there also needed to be consideration of the type of winter grazing. G Walton commented while wintering cows on lighter soils drove N leaching, wintering cows on heavy soil created animal welfare issues.

In relation to stock exclusion from streams M Dodson advised that 98% of Fonterra farms had waterways fenced. A Veltman had conducted a survey along the Cam and found 65% was fenced. G Walton asked if a costing had been completed for fencing to which M Dodson replied no. M Dodson advised that the message was stock exclusion had a positive effect on stream health and recreational values but there was still an issue around sediment legacy.

With regard to population growth M Dodson advised that they drew on work from WDC. Population was expected to increase to 80,000 by 2038. J Roper Lindsay commented that recent community meetings around the District Plan had predictions of 100,000 by 2048. J Atkinson noted the figures used were consistent with those used in the Urban Development Strategy.

There had been some work around estimating where small blocks would occur in the future although these predictions were challenging.

Predictions around climate change were drawn from NIWA and there were clear implications for land and water. A key effect would be increased climate variability.

The draft findings of the Current Pathways scenario were presented in a matrix summary to help demonstrate how things might change. The goal was to address the red and orange zones and protect the green zones. It was not possible for all catchments to move to green so the focus was on balancing tradeoffs to meet the community outcomes through a 'gifting and gaining' approach.

J Roper-Lindsay commented that it was generalised and M Dodson advised that they were taken from the defined community outcomes.

There was some discussion on how best to go through the matrix. There was general agreement to continue the discussion after the first round of meetings.

Moved G Edge seconded D Ashby

THAT the CWMS Waimakariri Zone Committee:

(a) **Receives** this workshop for their information and contribution towards the presentation of the Current Pathways scenario in November 2016.

CARRIED

The meeting adjourned for supper from 5.33pm to 5.56pm.

4 CONFIRMATION OF MINUTES

4.1 Minutes of the Canterbury Water Management Strategy Waimakariri Zone Committee meeting – 12 September 2016

Moved G Walton seconded D Ashby

THAT the CWMS Waimakariri Zone Committee:

(a) **Amends** the minutes of the Canterbury Water Management Strategy – Waimakariri Zone Committee held on Monday 12 September 2016. Item 4, page 11, 6th paragraph entire last sentence starting 'For sheep and beef' to be deleted. Item 6, page 15, last paragraph delete entire sentence starting 'G Edge noted that he'.

(b) **Confirms**, as a true and accurate record, the minutes of the Canterbury Water Management Strategy Waimakariri Zone Committee meeting held 12 September 2016.

CARRIED

MATTERS ARISING

J Roper Lindsay, page 10 item 2 - communication plan for small block holders. M Griffin advised it had been added to the Action List.

S Stewart, page 10 item 2 – Dr Hudson's report – advised that Henry Hudson had begun to provide reports including a commentary on current state as it applied to the Cam. Information would be distributed to M Griffin via Janet Fraser.

G Edge, page 10, item 2 – flagship recreation project – to be discussed at a later date, it was up to the committee to think about a scheme and develop further.

M Griffin, page 13, action list update – herbicide risk – the WDC report had been circulated to the zone committee. Request for confirmation that glyphosate used was specific for waterways had been added to the action list.

M Griffin, page 12, communications – the WDC report on potable water had been circulated to the zone committee.

S Stewart, page 12, communications – suggestion for working group to comment on urban water issues – noted that WDC had 6-12 rural drainage groups but no group of urban water issues and suggested that such a group was well overdue and could be a working group of this committee. C Latham noted that there was good dialogue on urban water issues with the WDC briefings. M Griffin proposed

there would be a review of the committee's working groups in early 2017 and an urban water issues working group could be reviewed then. G Walton suggested that the Lowland Waterways, Braided Rivers and Biodiversity Working Group covered those issues.

5 OPPORTUNITY FOR PUBLIC TO SPEAK

Michael Bate tabled a letter 'Waimakariri Land and Water Solutions Programme' he commented that the whole picture needed to be looked at and he believed there were a lot of things not mentioned.

M Bate advised that the weed growth in the Kaiapoi River and Courtenay Stream had increased which he believed was due to the reduction in spraying. He noted shellfish collection was banned from Motanau to the Ashburton Mouth and commented there was no signs warning of the potential health risk. He believed it was caused by the ocean outfall from the sewer system.

M Bate commented that he believed the committee were rushing in going into public consultation as there were issues they did not understand themselves.

M Bate also suggested farmers should be compensated for retiring red zone land from dairying.

M Bate presented the label on a glyphosate container which advised it should be kept away from streams.

6 WORKING GROUP AND COMMITTEE UPDATES – ZONE COMMITTEE MEMBERS / M GRIFFIN (FACILITATOR, ECAN)

- **Local Government Elections 2016 – Update**

  M Griffin advised S Stewart has replaced K Felstead as the appointed WDC representative. ECan was moving through its process for allocation of portfolios and positions to the new Council and these appointments would likely be confirmed on Thursday 17th November. The December meeting would, consequently, be the first meeting with the new ECan and WDC representatives confirmed.

  Having been elected onto the ECan Council it was C McKay's last meeting as a community appointee. She thanked past and present members for their support and work around the table and staff for their work. G Edge wished her all the best in her role as ECan Councillor.

  G Edge added it was encouraging to see a number of Councillors and Community Board Members attending the Current State and Current Pathways community meetings.

- **Nutrient Management & Water Efficiency Working Group**

  D Ashby advised that Angela Harvey would provide a Dairy NZ update at an upcoming committee meeting which would draw together information on actions required from those completed Sustainable Milk Plans in the District. All but 8 dairy farmers in the zone had completed a Sustainable Milk Plan.

  G Walton and C Latham were assisting with Beef and Lamb NZ's FEPs in the North Canterbury region.

There had been recognition of the 6,500 small block holders in the zone who were not catered for in terms of FEPs. D Ashby and A Arps had had a meeting with Primary ITO with a view to establishing a module/course/unit standards with the primary focus on the small/lifestyle block template. A pilot program was proposed and funding options were being investigated.

As a Waimakariri Zone initiative G Edge queried whether it needed endorsement from the committee and D Ashby clarified it was still too early in development for this.

- **Lowlands Waterways, Braided Rivers and Biodiversity Working Group**

  G Edge advised a third meeting of the Biodiversity Working Group had been held with stakeholders on 21 September and the next meeting was scheduled for March. He added they were heading in the right direction in terms of strategy.

  G Edge commented there was a gap in understanding of lowland waterways and a stakeholder group would be set up. Key stakeholders were currently being considered.

- **Regional Committee Meeting – 11 October 2016**

  C McKay advised she would take the report as read. She asked if Ellie McNae had been in touch and M Griffin replied no. She clarified the committee needed to think about a recreation project that did not exist back in 2010. She noted the importance of the Tūhaitara Coastal Park and suggested members could consider how that area could be used as a regional recreation centre.

  C McKay noted the responsibility of ECan, in terms of climate change, was to focus on the consequences of extreme weather events. Outcomes of a workshop in early 2017 would feed into the 2018-2028 Long Term Plan.

- **Waimakariri Zone Delivery Team – Update**

  A Arps advised Jason Butt was the new Zone Delivery Team Biodiversity Officer. He also noted the Zone Delivery Team was building a closer working relationship with WDC.

  A Arps noted the 2017 work programme would be reviewed and this was likely to include a review of the Waimakariri ZIP priorities.

- **Zone Committee Engagement & Communications**

  There were no questions from the communications circulated the previous week.

- **Action Points**

  M Griffin tabled the updated Actions List and noted a number of points had been covered.

  1. Ongoing work regarding investigations on the Kaiapoi. A Meredith advised full suite of loggers would be installed next year.
  2. Cam flood gate trial – still looking at how this could be integrated. S Stewart advised this had been conducted by Henry Hudson and ECan some time ago.
  3. Carex was looking at baseline testing in the Cust Main Drain prior to recommencing of spraying.
  4. The sea foam was still to be tested.
  5. Sampling in Saltwater Creek to be conducted in November/December.

6. Simon Woods (ECan Parks Officer) presented at the U3A seminars on how access could be controlled on the Ashley/Rakahuri especially in sensitive habitat areas.
7. ECan scientists have been completing monitoring work.
8. To follow up.
9. G Edge commented that the lowland waterways stakeholder group (to be established) would have opinions on the topic. S Stewart queried whether there was a definite timeframe and if it was possible to advance that. It was important as the management of waterways was influenced by how they were defined. Work was underway with Ngai Tahu and WDC on a classification related to stormwater.
10. Action focused looking at assistance with small block holder FEPs.
11. Possibly profile Cust Water User Group.
12. Follow-up U3A environment subcommittee.
13. Completed.
14. To follow up.
15. To base around ECan river engineers plus other parties.
16. To be arranged in 2017
17. DairyNZ briefing is being arranged for the 12 December meeting.
18. Group of 30, provided good feedback, looking for someone to be contact – C Latham.
19. As discussed.
20. Completed.

Moved D Ashby seconded G Walton

THAT the CWMS Waimakariri Zone Committee:

(a) **Receives** the above updates for its information and with regard to the committee's 5 Year Outcomes and 2016 work programme.

CARRIED

Item 8 was taken at this time.

7 GENERAL BUSINESS AND ACKNOWLEDGEMENTS – ZONE COMMITTEE MEMBERS / M GRIFFIN

J Roper-Lindsay commented that the size of the agenda had decreased every month and wanted to flag for the following year that there be more pre-circulated information to allow committee members time to consider the information provided. S Stewart endorsed the comment. She understood there was incredible time pressure but noted it was a subcommittee under standing orders.

D Ashby commented that the committee needed to be very careful when going through the nutrient limit setting process that there was more balance at the public meetings with urban residents, small block owners, and farmers attending. Farmers had 'skin in the game' and would be ultimately effected so it was important that they were engaged. If there was not a balance of attendees there could be unintended consequences come out of the process.

G Edge noted there could be a review of strategy of engagement next year. A Picken advised there was a workshop with Beef and Lamb on 5th December and a farmer's Reference Group could result from that. There was also a Fonterra consent planning day at ECan. J Atkinson noted that the most powerful mechanism was the connections of the committee with the community. G Walton commented that in reality there were a number of channels to engage and asked why doesn't the committee go out to groups? S Bragg commented that these discussions had often been had within zone committees. He added the point an

ECan Commissioner had once stated the role of the zone committees was to provide a conduit for connecting their community with the CWMS.

G Edge asked D Ashby if there was a requirement for an industry working group. D Ashby believed the zone was in a good space in terms of relationships. There were good connections with Dairy NZ, and the Foundation for Arable Research. Beef and Lamb NZ now had two Zone Committee members involved, and discussions are underway with Primary ITO towards support for small block holders.

G Edge advised that S Stewart had a conflict with a community board meeting and asked if the committee would be able to meet at the earlier time of 2pm. There was general agreement to this and the December 2016 meeting would be the first meeting to commence at 2pm.

G Edge advised there would be a zone committee catchup on the 24th of November at 3pm.

8 WAIMAKARIRI MANA WHENUA SIGNIFICANT SITES ASSESSMENT BRIEFING – J STAPLETON (SENIOR PLANNER, ECAN)

J Stapleton introduced B McGillan from Mahaanui Kurataiao Ltd (MKT) who was leading a combined project with ECan and WDC exploring how Wāhi Tapu and Wāhi Taonga cultural values were covered in the Waimakariri sub-regional planning process. A notice of a Hui at Tuahiwi Marae on 8th December 2016 was tabled.

B McGillan explained there were a range of documents to look at including statutory and non-statutory. He was looking at what worked and areas for improvement, and also a predictive element for recent changes. He commented that the Regional Policy Statement was very useful in terms of guidance on how to look at aspects of Wāhi Tapu and Wāhi Taonga.

B McGillan commented that the review of statutory documents was potentially also of use for the WDC District Plan review.

Non-statutory methods included discussions with ECan and WDC staff and looking at current practices. The opportunity to work through individual consents had provided an understanding of internal processes and had highlighted some gaps. He noted there had been significant changes and improvement over the last three years that would hopefully continue.

B McGillan noted that part of the presentation at the Hui on 8th December would work through a case study to provide real life examples and show some of the issues encountered. Prior to the Hui there would be a meeting with Te Ngāi Tūāhuriri Rūnanga to ensure they were comfortable with the level of information being provided.

B McGillan stressed silent files were still in place. They were looking to ensure triggers were in place so that there could be consultation early if there was an issue.

The Hui would provide an overview of what was proposed and B McGillan was hoping for a productive and informative day. The final report is due in January 2017.

J Roper Lindsay queried if the report would provide a list of where to go for information. B McGillan advised that it was a collation of information and GIS mapping had been used. Some of the information was in the public arena already. It was a matter of bringing it together and making it more accessible.

John Benn noted that DoC was not on the list and commented that a lot of the information was relevant to DoC.

J Atkinson noted that the project was focused on identifying cultural values rather than driving new processes and queried whether there would be re-litigation of protocols carefully created with MKT. B McGillan it was a matter of identifying what was working and what was not, adding the Regional Policy Statement and Section 6e of the RMA provided clear direction and guidance.

THERE BEING NO FURTHER BUSINESS, THE MEETING CLOSED AT 7.20 PM.

CONFIRMED

_____
Chairman

_____
Date

AGENDA ITEM NO: 4	SUBJECT: Committee Updates
REPORT TO: Waimakariri Water Zone Committee	MEETING DATE: 12 December 2016
REPORT BY: Murray Griffin, Facilitator, ECan	

PROPOSAL
This agenda item provides the committee with an overview of updates as tabled.

COMMITTEE UPDATES
The following updates are tabled for the committee:

- **Zone Committee Appointments – Update**

This item will confirm Claire McKay as the Environment Canterbury appointment to the Waimakariri Water Zone Committee. With both WDC and ECan appointments now confirmed it is proposed the committee elect its Chair, Deputy Chair, and Regional Committee representative for 2017 at the first meeting in 2017 on Monday 13 February in accordance with the committee's Terms of Reference.

- **Previous meeting (7 November 2016) briefings – links and reports**

  - The WDC Memo providing a 'Summary of Status of Council Water Supply Schemes', tabled by Gerard Cleary (WDC Manager – Utilities & Roading) at the 7 November committee meeting, is provided for the committee as agenda item 4-1

  - Link to Waimakariri District Plan Hazard Map: http://waimakariri.maps.arcgis.com/apps/webappviewer/index.html?id=a1508164fb474825bd34c34eebfadc46

  - Current Pathways Technical and Planning Overview reports – are attached as agenda items 4-2 and 4-3.

Committee Working Groups

- **Nutrient Management & Water Efficiency Working Group**

David Ashby will table an update at this meeting on this Working Group's priorities.

- **Lowlands Waterways, Braided Rivers and Biodiversity Working Group**

Grant Edge will table an update at this meeting on this Working Group's priorities.

- **Regional Committee Meeting – 13 December 2016**

The committee will confirm any priorities for this pending Regional Committee meeting.

- **Waimakariri Zone Delivery Team – Update**

Waimakariri Zone Delivery Team Manager, Andrew Arps, has provided a copy of quarterly update on Zone Team priorities and achievements as agenda item 4-4 for the committee to review. This would have been presented at the committee's 7 November meeting had the current pathways workshop not gone over the time allocated.

- **Zone Committee 2016 Annual Report**

A draft is being prepared for the committee's consideration, review and sign-off. This report will be presented to the WDC and ECan Councils in early 2017.

- **Zone Committee Engagement & Communications**

Engagements

- Science Stakeholder Advisory Group – previous workshop held on 26 October with the next meeting scheduled for February 2017
- Community meetings on the Current Pathways scenario for the Waimakariri:
    - 14 November in Cust (cancelled due to the Cust Hall closure post-earthquakes for engineer's inspection)
    - 16 November in Rangiora
    - 21 November in Waikuku
- Enterprise North Canterbury – Business networking briefing on the Land and Water Solutions Programme by Andrew Arps on Thursday 1 December
- Beef and Lamb NZ Workshop – Gary Walton and ECan Staff on Monday 5 December

Communications

- Committee's Monthly E Newsletter – previous sent on 31 October and final newsletter for the year to be sent on 16 December

Action List

- An updated list of action points from previous meeting will be tabled with the committee.

RECOMMENDATION

The Zone Committee are asked to receive these updates for its information and with regard to the committee's 5 Year Outcomes and 2017 work programme.

WAIMAKARIRI DISTRICT COUNCIL

MEMO

FILE NO AND TRIM NO: WAT-03 / 160906091545

DATE: 12 September 2016

MEMO TO: Council

FROM: Colin Roxburgh, Water Asset Manager

SUBJECT: Summary of Status of Council Water Supply Schemes

1. Purpose

The purpose of this memo is to provide a summary of the status of the Council's public water supply schemes in terms of water quality and public health risk.

It is important to note that all of the Waimakariri District Council public water supply schemes have Water Safety Plans (WSPs) (previously known as Public Health Risk Management Plans) that have been approved by Community and Public Health.

The intention of this memo is to document which schemes achieve compliance with the Drinking Water Standards for New Zealand (DWSNZ), and where the standards are not met what plans are in place to carry out the necessary upgrades.

2. Key Criteria for Compliance with the DWSNZ

Each scheme within the district is required to demonstrate compliance with the DWSNZ by providing barriers to protect against two key types of potential contamination.

1. Bacterial Compliance: Each scheme is required to provide protection against contamination from bacteria. This is achieved either by sourcing water from a deep and secure well, or by treating to disinfect the water against bacterial contamination.

2. Protozoal Compliance: Each scheme is required to provide protection against contamination from protozoa (such as cryptosporidium or giardia). This can be achieved by sourcing the water from a deep and secure well, or treating the water by means of filtration, ozone or ultra-violet (UV) disinfection.

3. Existing Status of Schemes, and Plans to Upgrade

There are 16 public water supply schemes within the district. Table 1 summarises each scheme's bacterial and protozoal compliance with the DWSNZ. Where compliance is not achieved on a given scheme, a plan has been put in place to upgrade the scheme to achieve compliance. The proposed methodology to upgrade each scheme has been documented in the respective Water Safety Plan (previously referred to as Public Health Risk Management Plans) for each scheme. These plans have been submitted to and approved by Community and Public Health. The approved proposed upgrades for each scheme are documented in Table 1.

Table 1: Summary of Compliance with DWNSZ and Planned Upgrades

Scheme	Source Description	Bore Depth (approx.)	Treatment	Compliance with DWSNZ		Proposed Upgrade	
				Bacterial Compliance	Protozoal Compliance	Description	Completion Time
Rangiora	Four deep secure bores at Smith Street, Kaiapoi.	150 m	Not required.	Yes	Yes	Not required, fully compliant.	Fully compliant.
Kaiapoi (incl. Pines Kairaki)	Six deep secure bores in Kaiapoi, plus backup secure bore in Pines Beach.	100 m	Not required.	Yes	Yes	Not required, fully compliant.	Fully compliant.
Woodend	Two deep secure bores at Gladstone Park.	200 m	Biological filter to remove Manganese	Yes	Yes	Consultation underway to join with Pegasus. No decision has been made on this project yet.	Fully compliant.
Pegasus	Three deep secure bores south of Pegasus (near Gladstone Park)	140 – 250 m	Chlorine treatment to remove Manganese	Yes	Yes	Consultation underway to join with Woodend. No decision has been made on this project yet.	Fully compliant.
Waikuku Beach	Two shallow artesian bores	20 m	None at present, to be implemented as part of upgrade.	Yes	No	The Water Safety Plan identifies that the treatment will be upgraded in 2017/18. Council staff are planning to complete this project in the 2016/17 financial year (subject to Council approval).	2016/17
Cust	One deep secure bore at Springbank.	80 m	Not required.	Yes	Yes*	The project to upgrade the Cust source was recently completed with the new source coming online in late 2015.	2016
Oxford Urban	One deep source on Domain Road (second deep secure well has been drilled but is not yet online).	120 m	Not required.	Yes	Yes	Not required, fully compliant.	Fully compliant.
Ohoka	One deep well on Bradleys Road	80 m	Chlorine	Yes	Yes*	A new deep secure well was drilled recently and is due to come on-line mid-September 2016 which will achieve protozoal compliance.	2016
Garrymere	One shallow well at headworks site	30 m (screen from 2.5 m)	Chlorine and pH correction	Yes	No	An investigation into new source options to achieve protozoal compliance is underway this financial year.	2017/18

Scheme	Source Description	Bore Depth (approx.)	Treatment	Compliance with DWSNZ		Proposed Upgrade	
				Bacterial Compliance	Protozoal Compliance	Description	Completion Time
Poyntzs Road	One shallow well at headworks site	30 m	Chlorine	Yes	No	Source upgrade planned for 2023/24. This is to be revised to see if the budget can be brought forward.	2023/24
Oxford Rural No.1	Gallery intake from the Waimakariri River	5 m	Chlorine	Yes	No	A source upgrade project to achieve protozoal compliance is underway. A new deep secure well has been drilled and is due to come online in November 2016. This does not have sufficient capacity for the entire scheme so an additional well or wells are required.	2017/18
Oxford Rural No.2	Gallery intake from river at Coopers Creek	3 m	Chlorine	Yes	No	A project is underway to utilise the wells at Domain Road to provide secure water to the Oxford Rural No.2 scheme to achieve protozoal compliance.	2017/18
Summerhill	One deep secure well at West Eyreton	100 m	Chlorine	Yes	Yes	Back-up deep source proposed at West Eyreton headworks site for completion in 2017/18.	Fully compliant.
Mandeville	Deep non-secure well at Two Chain Road headworks.	80 m	Chlorine and pH correction	Yes	No	A project is underway to install UV treatment to achieve protozoal compliance.	2016/17
Fernside	Shallow well at headworks	18 m	Chlorine and pH correction	Yes	No	Consultation is underway regarding the joining of the Fernside scheme with Mandeville (which will be fully compliant by the time they join).	2017/18
West Eyreton	Deep secure well at headworks	100 m	Chlorine	Yes	Yes	Back-up deep source proposed at West Eyreton headworks site for completion in 2017/18.	Fully compliant.

** Ohoka sources' fully compliant status is subject to confirmation from CPH (following implementation of upgraded sources mid-September 2016).*

** Cust sources' fully compliant status is subject to confirmation from CPH following some amendment to the site fencing to ensure the security of the well head.*

4. Existing Scheme Status Discussion

As is documented in Table 1, all public water supply schemes within the district achieve bacterial compliance with the DWSNZ, and seven out of the sixteen schemes achieving protozoal compliance at present, and two more (Ohoka and Cust) to achieve protozoal compliance in the very near future.

For the other schemes where protozoal compliance is not achieved, projects are either underway or planned to carry out the required upgrades. It is projected that by the end of the 2017/18 financial year all but one of the schemes will have achieved full compliance with the DWSNZ. Where upgrades are required to achieve full compliance, these are described below:

4.1. Waikuku Beach

The primary source for Waikuku Beach is a 21.6m deep artesian bore on Kings Avenue. While this is relatively shallow for an untreated source, a mitigating factor when considering the risk is the fact that the bore is artesian. This indicates that there is hydraulic separation between the surface water and source water. Furthermore the site has a good record of bacterial compliance with the DWSNZ, which also indicates a lower risk.

It was proposed to install a treatment system in order to achieve compliance in the 2017/18 financial year. This will likely consist of a UV treatment system. Council staff are proposing to bring a report to Council to bring the budget for this upgrade forward to allow it to be completed in the 2016/17 financial year.

4.2. Ohoka

The Ohoka source previously consisted of a shallow non-secure bore with chlorine treatment and pH correction. A new bore has been drilled which is due to come on-line mid-September this year, which will provide secure and fully compliant drinking water.

4.3. Garrymere

The source for the Garrymere scheme consists of a shallow bore, with the first screen installed approximately 2.5 m below ground level. The water is treated with chlorine to achieve bacterial compliance. Due to the shallow non-secure nature of this bore there is a risk of contamination from protozoa. This source is similar in nature to the source for the Rangiora scheme prior to the 2011 upgrade.

An assessment into options to upgrade the scheme to achieve protozoal compliance is being carried out this financial year, with the recommended solution proposed to be implemented in the 2017/18 year. The options for consideration will likely include drilling a new deep source, treating the existing source, or connecting with another scheme (the latter option is considered unlikely).

4.4. Poyntzs Road

The source for the Poytnzs Road scheme consists of a 30 m deep non-secure well. The water is treated with chlorine to achieve bacterial compliance. Due to the shallow non-secure nature of this bore there is a risk of contamination from protozoa. This source is considered to present a lower risk relative to some of the shallower non-secure bores.

An upgrade to the source to achieve full compliance with the DWSNZ is currently programmed for the 2023/24 financial year. It is the intention of 3 Waters staff to bring a report to Council to recommend that this budget be brought forward to allow the upgrade to be carried out sooner than currently planned.

4.5. Oxford Rural No.1

The source for the Oxford Rural No.1 scheme consists of an infiltration gallery in the Waimakariri River. The water is treated with chlorine to achieve bacterial compliance, however the current treatment system does not provide protection against protozoal contamination.

A project to upgrade the source is underway. A well has been drilled to a depth of approximately 200m which struck a secure groundwater source which is due to come online in November this year. This new source is only able to provide approximately 30% of the current peak demand for the scheme however, so further work is required to complete the source upgrade project. This will likely consist of an additional deep well or wells such that the existing river intake can ultimately be abandoned. This project is schedule to be completed in the 2017/18 financial year.

4.6. Oxford Rural No.2

The source for the Oxford Rural No.2 scheme consists of an infiltration gallery at Coopers Creek. The water is treated with chlorine to achieve bacterial compliance, however the current treatment system does not provide protection against protozoal contamination.

A project is underway to upgrade the Oxford Rural No.2 source. A second well has been drilled at Domain Road (next to the Oxford Urban source) to allow the two Domain Road wells to form a combined source for the Oxford Rural No.2 and Oxford Urban schemes. There is some further work required to bring the new well on-line and join the two schemes which is programmed to be completed in 2017/18. This will include detailed design and construction of the new well head, three booster pump stations and some reticulation upgrades to join the schemes but keep the treatment separate (such that the Oxford Rural No.2 scheme is chlorinated and Oxford Urban is not). Once this upgrade is completed the Oxford Rural No.2 scheme will achieve full compliance with the DWSNZ.

4.7. Mandeville

The primary source for the Mandeville scheme is an 80 m deep non-secure well that is treated with chlorine to achieve bacterial compliance with the DWSNZ. A project is underway this financial year to install a UV treatment system at the Mandeville headworks. Once this upgrade is completed the scheme will achieve full compliance with the DWSNZ.

4.8. Fernside

The primary source for the Fernside scheme is an 18 m deep non-secure well. The water is treated with chlorine to achieve bacterial compliance. Due to the shallow non-secure nature of this bore there is a risk of contamination from protozoa.

A project has commenced to carry out an upgrade on the Fernside scheme to achieve compliance with the DWSNZ. The recommended strategy to achieve compliance is to join with the Mandeville scheme, and utilise the Mandeville water headworks at Two Chain Road. The Fernside and Mandeville communities are currently being consulted regarding this upgrade. This upgrade is programmed to be completed in the 2017/18 financial year.

5. Chlorination Strategy

It is noted that all restricted schemes are chlorinated, regardless of whether or not they have a secure source. The reason for this is that chlorine offers residual disinfection against bacterial contamination that may enter the water downstream of the source. On restricted schemes it has been identified that there is a risk that contamination may enter the water in private storage tanks located at each property. Chlorinating restricted schemes provides a barrier against the risk of contamination in private storage tanks.

This risk of contamination entering water in private on-site tanks is not an issue on on-demand schemes, where private tanks are not required. For this reason on-demand schemes with secure sources (Kaiapoi, Rangiora, Oxford Urban, Cust) are generally not chlorinated.

It is noted however that in some cases there are some restricted connections on rural-residential properties connected to some on-demand schemes. These properties are the exceptions to the rule, in that they are restricted properties with private storage tanks that receive unchlorinated (but secure) water. Council staff are considering the need for a chlorination policy to document the decision making process regarding the need to chlorinate water on all types of schemes for all types of connections.

6. Testing and Monitoring Strategy

As well as putting the barriers in place to prevent contamination, there are also testing requirements to demonstrate that these barriers are working effectively. This is predominantly demonstrated through testing for E. coli. The testing is carried out both at the sources and within the reticulation for each scheme. The frequency of testing is determined by the DWSNZ and is a function of the scheme and source characteristics and the population of each scheme.

The frequency of testing on each of the schemes being carried out at present is detailed on Table 2 and the results from the 2015/16 testing period are detailed on Table 3.

Table 2: 2016/17 E. coli Testing Programme

Scheme	E. Coli Testing Frequency (Max Days Between Samples)	
	Source	Reticulation
Rangiora	135	6
Kaiapoi (incl. Pines Kairaki)	135	8
Woodend	135	11
Pegasus	135	11
Waikuku Beach	5	11
Cust	13	45
Oxford Urban	135	11
Ohoka	13	45
Garrymere	13	45
Poyntzs Road	13	45
Oxford Rural No.1	5	11
Oxford Rural No.2	5	11
Summerhill	135	45
Mandeville	5	11
Fernside	13	45
West Eyreton	135	45

Table 3: 2015/16 E. coli Testing Results

Scheme	E. Coli Testing – Number of Samples		Total	Clear Samples
	Source	Reticulation		
Rangiora	5	97	102	100%
Kaiapoi (incl. Pines Kairaki)	17	100	117	100%
Woodend	11	67	78	100%
Pegasus	12	59	71	100%
Waikuku Beach	115	60	175	100%
Cust	55	34	89	100%
Oxford Urban	9	60	69	100%
Ohoka	58	18	76	100%
Garrymere	58	17	75	100%
Poyntzs Road	55	17	72	100%
Oxford Rural No.1	110	56	166	100%
Oxford Rural No.2	110	57	167	100%
Summerhill	10	31	41	100%
Mandeville	116	63	179	100%
Fernside	58	18	76	100%
West Eyreton	10	19	29	100%

Council's monitoring procedures were audited recently by Community and Public Health, and the monitoring was found to be fully compliant with the DWSNZ across all schemes for the 2015/16 monitoring period. No positive E. coli tests were received on any of the schemes for the 2015/16 monitoring period.

6.1. Historic Transgressions

There have been several positive E. coli test results on Waimakariri District Council water supply schemes over the last decade. These are detailed below:

Kaiapoi — E. coli was recorded in the Kaiapoi reticulation immediately following the 2010 Earthquake. This was attributed to damage caused to both water and sewer mains causing cross contamination.

There was one positive E. coli test result in Kaiapoi due to an event involving contractor error. The event involved a digger bucket going through a water and sewer main simultaneously. This incident was identified and remedied immediately.

Mandeville — In 2012 there was a positive E. coli test result at one of the Two Chain Road wells in Mandeville. As a result of the transgression the bore lost its secure status and the project was put in place to upgrade the source with UV treatment.

Woodend — In 2013 there was a positive E. coli test result on the Woodend scheme. This was attributed to birds entering and contaminating one of the reservoirs. The point at which the birds entered the reservoir has been repaired, and there have been no positive test results since.

7. Summary

In summary, while it is acknowledged that all levels of risk associated with providing public water supplies cannot be eliminated, it can be concluded that as a whole the district's water supplies are in good shape. All schemes are either fully compliant with the bacterial and protozoal requirements of the DWSNZ, or have a plan and budget in place to achieve compliance within an approved timeframe.

Waimakariri zone current pathways technical overview – October 2016

This overview provides a summary of the technical work undertaken for the current pathways scenario. This scenario explores what might happen if the current state is projected into the future.

This summary is supported by the current state reports that are available at www.waimakariri-water.nz

Key findings:

- Increase in Nitrogen concentrations
- Decrease in sediment and E coli. getting into streams
- Plan change 5 permitted activity rules could offset any gains
- Climate change will have an effect on land and water
- Population expected to increase
- Many streams and rivers do not sustain cultural values

Background

What is a scenario? A scenario is a projected sequence of events used to explore what might happen in the future. Scenarios are useful ways of exploring 'what if'. They are a valuable planning tool to understand the consequences of what the future may bring.

What is the current pathways scenario? The current pathways scenario has a number of key elements being:

1. Nutrient loads 'in the post' are realised
2. Examining relevant Land and Water Regional Plan provisions; specifically stock exclusion and nutrient management rules
3. Population growth
4. Median climate change projection at 2040

Key elements of the current pathways scenario

1. Nutrient loads 'in the post' are realised

The major source of Nitrogen in the Waimakariri zone is from the agriculture. The Nitrogen gets to groundwater because as water passes through the soil it takes up available Nitrogen. Some of this water is used by plants or is evaporated, but some travels down through the soil and down into groundwater. Groundwater generally flows downgradient towards the ocean and supplies much of the water for spring-fed streams. Groundwater travels very slowly, on the order of tens to a few 100 metres a day. Therefore, it can take years to decades to travel downgradient through the aquifer to reach the coast and spring-fed streams.

We know that irrigated area in the Waimakariri zone has increased over time (Figure 1). Because of the time it takes for groundwater to travel through the aquifer to the spring-fed streams, we believe that the effects of the land use intensification inland have not yet made to the spring-fed streams. This conclusion is supported in our modelling. We expect that Nitrogen concentrations in spring-fed stream and groundwater will increase particularly in the south (Silverstream, Ohoka and Cust Main Drain) but also in other areas (Taranaki Stream for instance). Our modelling shows that the Silverstream, Ohoka and Cust Main Drain will exceed the national bottom line for Nitrogen and therefore some intervention will be required.

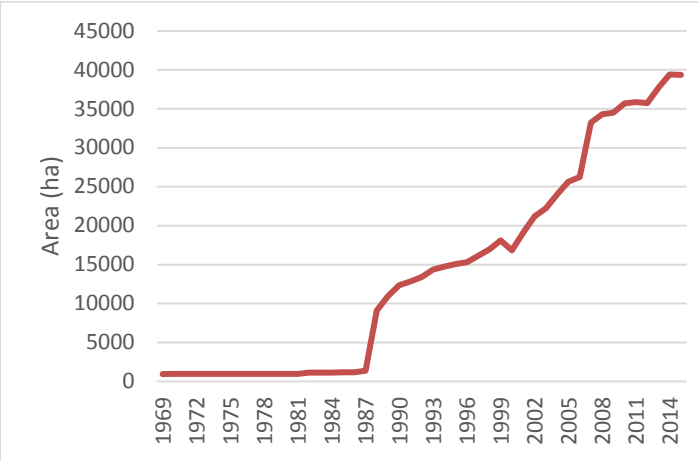


Figure 1: Estimated irrigated areas over time in the Waimakariri zone; based on consents data.

The 'in the post' load causes the biggest change in Nitrogen concentrations of all the factors considered.

2. Examining relevant Land and Water Regional Plan planning provisions

Stock exclusion

Under the Land and Water Regional Plan farmed cattle, deer and pigs are not allowed into the bed or banks of a spring-fed plains river, regardless of the size of the property. In the Waimakariri zone the spring-fed plains rivers are located in the east of the zone, for instance Saltwater Creek, Cam River, Silverstream. This would require landowners to fence off these streams if they had farmed cattle, deer and pigs on their property. This fencing would stop bank collapse and other forms of erosion; and it will stop animals defecating in the stream.

Our team of experts assessed that this fencing would have an overall positive effect on stream health and recreational values for the spring-fed plains rivers. However, it will do little for the sediment already in the stream or for sediment travelling overland in floods.

Nutrient management

We modelled Nitrogen losses in the zone assuming they all properties were operating at Good Management Practice. This modelling takes into account soil type, climate and land use. Using best available information, we estimated the difference between current Nitrogen losses and those under Good Management Practice to be 16% on average[1].

Our modelling showed that Nitrogen losses reduce under Good Management Practice but so does drainage through the soil. The reduced drainage is caused by increased irrigation efficiency. Our modelling shows that less drainage will mean less flow for some spring-fed streams (i.e. Cust Main Drain, Silverstream and Ohoka).

We have also assessed the impact of the Plan Change 5 permitted activity[2] rules. These rules are summarised in the Waimakariri Zone Current Pathways Planning Overview report. The permitted activity rules allow for intensification of irrigated area and winter grazing for cattle. In our modelling, we assumed that **all** properties that could intensify, did so. We undertook this analysis to define what has been effectively allocated in this zone under Plan Change 5.

[1] http://ecan.govt.nz/publications/General/MGM_Overview_report_Main_Report_Section_final.pdf

[2] Permitted activity is a planning term used to describe an activity that can be carried out without the need for a resource consent so long as it complies with any requirements, conditions and permissions specified in the Resource Management Act, in any regulations, and in any applicable plans or proposed plans

Our modelling showed that any gains from Good Management Practice are offset by the increase in permitted activities. For groundwater allocation zones with available allocation (Cust, Ashley and Kowai groundwater allocation zones) there could be an increase in irrigated area (4,900 ha) assuming the water is available and the resource consent for the groundwater take is granted. This increase in irrigated area would have an impact on existing user's reliability and flows in spring-fed streams (i.e. Saltwater Creek, Cam River and Waikuku Stream).

3. Population growth

We have drawn on the information provided by the Waimakariri District Council and Statistics NZ for our assessment.

We expect that the population within the Waimakariri zone will continue to increase. As at 30 June 2016, Statistics NZ indicate there are 57,600 people living in the district. This number is projected to increase to greater than 80,000 by 2048. This increase in population is expected to be housed mainly in urban settings, in the residential priority areas (Figure 2).

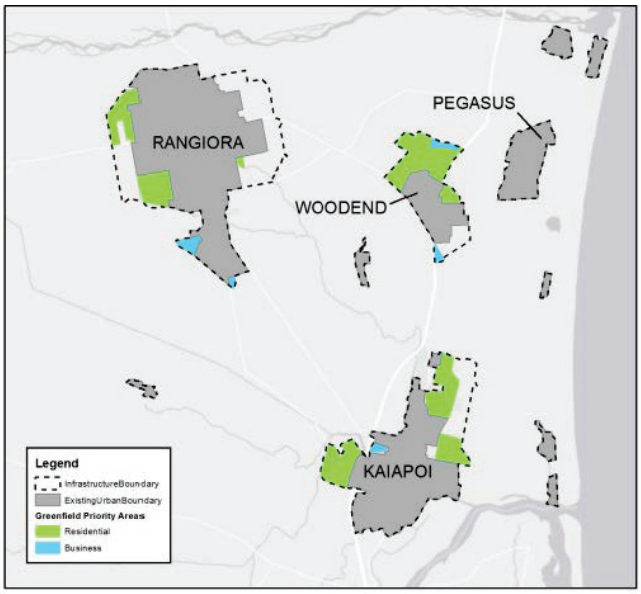


Figure 2: Priority areas for growth, from the Waimakariri District Councils 30 Year Infrastructure Strategy

The age distribution of the people in the zone is also changing, with greater proportions of residences aged >65 occurring over time.

The increase in population within the Waimakariri zone is expected to drive growth, with an increase in retail and wholesale activities, education and training, and health services. Overall, the impact from agriculture on the economy it is expected to change little. Although we have assumed that there will be increases in productivity, this does not result in a meaningful change in profitability because of a long term decrease in real prices and increase in input costs.

4. Median climate change projection at 2040

We have used climate change data provided by NIWA in our models where appropriate. While we cannot estimate all the impacts of climate change, we have drawn on the works and conclusions of others[3].

[3] http://www.mfe.govt.nz/publications/climate-change/climate-change-effects-and-impacts-assessment-guidance-manual-local-51

In 2040 we expect temperature to increase by 0.7 to 1.0 °C and there to be an increase in extreme windy days (by 2090 2-10% more)[4]. Higher temperatures and windier days will increase evaporation and the demand for water. We expect to see less snowfall which will affect flows in some rivers such as the Waimakariri River. We expect less winter rainfall and more in summer and autumn. And it is expected sea level will continue to rise.

Climate change will also bring more variability, for instance more extreme rainfall events, increased severity and frequency of droughts, increase in hot days (>25°), decrease in cold nights (<0°). All these factors

Climate change impacts on agricultural could be offset with adaptation. Higher winter/spring temperatures and CO2 fertilisation may offset higher summer temperatures and greater variability.

[4] http://www.mfe.govt.nz/climate-change/how-climate-change-affects-nz/how-might-climate-change-affect-my-region

Community outcome 1

The water quality and quantity of spring-fed streams maintains or improves mahinga kai gathering and diverse aquatic life

Narrative: The habitat, flow and water quality in the spring fed streams supports abundant and diverse aquatic life (including native flora and fauna). Spring fed streams contain safe and plentiful kai for gathering. The flow and visual appearance of the spring fed streams meet aesthetic values and promotes customary use. Plant and animal pest species are managed or eliminated.

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Sub-outcome	Indicator	Current state	Current pathways
Instream habitat	Sediment		
	Macroinvertebrates		
Water quality	Phosphorus for plant growth		
	Nitrogen for plant growth		
	Suspended solids		
Diversity and abundances of aquatic species (including taonga species)			
Plentiful mahinga kai			
Aesthetics	Clarity		
	Macrophyte growth		
Human health for recreation	Cyanobacteria		
	E coli.		
Cultural assessment			
National Policy Statement for Freshwater Management (plus MCI)	Nitrate (Toxicity)		
	Ammonia (Toxicity)		
	E coli.		
	Macroinvertebrate Community Index (MCI)		

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Community outcome 2

The Ashley/Rakahuri River is safe for contact recreation, has improved river habitat, fish passage, and customary use; and has flows that support natural coastal processes

Narrative: The river meets National standards for swimmable contact recreation. The habitat and fish passage along the river are improved to encourage more customary use and mahinga kai gathering. Braided river bird populations are protected and numbers improved. The river mouth and estuary are healthy and functioning.

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Sub-outcome	Indicator	Current state	Current pathways
Human health for recreation	Cyanobacteria		
	E coli.		
Instream habitat	Macroinvertebrates		
	Periphyton (nuisance algae)		
	Sediment		
	Continuous flow over length of river (connectedness)		
	Fish passage		
Cultural assessment			
Water quality	Phosphorus for plant growth		
	Suspended solids		
Diversity and abundance of bird life	Flow - braid morphology		
	Food supply		
Estuary assessment	Faecal coliforms		
	Macroalgae distribution and abundance		
	Aquatic vegetation		
	Toxins - metals		
National Policy Statement for Freshwater Management (plus MCI)	Nitrate (Toxicity)		
	Ammonia (Toxicity)		
	E coli.		
	Macroinvertebrate Community Index (MCI)		

LAND&WATER SOLUTIONS PROGRAMME
Water

Community outcome 3

The Waimakariri River as a receiving environment is a healthy habitat for freshwater and coastal species, and is protected and managed as an outstanding natural landscape and recreation resource

Narrative: Flow and water quality are maintained to support and enhance aquatic life. The river mouth is healthy and functioning. The natural braided characteristics of this alpine river are recognised for aesthetic and amenity values. Recreational opportunities, along and on the river, are sustained.

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Sub-outcome	Indicator	Current state	Current pathways
Habitat	Macroinvertebrates		
	Periphyton (nuisance algae)		
	Sediment		
	Continuous flow over length of river (connectedness)		
Water quality	Phosphorus		
	Nitrogen		
	Suspended solids		
Human health for recreation	Cyanobacteria		
Diversity and abundance of aquatic species	Diversity and abundance of aquatic species		
National Policy Statement for Freshwater Management (plus MCI)	Nitrate (Toxicity)		
	Ammonia (Toxicity)		
	Macroinvertebrate Community Index (MCI)		

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Community outcome 4

The zone has safe and reliable Drinking Water, preferably from secure sources

Narrative: Community drinking and domestic supplies meet NZ drinking water standards.

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Sub-outcome	Indicator	Current state	Current pathways
Safe drinking water	WDC water supplies		
	Private supplies		
Reliable private drinking water supplies	Well reliability (<50m deep)		
Cost of restoring drinking water to safe and reliable status			

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Community outcome 5

Indigenous biodiversity in the zone is protected and improved

Narrative: Protect and improve the indigenous biodiversity, habitat or ecosystems. Plant and animal pest species are managed or eliminated.

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Sub-outcome	Indicator	Current state	Current pathways
indigenous biodiversity, habitat or ecosystems	Extent of indigenous vegetation		
	Biodiversity values		
	Freshwater wetland extent		

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Community outcome 6

Highly reliable irrigation water, to a target of 95%, is available in the Zone

Narrative: Irrigation water (from both surface and groundwater) reliably supplies water to meet demand when operating within flow and allocation regimes. 100% of the irrigated area is able to be irrigated 95% of the time. The effects of climate change are considered in the planning and effective long-term management of water and land. Opportunities for water storage are considered.

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Sub-outcome	Indicator	Current state	Current pathways
Reliability of supply	Reliability of supply		

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Community outcome 7

Optimal water and nutrient management is common practice

Narrative: All land and water users' practise management that maximises water use efficiency and minimises inputs of nutrients and pollutants to water. Industry agreed Good Management Practices and Farm Environment Plans are adopted as everyday farm management tools

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Sub-outcome	Indicator	Current state	Current pathways
Optimal water and nutrient management	Industry agreed Good Management Practice		
	Audited Farm Environment Plans or Management Plan		
	Community water supply use		
	Domestic water use		
	Urban nutrients and pollutants		
	Small blocks nutrients and pollutants		

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Community outcome 8

There is improved contribution to the Regional Economy from the Zone

Narrative: The zone has thriving and vibrant communities supported by a sustainable local economy based on diverse and productive land and water use. Integrated and sustainable management of the effects of flooding, earthquakes and climate change protect assets and amenities and build resilience in communities and ecosystems.

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Sub-outcome	Indicator	Current state	Current pathways
Thriving and vibrant communities	Population		
	Population - age distribution		
	Industrial zones		
	Numbers of children at the District's urban and peri-urban schools		
Diverse and productive land and water use - primary industry	Catchment direct GDP		
	Catchment direct employment		
	Regional GDP		
	Regional household income		
	Regional employment		

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME
Canterbury Water

Waimakariri Zone "Current Pathways" Planning Overview – November 2016

Purpose

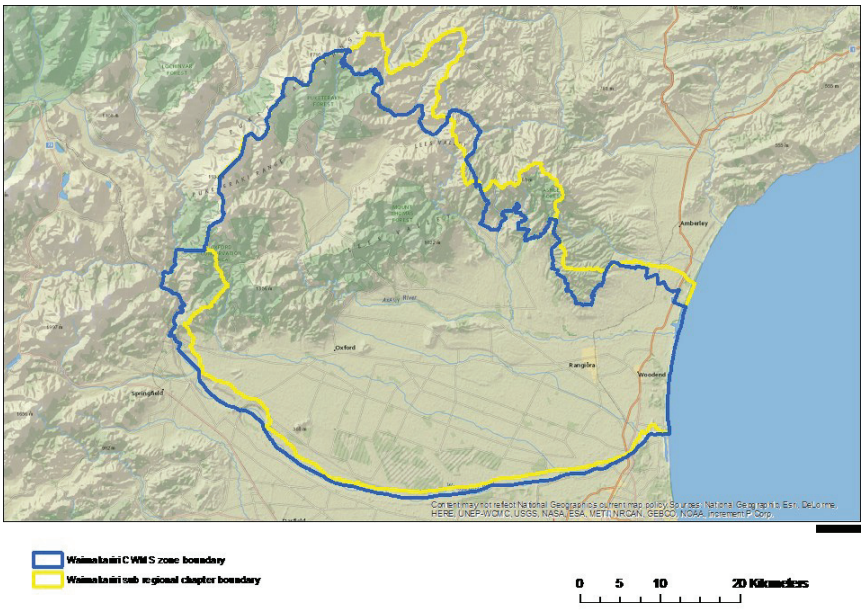
This is an overview of the current regional plans for managing freshwater in the Waimakariri Zone which include the Canterbury Land and Water Regional Plan (LWRP) and Waimakariri River Regional Plan (WRRP).

Regional plans must meet the requirements of the Resource Management Act 1991, including the National Policy Statement on Freshwater Management (NPSFM), New Zealand Coastal Policy Statement 2010 (NZCPS), Canterbury Regional Policy Statement 2013 (CRPS) and Iwi Management Plans. In Canterbury, regional freshwater plans must also meet the requirements of the Environment Canterbury (Transitional Governance Arrangements) Act 2016. Appendix 1 shows the hierarchy of planning instruments and Appendix 4 provides a summary of the NPSFM.

Area Covered by the *Waimakariri Land and Water Solutions Programme*

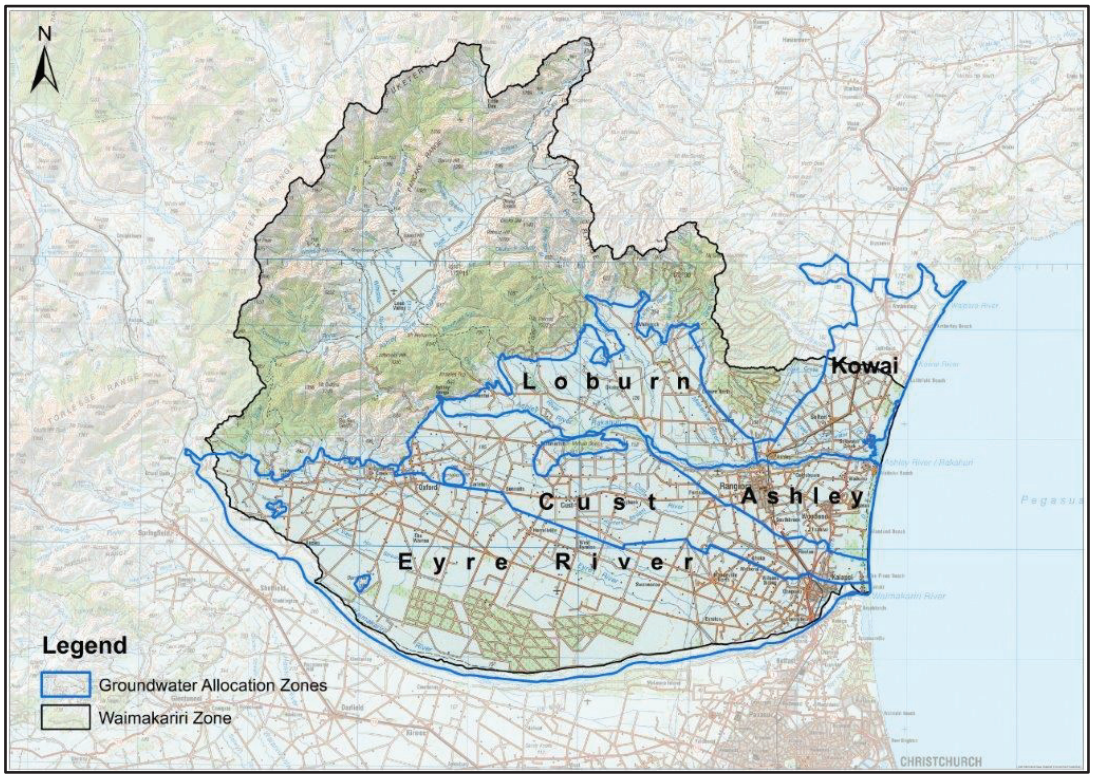
This programme is about fresh water management across all of the rivers, streams and groundwater in the Waimakariri Zone, which is similar to the sub-region boundary in Section 8 of the LWRP, and includes the Ashley River/Rakahuri catchment and plains tributaries in the area to the north of the Waimakariri River. It does not include setting water quality and quantity limits for the main stem and headwaters of the Waimakariri River. Map 1 shows the boundary of the Waimakariri zone (yellow line).

Map 1 – Waimakariri Zone boundary (yellow line)



Map 2 below shows the five Groundwater Allocation Zones (GAZ) that are within the scope of this programme.

Map 2 – Groundwater Allocation Zones in the Waimakariri Zone



What Regional Plans Apply in the Waimakariri Zone?

There are two regional plans that apply in the Waimakariri Zone:

- The Waimakariri River Regional Plan (WRRP)
- The Canterbury Land and Water Regional Plan (LWRP)

The WRRP establishes water quality standards and flow and allocation limits for surface waters in the Waimakariri catchment. It regulates the following activities:

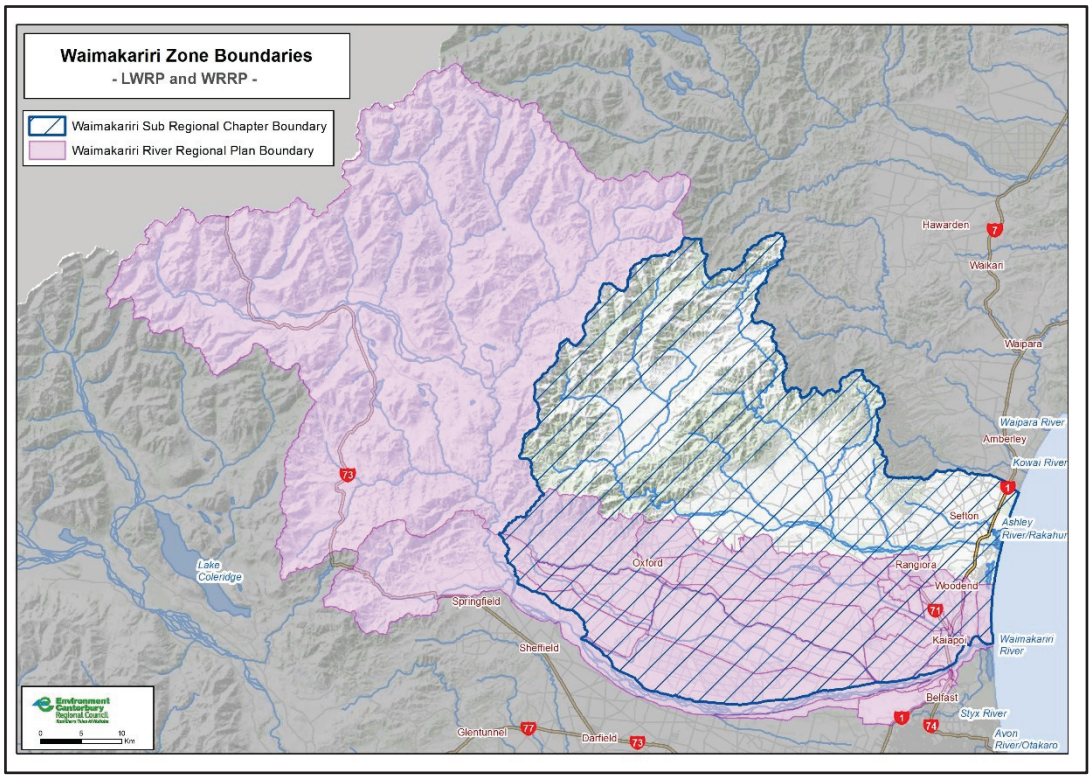
- taking surface water or hydraulically connected groundwater from the Waimakariri River and its tributaries
- use, diversion and damming of surface water
- discharges into surface water bodies, or onto or into land within 20 metres of surface water bodies, or onto or into land where contaminants may enter surface water bodies
- a range of land use activities in, on, under, or over the bed of any river, including any disturbance, deposition of material, the introduction or removal of any plant material, and activities relating to the use and maintenance of structures.

In the Waimakariri Zone, the LWRP regulates the following activities:

- use of land for farming activities (see next section for information on the nutrient management rules)
- taking surface water or hydraulically connected groundwater from the Ashley River/Rakahuri and its tributaries and the taking of groundwater
- activities in the margins and beds of rivers (such as vegetation clearance and earthworks)
- stock exclusion from waterbodies
- stormwater discharges and community wastewater systems
- protection of community drinking water
- other activities not controlled by the WRRP that are within the functions of a regional council under the Resource Management Act. [1]

Map 3 below identifies the areas where the WRRP and LWRP apply.

Map 3 – Area covered by the WRRP and Section 8 of the LWRP



Plan Elements included in "Current Pathways" Technical Assessment

The rules to manage freshwater in the Waimakariri Zone today are summarised under the headings:

- Nutrient management for farming
- Stock exclusion

[1] The functions of regional councils are set out in section 30 of the Resource Management Act 1991.

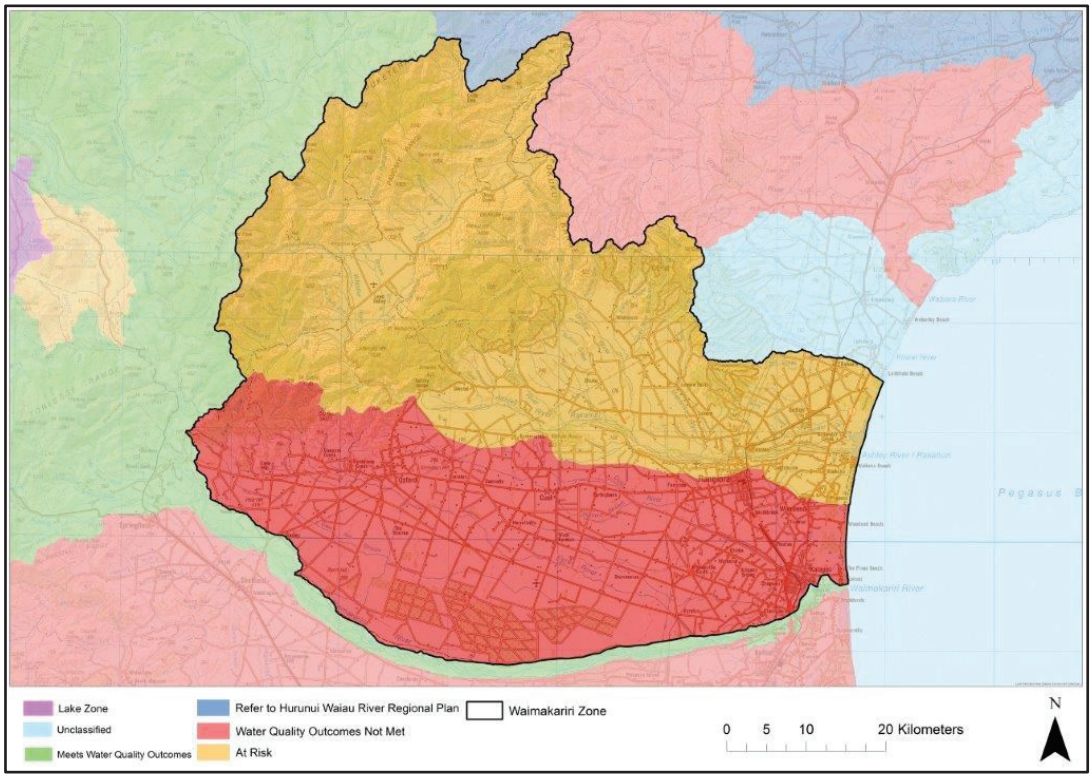
- Groundwater allocation limits
- Surface water minimum flows and allocation limits
- Stream depletion and hydraulically connected groundwater takes
- Resource management issues not reflected in modelling

Nutrient Management for Farming

The LWRP classifies all of Canterbury into different "Nutrient Allocation Zones". As shown in Map 4 below, in the area covered by the Waimakariri Land and Water Solutions Programme process:

- The part of the Waimakariri zone within the Waimakariri catchment is a "red nutrient allocation zone", meaning that outcomes for water quality are not currently being met.
- The rest of the Waimakariri zone (including the Ashley River/Rakahuri catchment) is an "orange nutrient allocation zone", meaning that water quality outcomes are at risk of not being met.

Map 4 – Nutrient Allocation Zones in the Waimakariri Zone (Black line)



The LWRP has bespoke rules for each nutrient allocation zone (see summary in Appendix 2). These are operative and apply to landowners in the zone now.[2]

[2] User friendly and up to date information for farmers in the zone can be found at: http://www.canterburywater.farm/

Plan Change 5

The nutrient management rules in the LWRP are currently being reviewed through the Nutrient Management Plan Change (Plan Change 5).

The Plan Change builds on the existing LWRP concepts of nutrient allocation zones, audited Farm Environment Plans, the use of Overseer® and managing farming activities according to risk. It also:

- Brings Good Management Practices[3] and good management practice nitrogen loss rates[4] (through the Farm Portal) into the rules
- Reduces uncertainty of Overseer® version changes by replacing consenting thresholds that were based on fixed numeric nitrogen loss rates with consenting thresholds based on areas of irrigated land and winter grazing
- Addresses inequality and grandfathering historic high nutrient losses by holding farming activities to their baseline nitrogen loss rates as if they were operating at Good Management Practice in the 2009 – 2013 baseline period.

What Plan Change 5 may mean for farmers is also summarised in Appendix 2. However please note that:

- Plan Change 5 is part-way through the hearing stage of the RMA process. The final version may not be the same as the version initially notified in February 2016
- Its rules do not have any legal effect until the changes are made operative (after the hearing process in 2017)
- Any significant changes resulting from the hearing process will be assessed once the decision is known.

The "Current Pathways" scenario assumes that the notified rules in Plan Change 5 are in place.

Stock Exclusion

Stock access to waterways can damage the bed and banks and adversely affect stream life. It may also result in discharges of dung and urine to rivers and streams introducing pathogens that can create a health risk where a river or stream is used for mahinga kai gathering or recreational activities. Cattle, deer and pigs are particularly attracted to water and can have a serious impact on water quality.

The LWRP has strict rules that cover livestock access to waterbodies. In summary, access by farmed cattle, deer or pigs is **prohibited** in inanga habitat and salmon spawning areas, community drinking water

[3] Good Management Practices are those described in the September 2015 document "Industry-agreed Good Management Practices relating to water quality"

[4] Plan Change 5 introduces the concept of "Baseline GMP Loss Rate" which means the average nitrogen loss rate below the root zone, as estimated by the Farm Portal, for the farming activity carried out during the nitrogen baseline period (2009-2013) if operated at good management practice.

protection zones, waterways 1000 metres upstream of a freshwater bathing site; and the bed or banks of a spring-fed plains river.

Stock access to waterways and wetlands is **permitted** if it does not result in pugging or de-vegetation that exposes bare earth in the bed or banks, a conspicuous change in clarity or colour of the water outside the mixing zone or cattle standing in any lake. There is an exception to these conditions for stock crossing points.

A **resource consent** (non-complying) is needed for any access by intensively farmed stock to any waterway over 1 metre wide or 10 centimetres deep, or to a wetland. Intensively farmed stock are cattle or deer grazed on irrigated land or contained for break-feeding of winter crops, dairy cattle of any class including cows, whether dry or milking, and whether on irrigated land or not, and farmed pigs.

The "Current Pathways" scenario assumes full compliance with the LWRP stock exclusion rules and additionally that intensively farmed stock are fenced from rivers where their access is classified as a "non-complying" activity.

Groundwater Allocation Limits

The LWRP defines five Groundwater Allocation Zones (GAZs) in the Waimakariri Zone: Eyre River, Cust, Ashley, Loburn and Kowai. The groundwater allocation limits for these zones define the maximum amount of groundwater that can be abstracted over the course of a year. The Eyre River is the only GAZ that is fully allocated. The LWRP rules prohibit further allocation from fully or over-allocated zones.

The "Current Pathways" scenario assumes the groundwater allocation increases to allow for permitted activities in Zone that are not deemed to be fully allocated (Cust, Ashley, and Kowai).

Surface Water Minimum Flows and Allocation Limits

The current environmental flow and allocation regimes for the rivers and streams within the Waimakariri zone are set out in the LWRP and the WRRP. The LWRP and WRRP are fully operative plans and have legal effect.

Section 8 (Waimakariri) of the LWRP includes minimum flow and allocation limits for the Ashley River/Rakahuri and its tributaries Taranaki Creek, Waikuku Stream, Little Ashley Creek and Saltwater Creek.[5]

The WRRP contains the minimum flow and allocation limits for the tributaries of the Waimakariri River within the Waimakariri Zone - Courtenay Stream, Greigs Drain, Kaiapoi River, Cust Main Drain, Cust River, No.7 Drain, Ohoka Stream, Cam River, North Brook, Middle Brook and South Brook.[6]

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[5] LWRP Section 8.6.1 Table 7: Ashley River/Rakahuri Environmental Flow and Allocation Limits

[6] Table 2 in the Waimakariri River Regional Plan.

Older resource consents may have different minimum flow conditions to those in the LWRP and WRRP. This is because minimum flows were historically set on a consent by consent basis. However, on renewal these consents would be required to comply with the minimum flow conditions in the LWRP and WRRP.

LWRP rules prohibit further allocation of water once limits are reached, while in the WRRP it is a 'non-complying' activity to apply for water beyond the limits in the plan.

Though not reflected in the technical assessment, it is important to note that for the Ashley River/Rakahuri and tributaries that are over-allocated, that the LWRP should result in a 10% reduction in over-allocation over time as consents are renewed. Policy requires that where water consented for abstraction exceeds the allocation limit for surface water and stream depleting groundwater, that replacement of existing resource consents are for no more than 90% of the previously consented rate of take and seasonal or annual volume[7].

The "Current Pathways" scenario assumes that the minimum flow restrictions in the LWRP and WRRP are applied. It also assumes the "existing" surface water allocation remains the same irrespective of whether the river or stream is over or under-allocated relative to the allocation limits in the LWRP and WRRP.

Stream Depletion and Hydraulically Connected Groundwater Takes

Some shallow groundwater abstractions are hydraulically connected to surface water and directly deplete the flow in the stream. The degree to which a groundwater take is connected to a stream determines how much water is counted against the allocation limit for the stream and whether the groundwater take is subject to minimum flow restrictions or not.

The method for determining the degree hydraulic connection and stream depletion effect (expressed in litres per second) is different in the LWRP and WRRP. The stream depletion effect in the WRRP is calculated on the effect of a 30 day continuous pumping period. Takes with a stream depletion rate greater than 5 L/s are subject to the surface water minimum flow restrictions set out in the WRRP.

The stream depletion effect in the LWRP is calculated on the effect of a 7 day and 150 day continuous pumping period. Groundwater takes are categorised as having a Direct, High, Moderate or Low stream depletion effect. Takes with a Direct or High (greater than 5 L/s) stream depletion effect are subject to the surface water minimum flow restrictions set out in the LWRP.

The "Current Pathways" scenario applies the relevant plan stream depletion rules to groundwater takes within the areas covered by the WRRP and LWRP.

[7] LWRP Policy 4.50

Plan Elements not included in "Current Pathways" Technical Assessment

There are many plan elements and activities controlled by LWRP rules that have not been technically assessed[8].This is generally because the activity does not lend itself to being assessed numerically or is site specific and does not fit with the broad scale of the modelling exercise. The essential point is that these activities would continue to be managed by the relevant region-wide rules under the "Current Pathways" scenario. A few examples include:

- Discharges from wastewater, drainage water and stormwater systems
- Discharges of industrial and trade wastes
- Protection of drinking water sources
- Works in and around rivers, lakes and wetlands

Looking Ahead to 2017

Next year we will explore further scenarios and start to crystallise what water issues need addressing, where they are and possible options for solutions.

The LWRP has a set of region-wide objectives, policies and rules that were made operative only last year, and has already been subject to plan changes to improve it from the initially notified version in 2012.

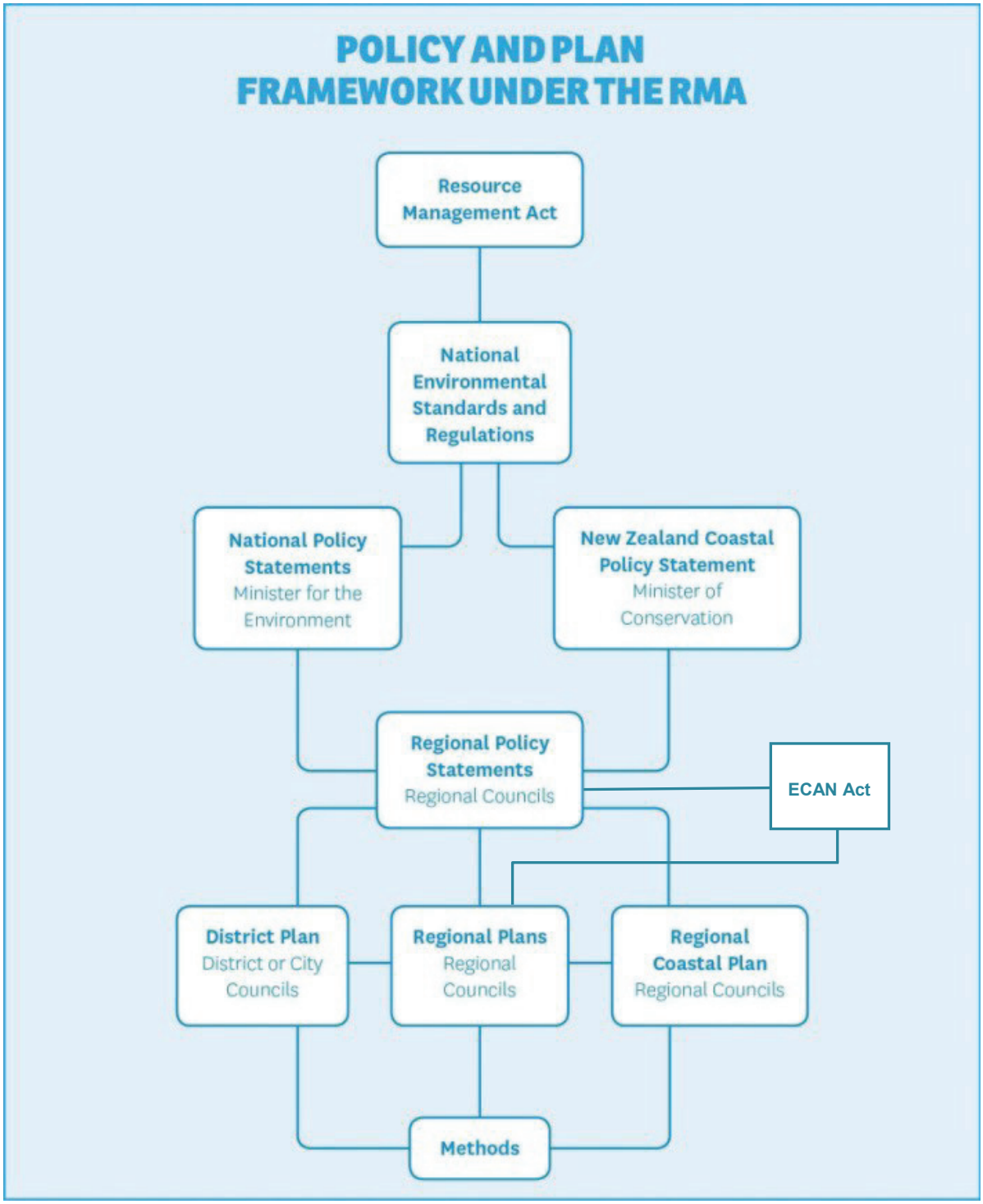
Later on in this we will need to determine catchment-specific water quality and quantity limits and decide if the rules in the current plans do the job, need to be tweaked, or if new rules are needed to respond to the water issues in the zone.

Whilst a plan change is a likely outcome from this process, it is important to recognise that plan changes create uncertainty and are challenging exercises. Other options will also need to be looked at including non-statutory options such as significant on-the-ground environmental enhancement projects to achieve freshwater outcomes.

The package of solutions that the Zone Committee settles on will set out the "drafting instructions" for the Waimakariri sub-region section of the LWRP and recommendations for practical actions. It will be the Council's responsibility to make sure the solutions work within the legal framework and are based on evidence.

[8] See Section 5 Region-wide Rules in the LWRP for the full list of topics and rules

Appendix 1 – Hierarchy of Planning Instruments



Appendix 2 – Summary of LWRP Nutrient Management Rules

Current Nutrient Management Rules

The LWRP defines five categories of Nutrient Allocation Zone (NAZ):

- Red – Water Quality Outcomes Not Met
- Orange – Water Quality Outcomes At Risk
- Green – Meets Water Quality Outcomes
- Purple – Lake Zone
- Light Blue - Unclassified

The LWRP has bespoke sets of rules for each zone. Within the Waimakariri Zone there are three Nutrient Allocation Zones that are either "red" or "orange". The "Ashley-Waimakariri" NAZ is red. The "Ashley" and "Saltwater Creek" NAZs are orange zones. The "red" and "orange" zone rules are as summarised below.

Red Zone rules do not require a resource consent to use land for a farming activity on a property (i.e. it is a permitted activity) where:

- the property is irrigated with water from an irrigation scheme or a principal water supplier, and the irrigation scheme or a principal water supplier holds a discharge permit that that specifies the maximum annual amount of nitrate-nitrogen that may be discharged or leached; *or*
- the property is less than 5 ha, or where the "nitrogen loss calculation"[9] does not exceed 10 kilograms per hectare per year (kg/ha/yr); *or*
- the nitrogen loss calculation is greater than 10 kg/ha/yr but does not exceed 20 kg/ha/yr and the "nitrogen baseline" for the property; *or*
- up to the 1 January 2017, the nitrogen loss calculation is greater than 20 kg/ha/yr and does not exceed the nitrogen baseline for the property.

After 1 January 2017, farmers in the red zone with nitrogen losses greater than 20 kg/ha/yr (that are not operating under a qualifying irrigation scheme discharge permit) will require resource consents to use land for a farming activity. Consents will require the preparation and implementation of a Farm Environment Plan that is subject to auditing requirements, and will require that the nitrogen loss calculation does not exceed the nitrogen baseline.

Orange Zone rules do not require a resource consent to use land for a farming activity on a property (i.e. it is a permitted activity) where:

- the property is irrigated with water from an irrigation scheme or a principal water supplier, and the irrigation scheme or a principal water supplier holds a discharge permit that that specifies the maximum annual amount of nitrate-nitrogen that may be

[9] The terms "nitrogen loss calculation" and "nitrogen baseline" are both defined in the LWRP. In summary, the term nitrogen loss calculation means the average nitrogen loss over the past four years, while nitrogen baseline means the average nitrogen loss in the baseline period of 2009 – 2013.

discharged or leached; *or*

- the nitrogen loss calculation does not exceed 20 kg per hectare per annum; *or*
- the nitrogen loss calculation exceeds 20 kg per hectare per annum but the property is less than 50 ha and the nitrogen loss calculation does not exceed the nitrogen baseline.

After 1 January 2016, farmers in the orange zone with nitrogen losses greater than 20 kg/ha/yr and greater than the nitrogen baseline (that are not operating under a qualifying irrigation scheme discharge permit) require resource consents to use land for a farming activity. Consents will require the preparation and implementation of a Farm Environment Plan that is subject to auditing requirements, and will require that the nitrogen loss calculation does not exceed the nitrogen baseline by greater than 5 kg/ha/yr.

Plan Change 5 Nutrient Management Rules

Once the rules are made operative, Plan Change 5 means some farmers will be required to obtain resource consent to use land for a farming activity. This will include farming on properties which:

- In **red nutrient allocation zones**, irrigate more than 50 ha of land or, if irrigating less than 50ha, propose to increase the area of irrigated land by more than 10 ha; or
- In **orange, green or light blue nutrient allocation zones**, irrigate more than 50 ha of land; or
- In **all nutrient allocation zones** except lake zones, use more than 20 ha of land for winter grazing of cattle[10].

Consenting processes will include a requirement for the preparation and implementation of audited Farm Environment Plans. These plans are a vital part of the approach taken in Canterbury to effective water management. They provide a mechanism that ensures Good Management Practices are followed, without being overly prescriptive and limiting farmer innovation.

For other farmers on properties of 10 hectares or more, consent will not be required, but it will be necessary to register and report farming activities to the new online Farm Portal, and to prepare and implement non-audited Management Plans. The Portal requirements enable Environment Canterbury to gather useful information at a catchment level about nitrogen losses, which will be used to inform future sub-region processes. The Management Plans are another mechanism to ensure that Good Management Practices are followed on-farm.

The use of land for a farming activity on properties less than 10 hectares is a permitted activity, without conditions.

Note:

Plan Change 5 received 129 submissions is currently at the public hearing stage in the RMA process. It may be reasonable to assume that the intent of Plan Change 5 will be retained but it is likely that the detail

10 Winter grazing is defined in Plan Change 5 as the grazing of cattle within the period of 1 May to 30 September, where the cattle are contained for break-feeding of in-situ forage crops or supplementary feed that has been brought onto the property.

of rules will be different to those that were notified. We will not know what the independent hearing panel's final recommendations look like until sometime in the second quarter of 2017.

Appendix 3 – Summary of Planning Assumptions modelled for "Current Pathways"

Plan Change 5 Nutrient Management Rules

Some of the assumptions below are "approximations" of the rules in Plan Change 5 and may not reflect the "precise" requirements of the rules.

Red Nutrient Allocation Zones – permitted activities

- Assume all properties less than 10 ha increase nitrogen losses up to an amount that is realistic
- Properties can undertake 20 ha Winter Grazing and 10 ha increase in irrigated area (provided total irrigated area remains below 50 ha)

This is only applied to properties that do not exceed one of these thresholds

Red Nutrient Allocation Zones – consented activities

- Properties with more than 20 ha of winter grazing or 50 ha of irrigation reduce or increase nitrogen losses to the GMP loss rate for their existing land use

Orange Nutrient Allocation Zones – permitted activities

- Assume all properties less than 10 ha increase nitrogen losses up to an amount that is realistic
- Properties can undertake 20 ha Winter Grazing and 50 ha of irrigation

This is only applied to properties that do not exceed one of these thresholds

Orange Nutrient Allocation Zones – consented activities

- Properties with more than 20 ha of winter grazing or 50 ha of irrigation reduce or increase nitrogen losses to the GMP loss rate for their existing land use

LWRP Stock Exclusion Rules and Riparian Management

- All farmed cattle, deer and pigs fenced from rivers in line with prohibitions in LWRP
- Intensively farmed stock assumed to be fenced from rivers where their access is classified as a non-complying activity
- Where non-intensively farmed stock are allowed access through the permitted activity rules in the LWRP it is assumed that those stock are not excluded from waterways.

LWRP Groundwater Allocation Limits

- No new allocation in the Eyre River GAZ
- Assumes the groundwater allocation increases to allow for permitted activities in Zone that are not deemed to be fully allocated (Cust, Ashley, and Kowai).

LWRP / WRRP Surface Water Minimum Flows and Allocation Limits

- Where existing surface water and stream depleting groundwater takes have different minimum flows to those in the LWRP or WRRP, they are assumed to be brought into line with the relevant plan minimum flows over time
- Assume that the “existing” amount of allocation remains the same irrespective of whether the river or stream is under or over-allocated relative to the environmental flow and allocation limits in the LWRP or WRRP.

LWRP / WRRP Stream Depletion Calculations

- Relevant plan stream depletion rules applied to determine the stream depletion effect (L/s) for groundwater takes hydraulically connected to surface water bodies (WRRP calculation based on 30 day continuous pumping period and LWRP calculation based on 7 day and 150 day continuous pumping period) irrespective of any current consents with different requirements.

Appendix 4 – Summary National Policy Statement for Freshwater Management 2014

The summary information below is taken from Ministry for the Environment's website. For more detailed information about the NPS-FM see the guide to implementing the NPS-FM or the NPS-FM itself.

- A guide to the National Policy Statement for Freshwater Management 2014 http://www.mfe.govt.nz/node/20320
- National Policy Statement for Freshwater Management 2014 http://www.mfe.govt.nz/publications/fresh-water/national-policy-statement-freshwater-management-2014

What the NPS-FM is about

National policy statements are issued by the government to provide direction to local government about matters of national significance. The National Policy Statement for Freshwater Management 2014 (NPS-FM) is about recognising the national significance of fresh water and Te Mana o te Wai (the mana of the water).

What it does

The NPS-FM provides direction about how local authorities should carry out their responsibilities under the Resource Management Act 1991 for managing fresh water. It's particularly important for regional councils, as it directs them to consider specific matters and to meet certain requirements when they are developing regional plans for fresh water.

What it requires

In a nutshell, the NPS-FM directs regional councils to set objectives for the state their communities want for their water bodies in the future and to set limits to meet these objectives.

Some of the key requirements of the NPS-FM are to:

- safeguard fresh water's life-supporting capacity, ecosystem processes, and indigenous species
- safeguard the health of people who come into contact with the water through recreation
- maintain or improve the overall quality of fresh water within a region
- protect the significant values of wetlands and outstanding freshwater bodies
- follow a specific process (sometimes referred to as the National Objectives Framework or NOF) for identifying the values that tāngata whenua and communities have for water, and using a specified set of water quality measures (called attributes) to set objectives
- set limits on resource use (eg, how much water can be taken or how much of a contaminant can be discharged) to meet limits over time and ensure they continue to be met
- determine the appropriate set of methods to meet the objectives and limits

- take an integrated approach to managing land use, fresh water, and coastal water
- involve iwi and hapū in decision-making and management of fresh water.

How it is being implemented

The NPS-FM must be fully implemented no later than 31 December 2025 (or 31 December 2030 in certain circumstances).

If councils cannot implement the NPS-FM by the end of 2015 they must identify a programme of time-limited stages to meet the 2025 date, known as a progressive implementation programme. They must report annually on their progress towards their progressive implementation programme.

Read about Regional councils' implementation programmes. http://www.mfe.govt.nz/node/18885

The parts of the NPS-FM

Part A and Part B

Give direction on what must be provided for, or addressed, in a regional plan in terms of managing water quality and quantity. Part A is about water quality and Part B is about water quantity.

Central to these sections are requirements for:

- maintaining or improving overall water quality across a region
- safeguarding the life-supporting capacity of fresh water, and the health of people and communities
- the efficient use and allocation of water
- protecting the significant values of wetlands and outstanding freshwater bodies
- setting freshwater objectives, limits, and methods.

Part C

Gives direction to regional councils about managing freshwater in an integrated way. Councils must manage the relationship between land use and development, and fresh water. Councils must also manage the effects of land use and development, including cumulative effects, on freshwater and coastal water.

Part CA

Provides the process for setting freshwater objectives. This section has two appendices which provide lists of national values (Appendix 1) and attributes (Appendix 2) that regional councils must use to set freshwater objectives.

Part CB

Provides direction on how to monitor progress towards, and achievement of, freshwater objectives.

Part CC

Gives direction to regional councils about the requirement to account for freshwater takes and discharges. This means that when it comes to setting freshwater objectives and limits, councils and the community know what water is being taken and what contaminants are being put into freshwater bodies.

Part D

Provides direction on involving iwi and hapū in reflecting tāngata whenua values and interests in water management.

Part E

Provides information on the timeframe for implementing the NPS-FM.

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

Waimakariri Zone Team Update

November 2016

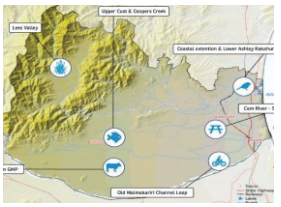
For more information visit www.waimakariri-water.nz
or find us at facebook.com/canterburywater

WAIMAKARIRI DISTRICT COUNCIL

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

Background

- 5 Year Outcomes to be achieved by 2020
- Waimakariri Land and Water Solutions Programme
- Lead Stories (Being informed by Current State etc…)
- Full team (expanded to include all Compliance and Monitoring)



WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

Outcome 1: Instream ecosystem health, mahinga kai gathering and recreational use increases in Silverstream and Cam by 2020

- Sub Catchment Plans/ Lead Stories being informed by d Current State & Henry Hudson Cam Report etc...
- First 500 concept being scoped (Protection of large springheads in priority catchments)
- Good progress with FEPs but still work to be done
- Training course for Small Block holders under development
- Pollution Prevention Programme for Rangiora Business need addressing

STATUS – *Not Started | Started |* ***Progress*** *| Good Progress | Achieving*

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

Outcome 2: Mahinga Kai food gathering standards are part of all catchment monitoring programmes by Dec 2017

- Building in to the programme

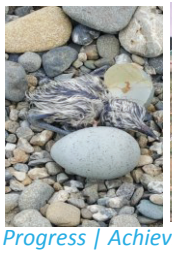
STATUS – *Not Started |* ***Started*** *| Progress | Good Progress | Achieving*

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

Outcome 3: A work programme for the Ashley River/Rakahuri delivering improvements in overall braided river ecosystem health and recreational opportunities by 2020

- Inanga Spawning Area Lower Ashley/Rakahuri
- Wrybill & Island Creation
- Coastal park extension/ Lower Ashley/Rakahuri Lead Story
- Kaiapoi River



***STATUS** – Not Started | **Started** | Progress | Good Progress | Achieving*

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

Outcome 4: All farmers are operating at Good Management Practice, and more collective groups are managing within nutrient limits by 2020

- Irrigation Field Days
  - ECan, Irrigation NZ and others, Good but can get better
  - WIL field day
- 1 on 1 targeted programme
  - www.canterburywater.farm/waimakariri
  - Orange Zone
    - Beef & Lamb - FEP focus
  - Red Zone
    - Consent focus - Synlait & Fonterra Nov workshops
- Water metering and water use monitoring
  - 481 Consents, 0 unaccounted, 3 infringement notices
- Whole of farm visit
  - One stop shop

***STATUS** – Not Started | Started | Progress | **Good Progress** | Achieving*

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

Outcome 5: Urban and rural communities are implementing solutions to land and water management issues by 2020

- Waimakariri Land & Water Solutions Programme
  - Engagement and Awareness
  - Solutions Development
  - FYI: New ECan www
- Relationship Development
  - WDC Biodiversity
  - WD Development Strategy

STATUS – *Not Started | Started |* ***Progress*** *| Good Progress | Achieving*

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

Outcome 6: Greater numbers of residents in the zone have access to drinking water supplies that meet the New Zealand Drinking Water Standards. A water storage solution is identified to provide of the Ashley River/Rakahuri flows and reliability for surface water irrigation by 2020

- No Update

STATUS – *Not Started | Started |* ***Progress*** *| Good Progress | Achieving*

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

Outcome 7: Integrated stakeholder awareness and engagement in biodiversity planning and management in the district by 2020

- Lead Stories
- Relationship Development
  - WDC Biodiversity
- Current State meetings
- Hudson report

***STATUS** – Not Started | Started | **Progress** | Good Progress | Achieving*

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

Bringing it all together

- Developing the Lead Stories
- 2017 Work Programme
- Re-visit ZIP
- Innovation

WAIMAKARIRI LAND&WATER SOLUTIONS PROGRAMME

Canterbury Water

AGENDA ITEM NO: 6	SUBJECT MATTER: DairyNZ – Briefing
REPORT TO: Waimakariri Water Zone Committee	MEETING DATE:12 December 2016
REPORT BY: Paul Edwards, Scientist (Farm Systems), DairyNZ	

PROPOSAL

This briefing is to update the Waimakariri Water Zone Committee on the DairyNZ initiatives and activities relevant to the zone.

BY WHO

This briefing will be provided by Paul Edwards, one of DairyNZ's farm systems scientists. Paul has been working with a group of monitor farmers in Canterbury as part of the Forages for Reduced Nitrate Leaching programme.

FOCUS

The goal of the DairyNZ-led Forages for Reduced Nitrate Leaching programme is to develop readily adoptable farm systems capable of reducing nitrate leaching by 20% by 2020. The programme is a cross sectoral collaboration between the dairy, arable and sheep and beef sectors and involves AgResearch, Plant & Food Research, Lancare Research, Lincoln University and the Foundation for Arable Research.

The programme focuses on developing practical options to reduce nitrate leaching using alternative pasture species and crops and crop rotations with the aim of improving utilisation of nitrogen by plants and animals, and maintain or improve profitability, animal welfare and total environmental footprint. Monitor farmers are involved to assess practicality and risks associated with potential mitigation options, and demonstrate good management practise and implementation of diverse pastures and/or crops.

RECOMMENDATION

That the Committee receive this briefing for their information, and in relation to the committee's 5 Year Outcomes and community engagement for 2017.

AGENDA ITEM: 7	**SUBJECT:** Current Pathways Community Feedback – briefing
REPORT TO: Waimakariri Water Zone Committee	**MEETING DATE:** 12 December 2016
REPORT BY: Murray Griffin, Facilitator, ECan	

PURPOSE
To provide the committee with an overview of the community feedback from the Current Pathways community meetings held in November 2016.

BACKGROUND
This feedback is from the two community held in November on the 'Current Pathways' scenario. One of the three meetings scheduled was cancelled due to the Cust Hall being closed for inspection post the 13 November earthquakes.

The two community meetings held were:

- 16 November in Rangiora
- 21 November in Waikuku

The feedback and questions collated from these meetings is provided for the committee's review as agenda item 7-1 and 7-2 respectively.

WHO
This briefing will be led by Jo Stapleton (Senior Planner, ECan)

RECOMMENDATION
That the Zone Committee considers this community feedback in the development of the Waimakariri Land and Water Solutions Programme.

Community Feedback – Current Pathways November 2016

The following information was collected by WDC and ECan Staff at "current pathways" scenario meetings in Rangiora and Waikuku. The content of the feedback is largely unaltered reflecting what was said in the feedback sessions and written on the forms filled in by staff. However, any repeated points have been summarised. The information includes feedback from the Waimakariri Land and Water Solutions Programme website. The collated feedback, along with the feedback on the "current state" will be used to inform development of the solutions package. A number of questions we received during the meetings and in the feedback. A question and answer list (including current state questions) will be provided at a later date.

Water Quality

Acceptable	Unacceptable	Solutions
❖ N increase – depends on level of increase ❖ Decrease in sediment + E.coli is acceptable (accept also that this is a natural process) ❖ Good that E.coli is not too bad – but is this correct? ❖ Happy with Cam + Waikuku (apart from E.Coli) ❖ The focus on stock exclusion in lowland streams ❖ The groundwater and nitrate lag effect being raised ❖ Opportunity to reduce run-off ❖ Spring-fed streams – still clear and cool ❖ It is inevitable that water supply may be compromised at some stage	❖ Nutrients – what's in the post and saltwater intrusion ❖ Nitrogen increases – don't want increases to hold or decrease – provisions only where increases occurs (believe 90% of zone is ok) – wide variance in N concentrations in various waterways ❖ Lag time – time to fix ❖ Water quality in lowland springs ❖ Nitrate rise in streams ❖ Nitrogen/cyanobacteria in Waimakariri – want to reduce it further ❖ Drinking water could be a real issue with rising N loads ❖ Increase N in drinking water is not good – not right that it can influence safety of individuals ❖ Potential impact of increased irrigation on public drinking water wells	❖ Baseline (historical data) – what is naturally coming out of the water ❖ What land use is impacting this lag effect – how far up the plains? ❖ Intensive landuse on light soils creates conditions for leaching – solution could be landuse change (long term) ❖ Reduce intensification on the light soils/environmental conditions. ❖ Reduce drainage (through technology) – irrigation efficiency ❖ More water quality sampling and make monitoring points available ❖ Make water quality monitoring data available on the website (e.g. for Saltwater Creek) so community can see there if there is a problem and can take action ❖ Water quality in the Ashley and flows

	❖ Chlorination of drinking water is unacceptable ❖ The idea of people needing to filter their own drinking water ❖ Not maintaining soil health – balance of nutrient in soil – denitrifying and nitrifying – sensitive to environmental factors ❖ Gorse and Broom in Ashley Gorge to Okuku ❖ Treatment of wastewater ❖ Spraying around waterways ❖ The impact of a few on the wider community ❖ E.coli is an issue for private wells ❖ Stock impacts on E.coli in streams – not covered in assessment – needs to be addressed in solutions ❖ Clarify why N concentrations so high with permitted activity thresholds (unrealistic scenario) ❖ Sediment level – in lake – increased recently. Seems like an issue locally. ❖ Scenario accepts nitrate/nitrogen will increase and nitrate will increase in drinking water ❖ Not maintaining cultural values ❖ Deer being in stockwater races – enforce stockwater race bylaw ❖ Stock are not the main cause of sediment in Saltwater Creek – it is highly modified (it used to be shallow in its natural state) and dredging has made it deep and contributed to the sediment	won't improve until the bed of the Ashley is cleared of weeds/willows ❖ Need to fix problem at source ❖ Waterways – all the water ends up in stockwater races and lowland streams — but where are nutrients and sediment coming from? ❖ Need confidence in monitoring to be sure what is expected to happen is happening. Current state reports short term monitoring only – monitoring needs to continue ❖ Need to look to long-term solutions – possibly over several generations ❖ Nitrate removal walls/ bioreactors could be a solutions to N issues – partial solution – spring-fed streams could improve situation ❖ Nitrate will have to be taken out. Is a community issue – has to pay for it collectively ❖ We all want better water quality – this will happen with improving technology, improved infrastructure, efficient management and water storage. ❖ Use water from the Waimakariri or hill-fed rivers for drinking water as high nitrate levels in groundwater may be too difficult to address or bring under control ❖ Problem – cow urine, urine spots – issue! Need more improved Farm Management Practises to address this – P21 research – utilise in "solutions package" – encourage

	❖ High nitrate problems are caused by what happening upstream in the catchment not by the lowland farmers ❖ Erosion at the bend of the gorge upstream of Waimakariri Bridge ❖ Ashley – bank erosion has not been addressed by river engineering on the reach from Okuku to Ashley Gorge ❖ Deforestation of 90% of the Ashley Forest has caused more flooding issues and there will be nitrogen in the floodwater	more farm research – more on-farm innovation and then this extended to research for devising new innovations that all farmers can adopt readily and cost-effectively. ❖ Quantify the contribution from gorse and broom to nitrogen leaching. ❖ Managed Aquifer Recharge (MAR) – to provide a dilution factor

Water Quantity

Acceptable	Unacceptable	Solutions
❖ Flows in the Waimakariri and Ashley Rivers ❖ WIL improving flows in lowland streams	❖ Waimakariri River minimum flows being outside the brief of the Zone Committee ❖ Minimum flows do not need to increase ❖ Surprised we want wells at 50 m deep – need more clarity around risks for shallow wells ❖ Concern that with the delays in the WIL dam, Ngai Tahu's conversion to pasture of the Eyrewell forest will mean significantly more draw down and less water. ❖ The residents on the south side of Main Race Road, east of Pesters have found our 30m wells have tried up - some for the first time ever, some for the last 3 years over summer	❖ On-farm storage to improve reliability ❖ People paying for water ❖ Meters for irrigation ❖ Supplement water quantity with other water – Lees Valley etc. ❖ Need a balance – more water and more storage ❖ Lifestyle blocks shouldn't be on irrigation schemes. Should only be allowed for productive farms. If going to be short in the future should take it away. ❖ If the Eyre River received a more significant re-charge this might assist with getting us through the dry spell. ❖ Improved irrigation technology – while total area has increased the total nutrient losses

		❖ Need to increase monitoring (greater spread and frequency)

Science

Acceptable	Unacceptable	Solutions
❖ Improving science/understanding ❖ Gathering data and enquiring towards a level that is acceptable ❖ Agree with how current pathways had been portrayed	❖ "Climate change will have an effect on land and water" – pointless statement ❖ Technical reports may not consider earthquake effects (may not be significant) ❖ Too much negativity – modelling isn't necessarily accurate ❖ Better data to support policy and rule making e.g. Local knowledge, Coopers Creek/View Hill groundwater takes, mudfish project ❖ Business as usual – at GMP – all consents exercised ❖ Climate Change is very emotional – climate change doesn't happen in 10 years or 100 years ❖ Dates for metering irrigation takes ❖ Models don't incorporate variability	❖ Need more information to be able to sufficiently evaluate the information

Farming/Land Use

Acceptable	Unacceptable	Solutions
❖ Dairy Farm Management Plans produced by farmers in orange Nutrient Allocation	❖ Do not accept the projection for nutrient losses – practices are improving	❖ Productive area may not increase – but year on year improvements in production

Zones ❖ Irrigation improvement – need to average ❖ Farm Management Plans are good ❖ Good that irrigation can be made more precise	❖ Too much dairy farming ❖ The shift from family farming to commercial farming – has a high impact ❖ Reluctance to demand compliance – Farmers see others doing bad things – leads to frustration ❖ Intensifying farming seems to be a primary cause of these problems ❖ Dairying may not be the most suitable use of the land ❖ Better management of effluent being sprayed onto ground	– better animals more productive – always a growth factor – new products increases in the benefits to the district ❖ Ban future dairy farm conversions in the zone ❖ Stop farming in certain areas (management areas) ❖ Change land use – determine land use based on soil types. ❖ Sustainable/organic farming practices - Conserve water, feed crops that use less water, stock numbers, no imported palm kernel, fertiliser use ❖ Technologies i.e. essentially a probiotic for cows to reduce nitrate in cow pee ❖ Less intensification – farms can be more profitable with low inputs ❖ Any increase in irrigation needs to go with a management plan ❖ Obligation on farmers to move to better techniques ❖ Not all farms are equal – some dairy farms use little to no nitrogen on farm

Urban

Acceptable	Unacceptable	Solutions
❖ Population expected to increase – accept this will happen – but flag concerns about the effect of this on resources.	❖ Effect of urban subdivision on water quality e.g. stress on spring-heads ❖ Effects of urban development on water quality ❖ Large numbers of septic tanks given high	❖ Mandatory that every household collects and uses rainwater ❖ Subdivision and small blocks – challenge of providing drinking water/infrastructure – thinking of other solutions/settlement

	number of lifestyle blocks – is there adequate evaluation of the effects of these (seems there is a lot of reticulation) ❖ Population growth – around existing settlements over next 30 years	pattern to take pressure off provide wells – could be small blocks and centralised group systems. ❖ Farmers need to tell community more about what they are doing

On-the-ground Actions

Acceptable	Unacceptable	Solutions
❖ Riparian planting and fencing ❖ Fencing 98% of heavy livestock removed from riverside access ❖ Fencing of streams	❖ Removal of hedges are both erosion and animal welfare issues ❖ Fencing stock out of waterways increases weed growth in the riparian margins and causes problems with managing weeds	❖ Need to use drone to check length of fencing on streams ❖ More drains on farms that go into wetlands ❖ Create new wetlands ❖ Planting more trees ❖ Fencing and stock exclusion - focus on lifestyle block and other farms not just dairy farmers ❖ Help smallholders to fence and riparian plating ❖ If something could be fixed by immediate physical action then should be done e.g. physically cleaning out streams ❖ Practise change to bring about localised improvements – targeted specific projects based on really robust science to bring about improvements – e.g. Silverstream want to know upstream extent of land use effects that effect this are and more data

Economics

Acceptable	Unacceptable	Solutions
	❖ Why are we obsessed with growth? ❖ Farming need not necessarily become less significant part of the district economy ❖ Economic sources – cropping, sheep, horticulture, nuts/'pulse'	❖ Doing things differently e.g. Ravenswood – Employment and lifestyle

Biodiversity

Acceptable	Unacceptable	Solutions
❖ Actually has been huge enhancement in biodiversity in last 10 years – has improved a lot – North Brook and Middle Brook 5 years ago no Salmon in the there but there are now Salmon in there – planting and fencing good ❖ Biodiversity is not decreasing in the foothills – regeneration happening	❖ No improvement in indigenous biodiversity – some indicators seem like secondary indicators (the outcomes are presented in a way that puts more emphasis on economics).	❖ Biodiversity needs to be quantified more ❖ Habitat development for inanga spawning sites

Education/Awareness

Acceptable	Unacceptable	Solutions
❖ Important Issue – land and water management ❖ Good that we are out talking to people (e.g. one-on-one farmer visits by Land Management Advisors) ❖ Raising of the issues	❖ Whole process- important that it is done right as cost of getting it wrong is huge – make sure we get science right ❖ Is the change in the environmental situation outstripping your progress? ❖ Fixes are band aids and not dealing with	❖ Need to acknowledge the good things that are happening ❖ Messaging ❖ Get everyone on the same page ❖ Ensure the four well-beings are balanced ❖ A brain change – new thinking

❖ In the end everyone will be unhappy about some aspect. What the bottom line is for different parts of the community will vary.	sources of the issues ❖ Too narrowly focused – more factors haven't been discussed ❖ Scenario paints a poor picture ❖ No agreed acceptable level – minimum level for different indicators ❖ Nothing predicted to improve ❖ Individuals are powerless	❖ Advocating to the community that there is more to water than just the beach and rivers, it's also about what is happening on the land ❖ Think of the next generation ❖ Got to do something – Now ❖ Presentation needs to be more digestible – too much discussion in the intro ❖ Need to explain/reinforce the process – arrow need to be in presentation.

Planning/Council Process

Acceptable	Unacceptable	Solutions
	❖ PC5 Permitted Activity rules could offset gains – despite the requirement for GMP – query whether the assumptions for modelling this are reasonable ❖ 50 ha Irrigation and 20 ha winter grazing – no consideration of farm size ❖ 20 ha of Kale before consent to farm is unacceptable ❖ OVERSEER is not acceptable for regulatory purposes ❖ Constant changes to OVERSEER and nutrient loss numbers ❖ Cost of consents resulting from changes to the nutrient rules ❖ Agricultural complexity and service providers – difficulty as in Canterbury as have more than half a dozen different rule and planning approaches in the	❖ Any solutions need to be objective – has been about money so far – politics at the end to make the decisions ❖ Increase in prosecutions for people breaking their consent conditions ❖ More policing of regulations – drones ❖ Want to see more prosecutions when breaking consents ❖ Be more controlling on the amount of irrigated land ❖ Precautionary approach – too high reliability ❖ Someone has to get tough with deer farms ❖ Potential for change in NAZ (Lees Valley – Green Zone)

	region. ❖ Lack of national consistency for policing ❖ With increasing population need more enforcement of regulations ❖ No balance of four well-beings ❖ Nutrient Allocation Zone (NAZ) boundaries are incorrect ❖ GMP doesn't mean much really	

Current Pathways Questions

Water Quality

Measurement of dissolved oxygen content in waterways – why are the oxygen levels in streams and rivers not mentioned – what is the current state in streams and rivers?

Is the issue in this area water quality contaminants or water quantity?

How many cows are there in the catchment?

Effects of climate change: deforestation; as stated by the speaker, since the arrival of European settlement to NZ, considerable deforestation has occurred, but no thought towards the mass regrowth of trees in NZ and how that would offset the effects of climate change, and how that would then change the model for water nitrate?

What is the level of forestation across district – has it increased with increased planting?

Why are soil types not mentioned in current pathways presentation – this is more important than irrigation/fertiliser use as it can't be changed?

What is the effect of lifestyle blocks on water quality – septic tanks, lots of cattle and horses, unfenced waterways?

Is anyone looking at iodine spraying in Dairying? Microbes in settlement pads killed by disinfectant?

How do we deal with the effects of stormwater, urban land use and use of pesticides (such as Roundup) on water quality?

How does urban land use and use of pesticides impact on water quality e.g. use of Round up in ditches?

Explain what you mean by "lag" and "attenuation factor"?

What are we monitoring now? Is nitrogen, E.coli and sediment enough as this wouldn't help in a Havelock North situation?

How do you determe a Nitrogen Baseline if you have an uncooperative tenant?

Trends in well data – are we sure what is in the post?

Why was dairying allowed to happen?

I have concerns about the underlying assumptions behind these scenarios e.g. current state – showed sediment was the issue, not nutrients – so why are we now talking about nutrients?

Is there any historic data on water quality and how it will be impacted post-2017 (an 'in the post' question)?

Spring fed streams vary in flows throughout the year, so how are you estimating this tidal wave of N in the post?

Can you tell how far back up the catchment the N impacting on the Ohoka stream is coming from?

Can you clarify why 'Fonterra' water [not sure about this but sounded like Fonterra] is the age it is (150yrs old)?

Do you see N getting worse before it gets better?

What consideration is given in the modelling to deforestation and associated change in N load?

Has any work been done on what trees species are best for N capture?

How is aquatic and terrestrial biodiversity treated within the model/scenario?

How much sediment and N load is associated with flood events? Is this known, has it been modelled? Climate change suggests we'll get more flood events so it is important to know.

N from legumes?

Has the modelling included the Ngāi Tahu Eyrewell development?

Has there been an improvement water quality in the South Brook and Middle Brook since sewerage outfall has been removed, e.g. decline in E.coli?

N toxicity when does it become dangerous for aquatic life, compared to the NPS bottom lines? Adrian clarified 6.9 mg/l = broad tolerance level for aquatic life.

Would more consistent flows in the Ashley/Rakahuri help reduce the levels of cyanobacteria in the lower catchment? Zeb noted this is still being debated by scientists, it's complicated.

Is it fair to say hill-fed streams in the upper catchment have consistently low N loads?

How long until current Waimakariri Rivers and streams end up being as bad as Ashburton and the Hinds rivers and drains?

Drinking Water

Will increased irrigation leading to increased N in waterways and wells means there will be increasing costs for managing and treating drinking water?

Was chlorination considered as part of securing drinking water supplies?

What should WDC do in terms of securing long term drinking water supplies? It appears there are parts of the District that are likely to provide much safer drinking water sources. Are they looking in the right places? The cheaper and easier options might be gone.

What about halting urban growth as part of stopping increasing N loads?

Does WDC check for N in drinking water sources and supplies?

Water Quantity

What mechanisms are there to review current flow regimes/water allocations especially in light of climate change?

We are trying to deal with 160 years of poor land use – how long will it take to turn the ship around?

The Ashley River goes dry most summers and has done for decades. But the climate change projections suggest more wet summers.

What assumptions were used for drinking water quality in Zone Committee Outcome 4?

Why aren't river flows included in the modelling, surely they have to be in the bucket to get an accurate picture of what is going on? Is the science flawed without these flows?

Modelling

Modelling – using compliance of less than 100% for GMP, FEP, Fencing e.g. 50%, 70% compliance?

What other far more heavily populated countries of similar economies can we learn from?

Are there any other areas around the world that use as much water as NZ does?

Look at Irish practices?

Further clarify how climate change has been modelled.

On the Ground

How do we know how many streams are fenced and how much riparian planting has been done?

What about all the positive stuff that is being done – FEPs and nitrogen baselines?

Recreation

What is being done to address the collapse the sports fishing industry?

Why does the whitebait spawning habitat area [LWRP Plan Change 4] come half way across paddocks?

Why is Whitebait industry not being regulated by licences or quotas?

Do you know how many swimming sites there are in the Zone, e.g. Ashley Gorge? Is there a list? (Follow up with Kimberley) Is there a definition?

Urban

How responsible are lifestyle block owners – do they know what is happening – they are a potential source of contaminants – they may not know how to use??? – not seeking professional advice?

Septic tanks – 6000 lifestyle blocks – how many on reticulated systems; how many old systems; how many modern systems?

What is the real impact of population growth? – loss of agriculture?

Planning/Zone

How is intensification managed? Do consents limit level of stock/ha?

Read newspaper – I didn't think the article was accurate – need better reporting – didn't think the article reflected the Zone Committee meeting at all. Environment Canterbury needs to write its own press releases

What is the WWZC trying to achieve in the Ashley River – swim-ability? Where? Test the Gorge?

When decisions are finalised and set in the plan – is there a review process? Can it be reviewed more frequently?

If parts of PC5 permissions are not acceptable will the WWZC have the ability to change them?

What provisions will be reviewed once WWZC makes its recommendations?

Make the justification for the different Nutrient Allocation Zones and colour coding available

Send all landowners clear information on the rules for stock exclusion

With regard to stock exclusion – is there a map of fencing alongside waterways, where it is and isn't? Do we have this mapped? Could a drone be an option?

Do we have contingencies for climate change in the planning rules, e.g. consideration of the likelihood of more extreme events?

How will ECan planning address specific areas such as the Lees Valley on issues such as stock in waterways?

When will the PC5 decisions be released?

In the Orange Zone water quality outcomes are being met, but are at-risk?

What criteria were used to set the Nutrient Allocation Zones?

Farmers in Orange Nutrient Allocation Zones are required to demonstrate how they are managing N in order to get a consent. This is a very important issue for farmers. How is this being managed in the Orange Zone given they need to get consents?

AGENDA ITEM: 8	SUBJECT: Walk for the Planet 2017 – briefing
REPORT TO: Waimakariri Water Zone Committee	MEETING DATE: 12 December 2016
REPORT BY: Murray Griffin, Facilitator, ECan	

PURPOSE

To provide the committee with a short briefing on the Walk for the Planet event scheduled to take place over March and April in 2017.

BACKGROUND

Walk for the Planet was a grassroots pilgrimage from Rakiura (Stewart Island) to Wellington during Lent and Easter 2009 which connected with more than 300 people in communities all over the South Island, on Rakiura and in Wellington.

In 2017, the River of Life Project is planning another Walk for the Planet during March and April based in Canterbury with water as our focus - both local and global.

The River of Life Project, which comes under the umbrella of the Central South Island Synod, is an ecumenical faith-based initiative which was born out of the 2009 Walk for the Planet. The project's main claim to fame is that it organised a public forum which led to the establishment of the Avon-Otakaro Network, which has been successful in advocating for the Avon River and the red zone.

Focus on Rivers / Waterways

We propose to launch Walk for the Planet 2017 on Ash Wednesday, March 1, in south Christchurch on the banks of the Heathcote River. Over the next seven weeks we will walk along various rivers and water ways throughout the region and engage with local communities as they address issues with their local rivers or water ways. At the end of the seven weeks will return to Christchurch to walk the Otakaro Avon River, finishing with a dawn service on New Brighton beach on Easter Sunday, April 16.

Grassroots

Just as in 2009, Walk for the Planet 2017 will intentionally be a grassroots initiative, but we will welcome the support of church, political and community leaders through their participation in the walks and associated events. We plan to plant trees at different stages of the journey as part of our commitment to the environment.

As Mark Gibson concluded of the 2009 Walk for the Planet, “the enduring value of the walk was the inspiration and sense of community that it created for those who walked because of their aroha (love) for our planet and concern for what is being done to it”.

The original Walk for the Planet also engaged with local media throughout the journey. This time around we have even stronger local media contacts and with the lessons learned from 2009 we are confident we can maximise media exposure to the project and the issues we care about.

Walk for the Planet possible itinerary
March 1-4 – Ash Wednesday – Ōpāwaho / Heathcote River walk
March 5-11 (Saturday March 11) – Waikirikiri / Selwyn River walk
March 12-18 (Saturday March 18) – Orari /Orari
March 19-25 – Oamaru / Waitaki River walk
March 26 to April 1 – Hurunui River walk
April 2-8 – Rakahuri /Ashley River walk
April 9-12 – Waimakariri River walk
April 12-16 – Ōtākaro / Avon River walk

WHO
This briefing will be provided by David Hill (on behalf of the River of Life Project)

RECOMMENDATION
That the Zone Committee considers this briefing with regard to its community engagement priorities in 2017.