



**HURUNUI**  
*District Council*



# Hurunui-Waiau Zone Committee

## Agenda

**3.00pm, Monday, 16 October 2017**

*Hurunui Waiau Zone Committee Workshop (Public Excluded) 1.00pm to 2.45pm*

**Hawarden Community Hall, 8 Horsley Down Road, Hawarden.**

### **Committee Membership:**

John Faulkner (Chairperson)  
Mayor Winton Dalley (Hurunui District Council)  
Cr Vince Daly (Hurunui District Council)  
Cr Cynthia Roberts (Canterbury Regional Council)  
James Costello  
Ben Ensor (Deputy Chairperson)  
Michele Hawke  
Ken Hughey  
James McCone  
Makarini Rupene (Te Ngāi Tūāhuriri Rūnanga)  
Dan Shand  
Representative to be advised (Te Rūnanga o Kaikōura)

### **Quorum:**

The quorum of the meeting consists of:

- half of the members if the number of members (including vacancies) is even; or
- a majority of members if the number of members (including vacancies) is odd.

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### **The purpose of local government:**

- (1) The purpose of local government is—
  - (a) to enable democratic local decision-making and action by, and on behalf of, communities; and
  - (b) to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.
- (2) In this Act, **good-quality**, in relation to local infrastructure, local public services, and performance of regulatory functions, means infrastructure, services, and performance that are —
  - (a) efficient; and
  - (b) effective; and
  - (c) appropriate to present and anticipated future circumstances.

*(Local Government Act 2002 – Amendment Act 2012)*

HURUNUI – WAI AU ZONE COMMITTEE  
WORKSHOP & MEETING

Monday, 16 October 2017  
Hawarden Hall, Hawarden

**AGENDA**

**1.00pm – 2.45pm Zone Committee workshop (public excluded)**

	3.00pm	<b>Zone Committee Meeting commences</b> with karakia and formal order of business <ul style="list-style-type: none"> <li>• Apologies</li> <li>• Announced urgent business</li> <li>• Interests register (changes or updates)</li> <li>• Confirmation of minutes – 18 September 2017</li> <li>• Matters arising</li> <li>• Correspondence: <ul style="list-style-type: none"> <li>○ Letter to Environment Canterbury re HWZC targeted approach</li> <li>○ Letter from Environment Canterbury to HWZC</li> <li>○ letter from Rural Advocacy Network</li> </ul> </li> </ul>	4 5-14  15-19
1	3.20pm	Update on Regional Committee <ul style="list-style-type: none"> <li>• Winton Dalley and Michele Hawke</li> </ul>	
2	3.25pm	Update from Zone Committee members on activities and meetings attended that relate to the Committee's outcomes for the zone	
3	3.35pm	Public Contribution	
4	3.40pm	Update from Hurunui District Landcare Group and any other organisations wishing to speak	
5	3.50pm	Update from Zone Manager	
6	4.00pm	Considering deferring a review of water-take consents (with respect to HWRRP minimum flows): <ol style="list-style-type: none"> <li>a) Technical evaluation of risks and implications for environmental values; Suzanne Gabites and Ned Norton, Environment Canterbury</li> <li>b) Estimate of the cost to irrigators; Andrew Barton, AIC</li> </ol>	20-35  36-37
	4.40pm	BREAK	
7	5.00pm	Opportunity to notify HWRRP Plan Change in mid 2018. Andrew Parrish and Lisa Jenkins, Environment Canterbury	38-41
8	5.20pm	Updated programme of work to progress the key issues in the zone: <ol style="list-style-type: none"> <li>1. Technical information;</li> <li>2. Engagement and committee decision-making; Ian Whitehouse, Lisa Jenkins and Ned Norton, Environment Canterbury</li> </ol>	42-47
9	6.15pm	Zone Facilitator's report: <ul style="list-style-type: none"> <li>• Zone Committee's initial thoughts for content of its 2017 Annual Report: key achievements and projects/activities to feature</li> <li>• Input to Environment Canterbury's Long Term Plan Ian Whitehouse, Environment Canterbury</li> </ul>	48-55
	6.30pm	Meeting concludes	

## Register of Interests for the Hurunui-Waiau Zone Committee

Committee Member	Interests
James Costello	<ul style="list-style-type: none"> <li>• Farm owner – sheep in the Hurunui Catchment</li> <li>• Water Resource Consent to take water from the Waitohi River</li> <li>• Shareholder in Hurunui Water Project</li> <li>• Possibly an affected landowner by infrastructure of Hurunui Water Project</li> <li>• Dryland Farmers Committee member</li> </ul>
Ben Ensor	<ul style="list-style-type: none"> <li>• Land owner in the coastal hills, Jed and lower Waiau catchments.</li> <li>• Managing director of Seaward Stock Company Ltd, comprising sheep, beef and cropping enterprises.</li> <li>• Consent holder to take water for irrigation from a stream hydraulically connected to the Waiau River.</li> <li>• Member of the Hurunui Waiau Landcare Group (Dryland Farmers Group).</li> </ul>
John Faulkner	<ul style="list-style-type: none"> <li>• Dairy farm owner in the Amuri Basin.</li> <li>• Irrigation water supplied by Amuri Irrigation Company Ltd (Shareholder).</li> <li>• Dairy Support block owner, consent to take water from a gallery.</li> <li>• Member of the independent irrigators Group.</li> </ul>
Michele Hawke	Nil
Dan Shand	<ul style="list-style-type: none"> <li>• Land owner Hurunui and Waiau catchments</li> <li>• Dry land farmer</li> <li>• Member of the Hurunui/Waiau Landcare Group</li> </ul>
Mayor Winton Dalley	<ul style="list-style-type: none"> <li>• Register of Interests lies with the CEO of the Hurunui District Council.</li> </ul>
Ken Hughey	<ul style="list-style-type: none"> <li>• Professor of Environmental Management, Lincoln University (2 days per week)</li> <li>• Chief Science Advisor, Department of Conservation, Wellington (3 days per week)</li> <li>• Board member Waihora Ellesmere Trust</li> <li>• Board member Hanmer Springs Conservation Trust</li> <li>• Member Royal Forest and Bird Protection Society.</li> <li>• Member Royal Society of NZ</li> <li>• Member NZ Geographical Society.</li> <li>• Occasional contract water-related research work including for Environment Canterbury.</li> </ul>
Makarini Rupene	TBC
James McCone	<ul style="list-style-type: none"> <li>• Dairy Farming businesses- Director and Shareholder</li> <li>• Dry Creek Dairy Ltd- AIC Balmoral scheme</li> <li>• Kinloch Dairy Ltd- AIC Waiau Scheme</li> <li>• Dairy Farm Director</li> <li>• LH Dairy Ltd- Independent irrigation consent, lease of dryland hill country</li> <li>• Water management</li> <li>• Amuri Irrigation Company Director</li> <li>• Committee Member Upper Waiau Independent Irrigators</li> <li>• Informal interest in potential emu plains irrigation</li> </ul>
Councillor Vince Daly	<ul style="list-style-type: none"> <li>• Farm owner - mixed cropping and livestock farm</li> <li>• Water resource consent to take water from unnamed lake in Jed catchment</li> </ul>
Cynthia Roberts	<ul style="list-style-type: none"> <li>• Register of Interests is held by Environment Canterbury.</li> </ul>

# HURUNUI DISTRICT COUNCIL MINUTES



<b>Meeting</b>	Hurunui-Waiau Zone Committee
<b>Date and Time</b>	18 September 2017, 2.00pm
<b>Venue</b>	Council Chambers, Amberley
<b>Agenda</b>	<a href="http://www.hurunui.govt.nz/assets/Uploads/18-September-2017-HWZC-Agenda.pdf">http://www.hurunui.govt.nz/assets/Uploads/18-September-2017-HWZC-Agenda.pdf</a>
<b>Members Present</b>	Ben Ensor (Deputy Chairperson) Mayor Winton Dalley, James McCone, Cr Vince Daly, Cr Cynthia Roberts, Michele Hawke, James Costello, Makarini Rupene, and Dan Shand.
<b>In Attendance</b>	<p><b>Environment Canterbury (ECan)</b> – Michael Bennett, Leanne Lye, Ned Norton, Stephen Bragg, Rob Hubbard, Peter Taylor, Lisa Jenkins, Maree Willetts, Jarred Arthur, Jeanine Topeln, Steve Firth, Andrew Parrish and Angus McLeod.</p> <p><b>Hurunui District Landcare Group</b> – Josh Brown.</p> <p><b>Amuri Irrigation</b> – Andrew Barton and David Croft.</p> <p><b>Hurunui Water Project</b> – Karen Renouf, Chris Pile.</p> <p><b>Fish and Game New Zealand</b> – Scott Pearson.</p> <p><b>Hurunui District Council</b> – Cr Nicky Anderson, Cr Geoff Shier</p> <p><b>Federated Farmers</b> – Lionel Hume.</p> <p><b>Rainer Irrigation</b> – Neville Brightwell.</p> <p><b>Dairy New Zealand</b> – Shaun Burkett</p> <p><b>Department of Conservation</b> – Danny Kimber</p> <p><b>Land Owners</b> – Lesley Shand.</p> <p><b>Committee Secretary</b> – Michelle Stanley.</p>
<b>Recording Device</b>	A recording device was in use for the accuracy of the minutes.
<b>Karakia</b>	Makarini Rupene led the Karakia.
<b>Apologies</b>	<p>Apologies were received from Ken Hughey, John Faulkner, and Ian Whitehouse</p> <p>THAT THE APOLOGIES BE ACCEPTED.</p> <p>Hawke/Costello <span style="float: right;">CARRIED</span></p>
<b>Conflict of Interest Declarations</b>	Nil.
<b>Urgent Business</b>	Nil.

**Minutes**

THAT THE MINUTES OF THE COMMITTEE MEETING HELD ON 21 AUGUST 2017 ARE CONFIRMED, SUBJECT TO THE FOLLOWING AMENDMENTS:

- Page 6, Matters Arising, second paragraph, change to read “it was asked that if any organisation/public body wish to seek zonings on private land or requirements in farm plans that they discuss this with landowners in the first instance.”
- Page 10, Item 8:
  - Last paragraph change to read, “John Faulkner thanked Scott for the presentation and said he was pleased that reference was made to environmental improvement being a “whole of community” challenge.”
  - Add additional bullet point “Synlait Environmental Advisor, Emma Brand, liked the presentation from Scott. She spoke on how they are fairly new in this market and feel that they are ahead of the game in regards to environmental targets. Synlait incentivise farmers who get certified in their best farming practice program, lead with pride. This is being well taken up by Synlaits suppliers of which there are five in the Culverden area. Fonterra is also working on a program.”
  - Change the third bullet point to read, “There was disappointment from some members of the public over the amount of attention given to work already done by farmers in Scott Pearson’s presentation. Scott had mentioned the efforts by AIC farmers early in his presentation, but apologised if offense was taken as this was not his intention”.
  - Last bullet point, change to read “Scott believes it is possible for lower intensity farming to be done without a loss to profits over the medium term. And the risks associated with making the changes can be supported by a number of different funding avenues, for those willing to trial the new methods.”
- Page 11, Item 9, third paragraph, second bullet point, change to read “It was discussed that a Glenrae Storage on the Larger Glenrae option would be difficult to consent due to the zoning and legal implications.

Ensor/Costello

CARRIED

**Matters Arising:***Correspondence: Funds on the ground (Page 7)*

Clarification was requested on the possibility of redirecting funds to more on the ground projects. It was discussed that if money is wanted for on the ground projects then it should be applied for to the ECan Long Term Plan so that they know how much to leave in the budget. Money will not be automatically left in the budget if a targeted approach is taken.

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### *Braided Rivers*

Discussion was held on the importance of defining what 'braided rivers' means to the Zone Committee and to the community. It was requested that this becomes a regular agenda item.

#### **Correspondence**

Nil

#### **1. Update on Regional Committee**

Michele Hawke reported that there was a meeting of the working groups this month. The following was noted:

- They were given a briefing on the Canterbury Water Management Strategy (CWMS) targets progress report 2017. Overall we are on track for the medium term goals (2020).
- Efforts continue with braided rivers and mahinga kai values.
- It was discussed that greater reporting of outcomes rather than activities is needed.
- There is a focus on implementation and working with partners to keep the relationship strong.
- There are ongoing challenges of ownership and administrative responsibility for braided rivers.

Mayor Winton Dalley spoke on the Mayoral Forum. The following was noted:

- The CWMS target report went to the Mayoral Forum as the CWMS is effectively owned by the Mayoral Forum.
- Andy Pearce and Cr Claire McKay spoke to the report.
- Discussion was held on whether the CWMS is the right vehicle to deliver what is needed in Canterbury and the consensus was one hundred percent in agreement that it is the right one and that there is a balance between desire and achievability.
- A request for a public statement from the Mayoral Forum on its position on the CWMS was made. Mayor Winton Dalley to follow this up.

#### **2. Update from Zone Committee members on other activities and meetings attended that relate to the Committee's outcomes for the Zone.**

Cr Cynthia Roberts spoke on the Canterbury Regional Pest Management Plan Review. Submissions have been received and the hearings are in progress. All submissions and staff responses can be found on the ECan website. The classification of pests can have quite an impact on farmers.

<https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-regional-pest-management-plan/pest-management-plan/>

#### **3. General Public Contribution**

Nil.

## REPORTS, SPEAKERS AND PRESENTATIONS

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<b>4. Update from Hurunui District Landcare Group and other organisations wishing to speak</b>	<p>Josh Brown briefly updated the Zone Committee on the activities of the Hurunui District Landcare Group. They are business as usual and are continuing with the member survey.</p>
<b>5. Current State Economic Profile</b> Simon Harris, LWP	<p>Simon Harris from Land Water People (LWP) spoke to his presentation. It was noted that:</p> <ul style="list-style-type: none"> <li>• Canterbury has an agriculture dominated economy, with significant growth in the last 15 years.</li> <li>• Sheep and beef are the most important sectors to the region.</li> <li>• Sheep and beef have declined over the last few decades and dairy has increased in importance.</li> <li>• Some exposure to debt, but not showing major vulnerabilities for the average farmer. Those on higher indebtedness are more concerning.</li> <li>• Other users of water are only on a minor scale, but are of importance (e.g. drinking water, stormwater and industry.)</li> <li>• Tourism is a major sector employer and is seeing considerable growth.</li> </ul> <p>Discussion was held and the following was noted:</p> <ul style="list-style-type: none"> <li>• Retail data was not looked at during this profile and it was suggested that it would be a worthwhile set of data to look at.</li> <li>• It was noted that omitted from the data is farming families that also work in the tourism sector.</li> <li>• It was suggested that separating sheep from beef would be worth looking at. It was noted that most farming operations run both sheep and beef.</li> <li>• Other non-productive land use was discussed and a question was asked if it included non-productive sheep and beef. Simon to go back and check.</li> <li>• It was discussed that this economic profile indicates that those that are doing okay could handle more hardship but the reality is that they would not be able to. While on face value numbers can look quite good, volatility, such as a bad weather event, and the timing of expansion can impact a business quite substantially.</li> <li>• It was asked that the underlying messages from this data be pulled out.</li> <li>• The purpose of this profile was to provide context when discussing the nine issues that the Zone Committee is looking at. It was noted that this is the current statement not the future statement. They are hoping to work to a position where the environmental effects are balanced against the economic and social affects and to be able to assess the Plan against it.</li> </ul>

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**6. Results of additional water quality monitoring (*E.Coli*) above SH7 Hurunui River**

Environment  
Canterbury

Jarred Arthur presented to the Zone Committee on this report due to Kimberley being unwell. A report on the 'Hurunui River recreational water quality summary 25016/17' was tabled.

The 2016/2017 upper Hurunui River *E.coli* monitoring shows that faecal bacteria levels are commonly high at particularly the Lower River Road and State Highway 7 sites. This indicates that significant levels of faecal contamination occurs downstream of Hocking Road, which typically recorded low levels of faecal contamination. A colony of birds is often present near the Lower River Road site and is likely to contribute to high *E.coli* levels in the river. Faecal Source Tracking (FST) analyses confirmed that bird populations are a source of faecal bacteria in the Hurunui at State Highway 7. However, the impact of birds appears to be less significant than that of ruminant animals such as cattle and sheep. FST monitoring at State Highway 1 also found that ruminant animals are the dominant form of faecal contamination in the Hurunui River.

Discussion was held and the following was noted:

- It was noted that there appears to be a hot spot at Lower River Road that needs to be explored. The Hurunui-Waiarau Zone Committee requested that ECan look into this further and report back to the Zone Committee. ECan Officers will come back with a suggested plan and proposed monitoring for this coming summer.
- It was noted that the test for ruminant and avian *E.coli* is very accurate as there is no cross correlation of avian *E.coli* to any other animal.
- A question was raised as to the lifespan of *E.coli* in the river and how far it can travel downstream. It was discussed that whilst the lifespan of *E.coli* was not something that Jarred knew, the distance it could travel was also hard to discern as factors such as height of the river, flushes and time of year can alter the distance travelled.

**Break**

*The meeting adjourned for a break at 3.42pm and reconvened at 3.55pm.*

**7. Overview of braid plain identification work**

Environment  
Canterbury

Ned Norton spoke to the Zone Committee on the overview of the braid plain work that NIWA is undertaking across the Canterbury region.

- The purpose of the work is to develop a method for defining the 'natural braid plain' of braided rivers in the Canterbury region. This will be done in two stages:
  - Stage I: Develop draft method and test on two case study rivers.
  - Stage II: Modify method based on feedback and then apply to all Canterbury braided rivers.
- For the purposes of this study the 'natural braid plain' is defined as the area that might be occupied by the active channel of the river under the current flow and sediment supply regime. In defining the 'natural braid plain', the influence of willows and stop banks will be set aside. However, identification of these controls to define the 'current braid plain' could be easily incorporated at a later stage (e.g. by overlaying stop bank positions and/or willow-belt boundaries).

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- The method will be developed on two case study rivers, the Waiau and Ashley. These provide good examples of “alpine-source” and “foothills-source” braided rivers with their associated geomorphic characteristics.
  - The study will be office-based and will map the natural braid plain of the Waiau and Ashley rivers in ArcGIS by overlaying and analysing the following data:
    - Historic aerial photographs (providing ‘snap shots’ of where the active channel has been in the past);
    - LiDAR imagery (identifying variation in elevation and relief);
    - Satellite imagery (perhaps useful for developing automated routines to differentiate between vegetation and bare gravel);
    - Soil maps (identifying ‘recent soils’);
    - Geomorphic hazard maps (identifying historical flooding zones); and
    - Pre-European vegetation maps, including the Black Maps.
  - Outputs will be in the form of GIS shapefiles and a peer-reviewed technical report.

Discussion was held and the following was noted:

- The Zone Committee recommended that the community be informed that this work is going on and that its purpose and parameters be clearly described.
  - Useful information on old farmland maps for NIWA can be found at the Cheviot museum. Ned to inform NIWA of that source of information.
  - The Hurunui District Council has recently completed some LiDAR work that NIWA could be made aware of. Ned will pass that on to NIWA.
  - Ned offered, after discussion, to ask NIWA if it was possible to incorporate some element of estimated timing into their “natural braid plain” maps (i.e., 50 years, 100 years, 200 years etc.).
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## 8. Braided River Biodiversity Management

Biodiversity Sub-group/Jess Hill ECan

Dan Shand spoke to the report prepared by the Biodiversity subgroup. The group asks that the Zone Committee supports funding from the Immediate Steps program (IMS) towards the Hurunui-Waiau braided river native biodiversity Immediate Steps flagship project. Details around the project can be found in the agenda. The three projects that they have outlined are:

1. Black backed gull control.
2. Island weed clearance for braided river birds.
3. Annual bird surveys to show impacts.

Discussion was held and the following noted:

- The aim of the project is to protect and enhance the braided river bird communities on the Hurunui and Waiau Rivers through effective black backed gull control and habitat enhancement (weed clearance).
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- They are aiming to get buy in from a number of sources including, but not limited to, Department of Conservation, LINZ, adjacent landowners, Braided River Aid (Braid), and Fish and Game New Zealand. They will tie in with other works that are happening in the catchments areas such as spray programs and contractors.
- The surveys that need to be undertaken are costly and time consuming. There are detailed costs available if anyone wishes to look into it further.
- This project will use up fifty percent of the total amount of IMS funding over the next five years. The money is required and could possibly be at the expense of other IMS projects. They are aiming to future proof this project with firm partnerships so that after the initial five years, the project will have gained momentum and be supported with other funding. There is still funding left for this year.
- This project has been modelled off the projects that are currently underway on the Rakaia River and the Rangitata River. They are one year into their projects and the outcomes are promising.
- Hurunui Water Project (HWP) noted that part of its consent conditions is to put funding back into the biodiversity of the rivers and it would be worth contacting them.
- Andrew Barton of Amuri Irrigation (AIC) offered the use of a drone for surveying the rivers and, pending board approval, indicated that there could be funding available for this project from AIC.

THAT THE HURUNUI-WAIAU ZONE COMMITTEE APPROVES THE ALLOCATION OF THE IMMEDIATE STEPS FUNDING OF \$310,020.00 OVER FIVE YEARS (BROKEN DOWN IN THE TABLE BELOW) TO THE HURUNUI-WAIAU BRAIDED RIVER NATIVE BIODIVERSITY IMMEDIATE STEPS FLAGSHIP PROJECT.

2017-18	2018-19	2019-20	2020-21	2021-22	Total
\$76,140	\$92,340	\$56,940	\$47,100	\$37,500	\$310,020

Rupene/Hawke

CARRIED

**4. Facilitated session on braided rivers – what are the issues and outcomes**  
ECan

Stephen Bragg asked the Zone Committee and attendee's to workshop ideas on the issues around braided rivers. The following was suggested:

**Issues**

Natural Character of braided rivers	Weeds
Different expectations – where riverbeds start and finish	Native buffer zones
Predators	Lack of understanding
Ecosystem of riverbeds (including climate change)	Ecological flows
Effect of hill country vegetation	Engineering – controlling build up
Unique to Canterbury	Management of tributaries
Water quality and volume	Wildlife corridors

Effect of current consents	Recreation (e.g. kayaking)
Braided river birds	Commercial tourism
Cultural values and mahinga kai	Landscape aesthetic values
Rivers relationship to communities	Flood management
Aggregate supply	Economic
Ownership – public versus private and margins	Clean drinking water (e.g. Christchurch)
Contribution to aquifers	Coastal processes (e.g. erosion)
Feral, invasive species	Stock access – high country
Native fish	Protecting headwaters
Climate change	Irrigation water
Encroachment	Central Government obligations
Hapua	Fish passage
Hotspot for E.coli on the Hurunui River	Bang for buck projects
Grouing issues	Management of three key aspects of braided rivers
Management rights	General public expectations and awareness
Programme of actions	Ownership
Related studies - RAWG	

These issues will be grouped together as appropriate and a work program formulated.

Discussion was held on the margins of the braided rivers and ownership. There seem to be differing expectations of the work that is happening with identifying the braid plain. Concern was expressed that lines would be drawn in the course of the work and then those lines would be used to manage what could be done in riverbeds, such as through consents.

While some Committee members would like the margins left alone at this stage there was a call for a way forward on the margins issue. It was suggested to call for a regional meeting of the Zone Committees to work out the way forward with this contentious issue.

## 5. Zone Managers update and snapshot report.

Leanne Lye, ECan

Leanne Lye, Zone Manager ECan, updated the Zone Committee on the following items:

- Emu Plains – Michael Bennett visited the proposed Emu Plains Scheme area with consents staff last month. He met their committee members on Monday, 11 September. They will continue a focussed programme of engagement as Emu Plains farmers come under an FEP audit programme.
- Hanmer Irrigators – Engagement around collective membership now progressing to managing wetland areas in Hanmer Basin.

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- Earthquake Recovery – Kaikoura Plains Recovery Project now running independently after considerable support over the past two months. Now supporting Inland Road farmers with land recovery advice. Will continue to engage in this space as the Federated Farmers/Beef and Lamb hill country recovery project continues to develop.
  - Rural Professionals – Working alongside Waimakariri Irrigation to deliver a 'How do I know my farm is at GMP?' field day for North Canterbury Rural Professionals. To take place 14th October, time and venue TBC.
  - Work has been positive with farmer (Wayne Yates) in Cheviot to improve practices around waterways and erect permanent fencing.
  - Positive action with the Hurunui District Council to improve compliance at their community wastewater treatment plants, work in progress, but hope to achieve full compliance in 6 months.
  - Water monitoring: only one significant non-compliant consent so far, most consents are coming through fully compliant.
  - Jess Hill has, in addition to progressing the administration behind the HW Braided river biodiversity projects, been helping the Amberley Beach Coast Care Group progress a biodiversity project in the coastal wetland area, this may end up forming an Immediate Steps funding application later this year.

It was noted that ECan has improved its process of keeping the complainant informed of the progress of the complaint.

Leanne to email Committee members a copy of the Compliance Monitor report that was shown to the Zone Committee at the meeting.

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**6. Ngāi Tahu values in context of plan review/development**  
Makarini Rupene,

Cultural values are reflected and integrated through the Zone Implementation Programme (ZIP).

It was agreed that a workshop before Octobers Zone Committee meeting be held to explore how the Zone Committee is going to provide for Ngāi Tahu cultural values in the context of the current plan review/development phase over the next 18 months, while achieving the vision of the ZIP. Ian Whitehouse to set this up.

The suggested content for this workshop is:

- Mahinga Kai
  - Providing for Ngāi Tahu values within the context of the Zone Committee planning context.
  - Different tools being used in a number of areas and processes within Canterbury (including the Hurunui-Waiau Zone).
  - Communication with the community.
  - How to implement Mahinga Kai values in a practical manner.
  - Compile a guidance document which outlines the key areas and defining of what those key areas mean. This document could be built upon in the future.
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**Urgent Business**

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Nil

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**Meeting concluded**

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The meeting concluded at 6.01pm.

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**Next meeting**

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Monday, 16 October 2017

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# HURUNUI DISTRICT COUNCIL MEETING REPORT



## SECRETARY REPORT COVER

**To:** Hurunui-Waiau Zone Committee

**Date:** 16 October 2017

### Correspondence

#### Executive Summary

Correspondence sent on behalf of the Hurunui-Waiau Zone Committee for its information:

- Targeted approach to land and water management in Hurunui Waiau zone to ECan Chair.

Correspondence received on matters the committee is required to consider or receive:

- ECan reply to letter 'Targeted approach to land and water management in Hurunui Waiau zone' from the Hurunui-Waiau Zone Committee
- Jamie McFadden, Rural Advocacy Network, letter

#### Appendices

1. Targeted approach to land and water management in Hurunui Waiau zone – From John Faulkner, Chair Hurunui-Waiau Zone Committee.
2. ECan reply to 'Targeted approach to land and water management in Hurunui Waiau zone' letter
3. Jamie McFadden, Rural Advocacy Network, letter

**Report Cover  
Prepared by:**

Michelle Stanley

Committee Secretary

## Appendix 1

### Hurunui Waiau Zone Committee



29 August 2017

Chair  
Environment Canterbury  
via email

#### **Targeted approach to land and water management in Hurunui Waiau zone**

Dear Sir

The Hurunui Waiau Zone Committee is taking a targeted approach to addressing land and water management issues in the zone as outlined below. This approach may include targeted changes to the Hurunui Waiau Rivers Regional Plan (HWRRP). The committee believes the approach will result in less expenditure than was budgeted for in the Hurunui Waiau "sub-regional" process and asks Environment Canterbury to use some of the budget savings for on-the-ground work programmes in the zone.

The zone committee has agreed nine important and urgent issues it wants fixed or substantially progressed over the next 18 months. These are:

- i. 'Fixing' the "10% rule" issue;
- ii. Considering deferring a review of water take consents (with respect to HWRRP minimum flows) to lever more action to improve water quality;
- iii. Improving conservation management of braided rivers;
- iv. Ensuring all farms are at GMP;
- v. Understanding the intensification opportunities (or not) in the Waipara catchment, particularly within the context of possible Hurunui Water Project involvement;
- vi. Further research on factors determining toxic cyanobacteria blooms;
- vii. Considering stronger water quality limits for Waiau River;
- viii. Enabling integrated water storage;
- ix. Considering a revised methodology for the P load limit for Hurunui River.

Technical information is being brought together and analysed over the next few months. This will inform the committee's evaluation on the options to properly address the first two and last three issues and whether a targeted plan is the best way forward.

The committee is cautious of the unintended consequences that may come with plan changes and has not yet decided if targeted plan changes are the best way to proceed and, even where they might be, whether these changes are needed "now" or can be left until the Hurunui Waiau Rivers Regional Plan (HWRRP) is reviewed in 2023.

By the end of the year or early in 2018 the committee hopes to be in a position to indicate to Environment Canterbury whether a targeted plan change will be needed, although the nature and scope of the changes will not be decided at this time.



The committee will finalise its recommendations on what it wants by the way of targeted plan changes and other actions by September 2018 in a ZIP Addendum. In reaching its recommendations the committee will consider the technical information currently being gathered and will engage with stakeholders and the community.

Environment Canterbury scheduled a "sub-regional" process with notification of a sub-regional section for the entire zone to be notified in 2019. The zone committee's timetable for a targeted approach is similar with any targeted plan changes notified by mid 2019.

The targeted approach being adopted by the zone committee should mean that less technical and planning work is needed than would be for a full sub-regional process.

An approach to conservation management of braided river beds is being developed by the committee's biodiversity sub group and will be brought to the committee in September. It is likely that this will recommend more funding be provided for on-the-ground river-bed management, such as weed control and actions to protect river-bed nesting birds.

The committee asks Environment Canterbury to redirect some of the savings from the targeted approach to on-the-ground work programmes in the zone including, though not limited to, conservation management of braided river beds.

Yours sincerely

A handwritten signature in dark ink, appearing to be 'John Faulkner', with a long horizontal line extending to the right.

John Faulkner

Chair, Hurunui Waiau Zone Committee

## Appendix 2



6 October 2017

John Faulkner  
Chair – Hurunui Waiau Zone Committee  
Hurunui Waiau Zone Committee  
**Via Email:** [lockerbie.tce@xtra.co.nz](mailto:lockerbie.tce@xtra.co.nz)

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Dear John

### **Targeted approach to addressing issues in the Hurunui Waiau Zone**

Thank you for your letter of 29 August 2017 outlining the Zone Committee's work programme for addressing nine targeted issues in the Hurunui Waiau Zone. We appreciate the time the Committee has put into thinking through where funding will have the greatest impact on outcomes for the Zone. This work is of great value to the Regional Council as we work through our long-term plan and identify how funding will be allocated over the next ten years.

The Canterbury Regional Council is very supportive of the targeted approach. We have considered how we can best support the Zone Committee in pursuing this work programme. In particular, we have thought about how issues with the 10% rule can be resolved in the shortest timeframe possible. Resolving the 10% rule issue will enable the Committee to focus more of its energy on on-the-ground actions. To that end, there is an opportunity in the current work programme to notify a change to the HWRRP in July 2018, alongside the Orari, Opihi, Temuka and Pareora Sub Region Plan Change.

The Council is intending to finalise its draft budget for the next 10 years (from July 2018 to June 2028) in December 2017 as part of the long-term plan. The Committee's letter will continue to inform our thinking as we work towards finalising the 10 year work programme. While there will be further opportunities for the Hurunui Waiau Zone Committee to influence the Regional Council's thinking with regards to the long-term plan, it would be useful for the Council to get an indication from the Zone Committee if it too sees the benefit of a possible targeted plan change in mid-2018.

Yours sincerely

**Steve Lowndes**  
Acting Chair

## Appendix 3

24 Mina Road,  
RD2 Cheviot

6 September 2017

To: Hurunui Waiau Zone Committee

On a number of occasions we have raised issues with ECan over draft riverbed lines & wetlands mapping. Central to our concerns is mapping areas on private land without following due process and no consultation with affected landowners. ECan claim the draft riverbed lines are not statutory but they are using these lines in consent and compliance processes. ECan have admitted they used funding application information and resource consent information to quantify the existence of wetlands. They also confirmed using binoculars and mapping wetlands from roadsides. To date none of our concerns have been addressed and we are aware of some recent riverbed and wetland issues.

The draft riverbed lines issue has been particularly frustrating for landowners. In some cases landowners have incurred significant cost (\$10,000 – \$15,000) in order to prove their freehold land is not riverbed.

Recently we have discovered ECan have developed a database mapping springs on private land. Feedback from affected landowners is that no consultation has occurred. Some of these springs are in the middle of properties & landowners have not allowed access to anyone for the purpose of mapping springs. Again this is being done behind closed doors and not through a proper RMA consultative process.

These actions of ECan compromise the ability of the Hurunui Waiau Zone Committee and ECan to develop constructive dialogue and actions with landowners e.g. braided riverbed strategy.

We request that the Hurunui Waiau Zone Committee write to ECan seeking (1) the deletion of the draft riverbed lines, wetlands and springs mapping and (2) a written assurance from ECan that they will not undertake this type of mapping without following a proper RMA process, including consultation with affected landowners.

Yours sincerely,

Jamie McFadden

RURAL ADVOCACY NETWORK

AGENDA ITEM NO: 6 (a)	SUBJECT: <b>Assessment of consequences to a range of environmental values of continuing to delay implementation of the HWRRP minimum flows for all consented water users</b>
AUTHORS: Graeme Clarke, Jeanine Topélen, Ned Norton, Suzanne Gabites, Hamish Graham	DATE OF MEETING: 16 October 2017

### Action required

- Zone committee members gain a good understanding of the technical work done to assess the environmental implications of delaying the implementation of the HWRRP minimum flows for all consented users.

### Technical work undertaken

Simulated flow records for the Hurunui River and Waiau River have been created based on all consents tied to the minimum flows in the Hurunui Waiau Rivers Regional Plan (HWRRP).

These simulated records have been compared with the observed flows in the Waiau River from 2007 and in the Hurunui River from 2010 to now.

Information available from the HWRRP hearing evidence has been used to assess the difference between the observed flows and the simulated flows (with all consents tied to HWRRP minimum flows) to assess the consequences on a range of environmental values. No new technical investigations have been done.

The simulated flows, and hence the assessment, does not take into account any changes that may occur with the piping of the AIC irrigation scheme.

### Summary of results

Continuing to delay implementing the HWRRP minimum flows for all consented users has the following environmental implications:

- i. Potentially significant negative implications for salmon migration in both rivers but particularly in the Waiau River;
- ii. Slightly negative implications for:
  - The risk of potential mouth closure in both rivers, but more so in the Waiau River
  - Jetboat passage in both rivers
  - Riverbed bird nesting and feeding in the Hurunui River
- iii. Negligible effect on:
  - Nuisance periphyton growth
  - Riverbed bird nesting and feeding in the Waiau River.
- iv. No effect on sediment transport and geomorphology or on groundwater quality.

## Background and purpose

The Hurunui-Waiau Zone Committee requested technical work to inform them on the implications of continuing to delay implementation of the HWRRP minimum flows for all users. The Committee requested the technical work be developed collaboratively with the Science Stakeholders Group (SSG). A list of work items was developed with the SSG at a workshop on the 21 June 2017. Since then Environment Canterbury staff have been working with some of the SSG participants to deliver that work. The work helps inform on the following 4 questions:

1. What are the new HWRRP minimum flows compared to historic consent minimum flows?
2. What proportion of current consents are already on the HWRRP minimum flows?
3. What are the environmental implications of continuing to delay implementing the HWRRP minimum flows for all consented users?
4. What are the costs, for irrigators who are not already on the HWRRP minimum flows, of moving to those minimum flows?

This paper will directly address questions 1 to 3. An initial estimate to answer question 4 is provided in the next agenda paper by Andrew Barton, AIC.

Other information relevant to this subject requested by the Committee and/or the SSG includes:

- Ideas for other actions to improve water quality and/or biodiversity?
- Commentary on the latest advances in research to inform flow setting in New Zealand?

The first item has already been addressed in invited presentations to the Committee by Andrew Barton of Amuri Irrigation Company (17 July 2017) and Scott Pearson of Fish and Game (21 August 2017). The second item will be addressed in a separate paper to the Committee.

**Question 1: What are the new HWRRP minimum flows compared to historic consent minimum flows?**

Figure 1 shows the Waiau River at Marble Point historic A Block minimum flows together with the HWRRP minimum flows. February and March see higher minimum flows from 15 m<sup>3</sup>/s (historic) to 20 m<sup>3</sup>/s (HWRRP), while for the remainder of the year the minimum flows are lower, from 25 m<sup>3</sup>/s to 20 m<sup>3</sup>/s.

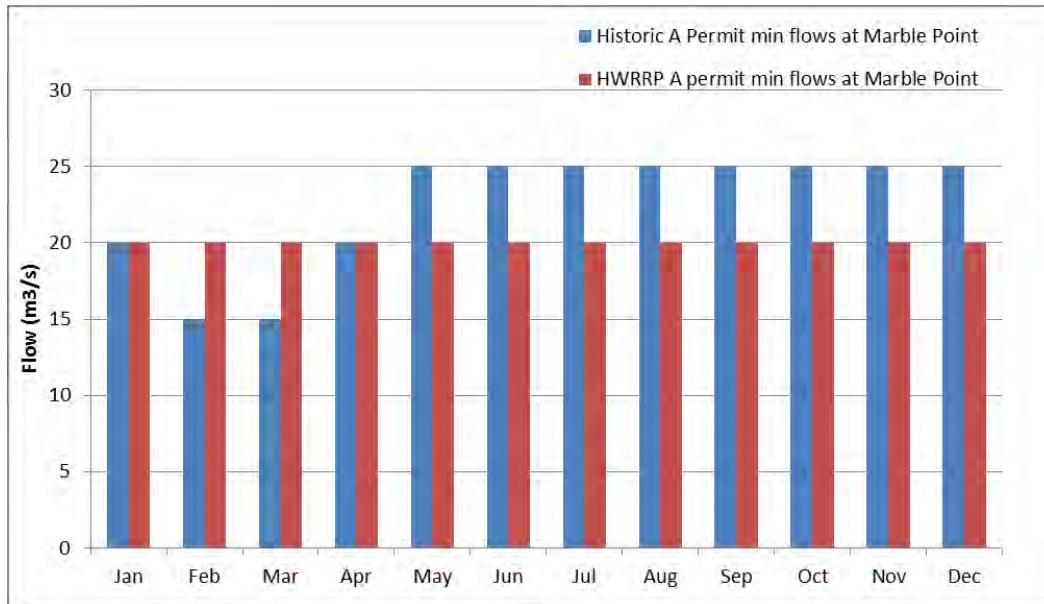


Figure 1: Historic and HWRRP minimum flows for the Waiau River at Marble Point

Figure 2 shows the historic minimum flows along with the HWRRP minimum flows for the Hurunui River at Mandamus. Amuri Irrigation Company (AIC) has historically had a slightly higher minimum flow than the remainder of A Block consents. The HWRRP sees December to April with higher minimum flows than historically.

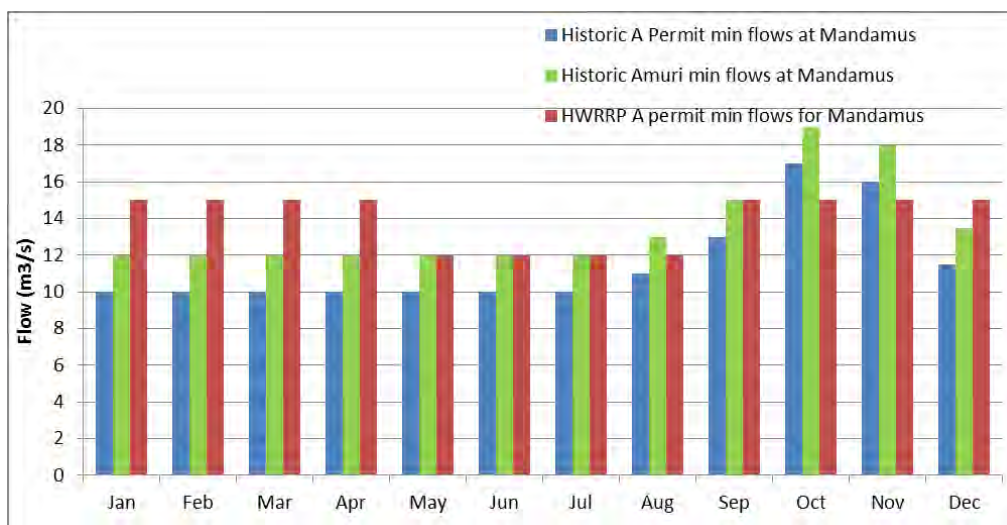


Figure 2: Historic and HWRRP minimum flows for the Hurunui River at Mandamus

## **Question 2: What proportion of current consents are already on the HWRRP minimum flows?**

Environment Canterbury consents records show that:

For the Waiau River catchment:

- Approximately 6 m<sup>3</sup>/s of A Block allocation (29 consents) currently have conditions requiring the HWRRP minimum flows, out of approximately 17 m<sup>3</sup>/s (66 consents) – Waiau River main stem A Allocation Block only.
- Of the 37 consents not yet attached to HWRRP minimum flows there are 22 consents that are due to expire by the end of 2020 and so will be given conditions requiring to meet HWRRP minimum flows if and when they are renewed.

For the Hurunui River catchment:

- Approximately 300 L/s of A Block allocation (5 consents) currently have conditions requiring the HWRRP minimum flows, out of a catchment total allocation of approximately 7.5 m<sup>3</sup>/s (40 consents)- Hurunui River main stem A Allocation Block only.
- Of the 35 of consents not yet attached to HWRRP minimum flows there are 21 consents that are due to expire by the end of 2020 and so will be given conditions requiring to meet HWRRP minimum flows if and when they are renewed.

Please note: These figures are estimates based on a basic inventory of the live lowflow database and refer to main stem allocation only. Final reviewed Consent Inventory figures were not available for this paper, but the figures quoted here will be updated when available.

## **Question 3: What are the environmental implications of continuing to delay implementing the HWRRP minimum flows for all consented users?**

### **General approach**

Peter Brown (AIC) set up a model estimating what the flow regime would have looked like in both rivers if all users had been operating according to the new HWRRP minimum flows, and compared that to the existing situation where some users are still operating on historic minimum flows. We then used evidence from the HWRRP hearing and other literature sources to assess what the differences between these two flow regimes meant for various identified environmental values over the years, and what this might mean going forward.

In other words, we assessed what the river environment has missed out on since the HWRRP became operative in December 2013 as a result of not having yet moved everyone to the HWRRP minimum flows, and then also the environmental risks of continuing to delay moving all consents to the new minimum flows.

## Brief Methods

1. Peter Brown (AIC) used a model to produce simulated flow records for the Hurunui River at SH1 and the Waiau River at the Mouth, assuming all consents are tied to the HWRRP minimum flows. The model does not represent flows as a result of the Amuri Irrigation's piping project. For each of the rivers two scenarios were modelled: Scenario 1 takes into account demand and supply, whereas Scenario 2 assumes water is taken when available. Further details on the approach used and results are described in Peter Brown's memo, which has been made available to you electronically.
2. We have reviewed Peter Brown's method and resulting model and consider it fit for purpose in assessing the effect on river flows of changing to HWRRP minimum for all consented water use. In addition to the statistics produced by Peter Brown we used the time series for Scenario 2, most conservative approach, described above to produce comparisons of various flow statistics, hydrographs and flow duration curves relevant to assessing environmental effects. For the Hurunui River at SH1 we used data from the water year 2007 (1 July 2007 to 30 June 2008) to date and for the Waiau River at the Mouth we used data from 2010 to date. This because the Hurunui River at SH1 water level recorder data was only rated for high flows for various periods of time prior to 2007. Data for the reinstated water level recorder in the Waiau River at the Mouth is available from February 2010.
3. We then used the flow descriptions provided above in combination with information available from hearing evidence to assess the difference between the scenarios for several aspects of environmental values including:
  - Fish habitat and migration
  - Mouth closure potential
  - Nuisance periphyton growth
  - Jet boating
  - Riverbed bird nesting and feeding

## Results and conclusions

### *Fish habitat and migration*

#### 1. Salmon Migration

The hearing commissioners report (Salmon et al. 2013) indicated that they considered flows of 15 m<sup>3</sup>/s and 20 m<sup>3</sup>/s in the Hurunui and Waiau Rivers respectively were likely to provide for salmon passage. The evidence provided generally focussed on providing a minimum water depth of 25cm to allow salmon to negotiate their way upstream. The upstream migration period for chinook salmon in the Hurunui and Waiau Rivers is from January to April (Jellyman 2012). The analysis carried out considered the total and consecutive number of days below the flow required to provide for salmon passage for these months.



The observed flows in the Hurunui River at SH1 fell below 15 m<sup>3</sup>/s in only 1 out of seven years (from 2010 to 2016). The HWRRP minimum flow and allocation regime would have reduced the number of days the flow went below 15 m<sup>3</sup>/s that year from 15 to 6 (Table 1). The maximum consecutive number of days would have reduced from 9 to 4.

The observed flows in the Waiau River at the Mouth fell below 20 m<sup>3</sup>/s in 4 out of the seven years assessed. The HWRRP flow and allocation plan rules would have reduced that to 2 out of seven years. The HWRRP plan rules would have also reduced the total and consecutive number of days the flow was below 20 m<sup>3</sup>/s (Table 2). In the 2014 water year for example, the total number of days flows were below 20 m<sup>3</sup>/s from January to April would have reduced from 53 to 21, and the maximum consecutive number of days would have reduced from 22 to 9. Salmon generally move reasonably quickly from the river mouth upstream (over days to weeks), as opposed to other species which may take much longer. It is undesirable for them to delay upstream migration for long periods while waiting for flows to increase. The implications of the current flow regime compared to the HWRRP flow regime on the migration of salmon in the Waiau River are therefore potentially reasonably large.

### Conclusion

Salmon migration in the Hurunui River is likely to be impacted by the current flow regime only in very dry years. The effect of the current flow regime on salmon migration in the Waiau River is greater than would be the case under the HWRRP flow regime, because the lower minimum flows lead to greater frequency and duration of flows that are below levels likely to provide for salmon migration.

Table 1. Total and maximum consecutive days with flows below 15 m<sup>3</sup>/s between January and April in the Hurunui River at SH1.

Year	Days below 15m <sup>3</sup> /s (observed/with historic minimum flows)	Days below 15m <sup>3</sup> /s (modelled/with HWRRP minimum flows)	Maximum number of consecutive days below 15m <sup>3</sup> /s (observed/with historic minimum flows)	Maximum number of consecutive days below 15m <sup>3</sup> /s (modelled/with HWRRP minimum flows)
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	15	6	9	4
2015	0	0	0	0
2016	0	0	0	0

Table 2. Total and maximum consecutive days with flows below 20 m<sup>3</sup>/s between January and April in the Waiau River at the Mouth.

Year	Days below 20m <sup>3</sup> /s (observed/with historic minimum flows)	Days below 20m <sup>3</sup> /s (modelled/with HWRRP minimum flows)	Maximum number of consecutive days below 20m <sup>3</sup> /s (observed/with historic minimum flows)	Maximum number of consecutive days below 20m <sup>3</sup> /s (modelled/with HWRRP minimum flows)
2010	0	0	0	0
2011	0	0	0	0
2012	20	0	18	0
2013	5	0	3	0
2014	53	21	22	9
2015	8	0	5	0
2016	0	0	0	0

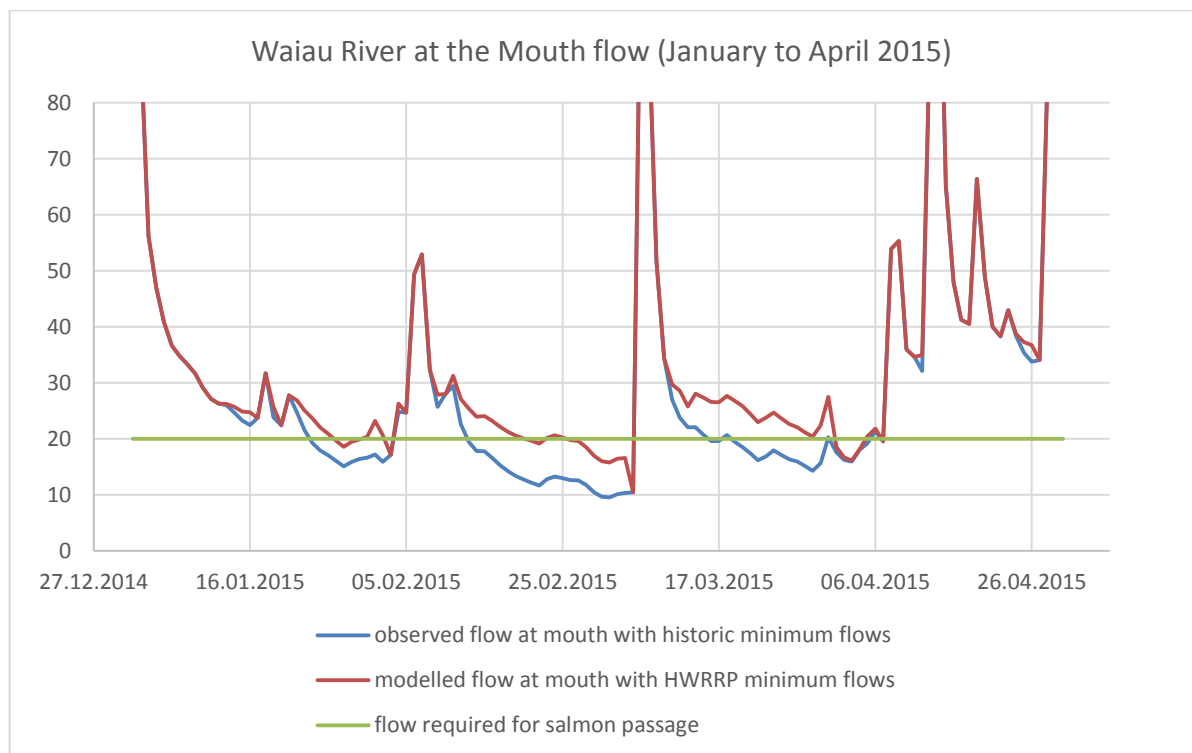


Figure 3: Flows in the Waiau River at the Mouth for January to April compared to flows required for salmon passage.

## 2. Weighted usable area (WUA) for different aquatic species.

Weighted usable area is the capacity of a river to provide suitable habitat, food, and other requirements for a particular species at a particular life stage. The assessment approach here has

been to consider the flow range that flows are reduced by the current flow and allocation regime compared to the HWRRP regime, and combined with the WUA vs flow curves available, to determine whether the amount of habitat for a particular species or value is likely to increase or decrease under the HWRRP regime. Evidence related to weighted usable area for a range of species was presented during the HWRRP hearing process (Duncan 2012, Jowett 2012), and this work built on earlier habitat suitability studies carried out in both the Hurunui and Waiau River catchments (Duncan and Shanker 2004, Duncan and Bind 2009). While we did not have access to the electronic versions of the WUA vs flow curves that would be needed to accurately quantify the predicted changes, we were able to use the information provided in hearing evidence to estimate approximate changes

Duncan and Shankar (2004) produced WUA curves for a number of species in the Hurunui River. This work indicates little change in habitat for juvenile salmon (52-102mm), but an increase in habitat for salmon fry (<55mm), salmon holding water and more area suitable for salmon angling under the HWRRP regime. Torrentfish habitat is likely to reduce slightly, as is adult brown trout habitat. The amount of young trout (yearling) habitat is likely to remain the same under the HWRRP rules compared to the current situation. The amount of habitat for both large and small longfin and shortfin eels is likely to increase under the HWRRP rules. Invertebrate food production is likely to decrease, and habitat for the mayfly *Deleatidium* is likely to increase slightly.

For the Waiau River, WUA curves were produced by both Duncan and Bind (2009), and Jowett (2012). These two studies covered different, but overlapping, parts of the Waiau River. Both studies predict an increase in habitat for small longfin eels with increasing flows, but Jowett predicted a slight reduction in habitat for large longfin eels. Shortfin eel habitat is likely to increase for both small and large individuals. This conflicted with the predictions of Duncan and Bind who predicted a slight increase in habitat over the range of affected flows. Both studies predicted increases in torrentfish habitat with increases in flow. *Deleatidium* and other invertebrate “food” species are likely to have more suitable habitat under increased flows, as are salmon at all life stages. Trout habitat predictions are less clear, with conflicting predictions from the two studies. However, both studies predicted reasonably small changes in available habitat over the flow ranges of concern.

### Conclusion

Habitat availability in the Hurunui River will increase with a change to the HWRRP minimum flows for most salmon life stages and eels, reduce for torrentfish, adult trout and invertebrate food, and remain about the same as current levels for juvenile salmon and juvenile trout. Habitat availability for most species is likely to increase in the Waiau River with a change to the HWRRP minimum flows.

Table 3. Summary of weighted usable area changes predicted if the HWRRP minimum flow and allocation regime is implemented. (+ increase in habitat, - reduction in habitat, +/- minimal or no change likely, ? effects uncertain)

	Salmon fry	Juvenile salmon	Salmon angling	Salmon holding	Torrentfish	Juvenile trout	Adult trout	Small long fin eels	Large longfin eels	Small shortfin eels	Large shortfin eels	Deleatidium	Invertebrate food	Black fronted tern	Wrybill
Hurunui River	+	+/-	+	+	-	+/-	-	+	+	+	+	+	-	+	+
Waiau River	+	+	+	+	+	?	?	+	?	+	+	+	+	+	+

### ***Mouth closure potential***

Evidence presented during the hearing indicated that flows of 15 m<sup>3</sup>/s or greater were required to maintain an open mouth in both the Hurunui and Waiau River (Hicks 2012). Both modelled and observed flows were above 15 m<sup>3</sup>/s in both the Hurunui and Waiau Rivers from August to November, over the 2010 to 2016 water years. Most inward movement of fish takes place during these months, and it is important that the mouth is open during these months to allow for recruitment of migratory species. (Jellyman 2012).

An assessment of flows outside of these months indicated the current flow regime is likely to have little impact on mouth closures, except during very dry years. In early 2015 for example, the flows in the Hurunui River at SH1 dropped below 15 m<sup>3</sup>/s several times because of the current flow regime, for one or two days at a time (Figure 4). Flows in the Waiau River at the Mouth fell below the 15 m<sup>3</sup>/s threshold for approximately seventeen consecutive days over the same period because of the current flow regime (Figure 5). The HWRRP minimum flows would have prevented this occurring save for one day. During this time (January to February), Chinook salmon and common bullies are attempting to migrate from the sea into the rivers (Jellyman 2102).

In February and March 2015 flows in the Waiau River were particularly low, with Marble Point recording the fourth lowest Annual Low Flow (ALF) in 49 years and flows at the Mouth were by far the lowest recorded ALF, of 10.3 m<sup>3</sup>/s, (36 years of record). It has been reported by some community members that the mouth was closed for short periods about this time, although this is anecdotal only. There are a few other occasions when local landowners recall the mouth has been closed, however no dates/times could be given. Access to the Waiau River mouth is limited to farm tracks so not visited nor reported by the general public.

Low flow conditions play a significant role when considering river mouth stability and closure. Changing the minimum flow from 15 m<sup>3</sup>/s to 20 m<sup>3</sup>/s for the Waiau River at Marble Point in February and March, when flows are generally lowest, for all consented abstractions would reduce the risk of a potential mouth closure, as there is uncertainty and risk around the assumption that 15 m<sup>3</sup>/s of river flow at Marble Point would be sufficient to maintain an open river mouth. This relies on the flow relationship between the Waiau River at Marble Point and the Waiau River at the Mouth, but also on water use, tributary contribution, compliance with the restriction regime and climate and wave conditions.

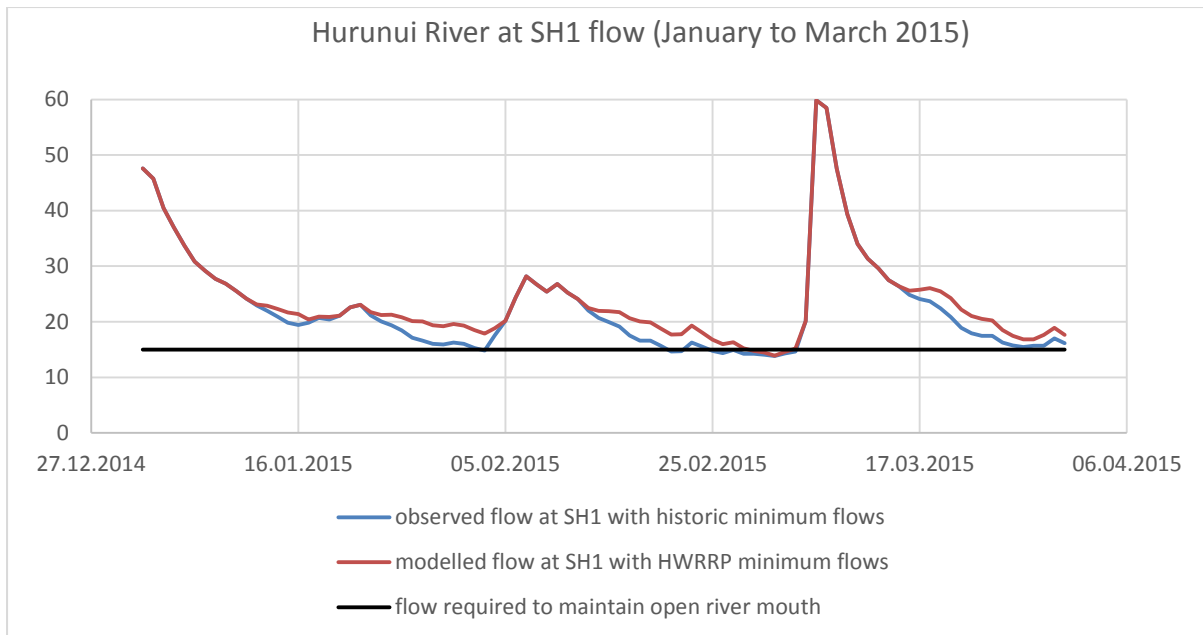


Figure 4: Observed and modelled flows for the Hurunui River at SH1 from January to March 2015. The black line is the flow required to maintain an open river mouth.

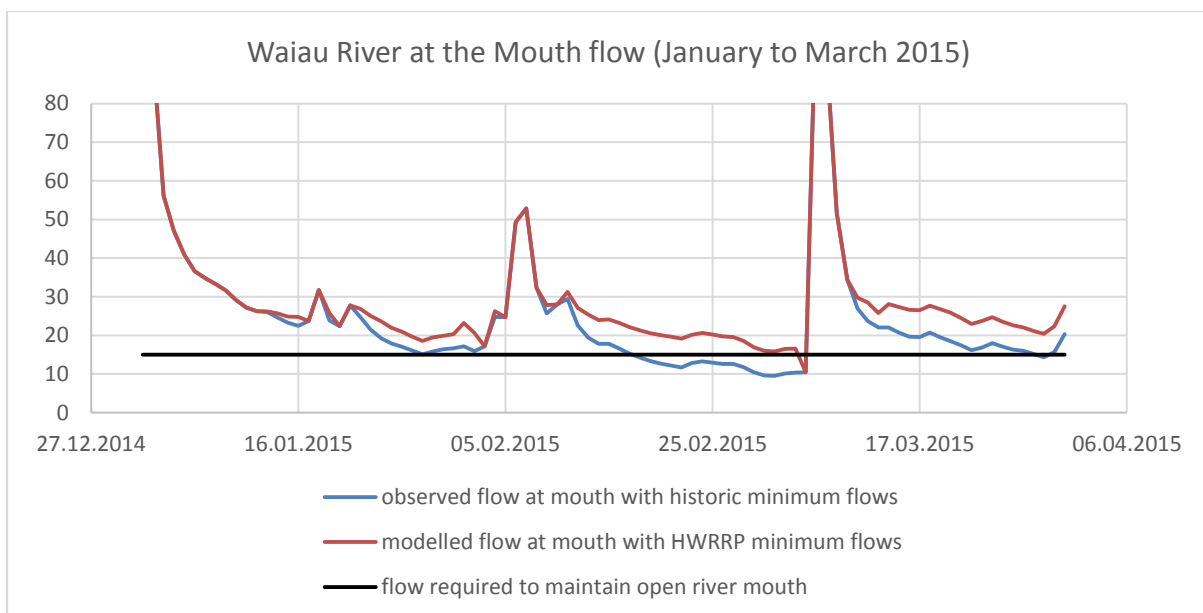


Figure 5: Observed and modelled flows at the Waiau River mouth from January to March 2015. The black line is the flow required to maintain an open river mouth.

### Conclusion

The current flow regime is unlikely to impact mouth opening from August to November in both the Waiau and Hurunui Rivers. This period is considered critical for inward fish movement. The flow regime is likely to impact mouth opening in other months of the year only infrequently during very dry periods in some years.

### ***Nuisance periphyton growth***

Flushing flow events two and three times the size of the median flow have been identified as important factors related to nuisance periphyton growth (Snelder 2012). The frequency of these flushing flow events influences the magnitude, frequency and duration of nuisance benthic periphyton blooms. The analysis carried out found no difference in the frequency of Fre2 or Fre3 events in the Hurunui or Waiau Rivers under the current flow regime compared to the HWRRP flow regime (Tables 4 and 5), as was expected because differences in minimum flow rules typically don't affect flushing flows.

Table 4: Frequency of Fre2 and Fre3 flushing events in the Hurunui River at SH1 between 2007 and 2016

Year	Observed Fre2 events (with historic minimum flows)	Modelled Fre2 events (with HWRRP minimum flows)	Observed Fre3 events (with historic minimum flows)	Modelled Fre3 events (with HWRRP minimum flows)
2007	4	4	2	2
2008	11	11	8	8
2009	8	8	6	6
2010	9	9	7	7
2011	9	9	4	4
2012	8	8	8	8
2013	11	11	9	9
2014	6	6	5	5
2015	5	5	4	4
2016	9	9	6	6

Table 5: Frequency of Fre2 and Fre3 flushing events in the Waiau River at the Mouth between 2010 and 2016

Year	Observed Fre2 events (with historic minimum flows)	Modelled Fre2 events (with HWRRP minimum flows)	Observed Fre3 events (with historic minimum flows)	Modelled Fre3 events (with HWRRP minimum flows)
2010	9	9	11	11
2011	9	9	6	6
2012	11	11	10	10
2013	11	11	12	12
2014	8	8	6	6
2015	9	9	6	6
2016	10	10	8	8

The other mechanisms by which flow can influence periphyton biomass are sheer stress and temperature. Previous work by Duncan (2007) in the Hurunui River indicates that the HWRRP flow regime is likely to increase the habitat available for diatomaceous algal growths, and decrease the habitat available for long and short filamentous algae. Filamentous algal growths have the potential to smother aquatic habitat, and may reach nuisance levels under suitable conditions. Diatomaceous growths tend not to cause ecologically deleterious effects, and generally provide food for benthic invertebrates (Duncan 2007).

Duncan and Bind (2004) and Jowett (2012) both produced weighted usable area curves for periphyton growth in the Waiau River. Duncan and Bind predicted small increases in long filamentous algae habitat with increasing flows, contrary to predictions by Jowett, which predicted

reasonably large reductions in habitat for this algae type. Inundation of small side braids and the potential for low water velocities which favour the development of filamentous algae, is the likely reason behind the findings of Duncan and Bind. Velocities in the main channels are likely to become less favourable for this potentially nuisance algae with increasing flows. Both studies predicted small increases in short filamentous algae habitat, and reasonably large increases in habitat suitable for diatomaceous algal growths.

It is also possible that increased water temperatures due to lower flows (Cox and Rutherford 2000) will result in increased algal growth (Matheson *et al.*, 2012a). Empirical relationships between algal growth and water temperature have not been developed, and it is therefore difficult to quantify the potential change in periphyton biomass.

### Conclusion

There is unlikely to be a change in flushing flow frequency for either the Waiau or Hurunui Rivers under the new HWRRP minimum flows. Habitat suitability modelling indicates increased water velocities resulting from higher flows are likely to reduce the amount of habitat suitable for filamentous algae in the main stem for both the Hurunui and Waiau Rivers. Habitat for thin diatomaceous algae, generally considered to be suitable for invertebrate grazing, is likely to increase.

### ***Jet boating***

Submitters proposed a range of flows suitable for jet boating in the Hurunui River, and these included 10 m<sup>3</sup>/s (Duncan 2012), 20 m<sup>3</sup>/s (Jowett), up to 35 m<sup>3</sup>/s or even 45 m<sup>3</sup>/s (Rob Gerard) for some sections of the river. Flows did not drop below 10 m<sup>3</sup>/s between 2007 and 2016. The AIC abstraction is unlikely to have a significant impact on the frequency of flows above 35 m<sup>3</sup>/s or 45 m<sup>3</sup>/s. However, when considering the 20 m<sup>3</sup>/s flow recommendation for jet boating, the current flow and allocation plan is likely to have more impact. Flow duration curves for water years between 2010 and 2016 indicate the current flow regime is likely to increase the frequency that flows are below 20 m<sup>3</sup>/s by between approximately 2 and 5 percent.

Flows proposed for the Waiau River to allow jet boat passage were 15 m<sup>3</sup>/s, 25 m<sup>3</sup>/s (Duncan 2012) and 30 m<sup>3</sup>/s (Jowett 2012). Flows have only fallen below 15 m<sup>3</sup>/s (at the mouth) very occasionally between 2010 and 2016, the most significant event being a period of seventeen days in early 2015, reaching a low of approximately 9.5 m<sup>3</sup>/s. If the HWRRP minimum flows had been implemented, flows would have fallen below 15 m<sup>3</sup>/s for just one day. Using the 25 m<sup>3</sup>/s and 30 m<sup>3</sup>/s flows proposed, flow duration curves for the Waiau River at the Mouth between 2010 and 2016 water years indicate flows would be suitable for jet boating between approximately 2% and 8% more often under the HWRRP flow regime, compared to the current flow regime (Figure 7).

### Conclusion

The frequency flows are above the 10 m<sup>3</sup>/s and 35 m<sup>3</sup>/s thresholds is unlikely to change under the HWRRP flow regime. The river is likely to be above the 20 m<sup>3</sup>/s threshold proposed for jet boating more frequently under HWRRP minimum flow rules.

Jet boating in the Waiau River will improve at very low flows (below 15 m<sup>3</sup>/s) only very occasionally if the HWRRP minimum flow rules are implemented. Conditions are likely to be above the 25 m<sup>3</sup>/s and 30 m<sup>3</sup>/s thresholds more frequently if the HWRRP minimum flow rules are implemented.

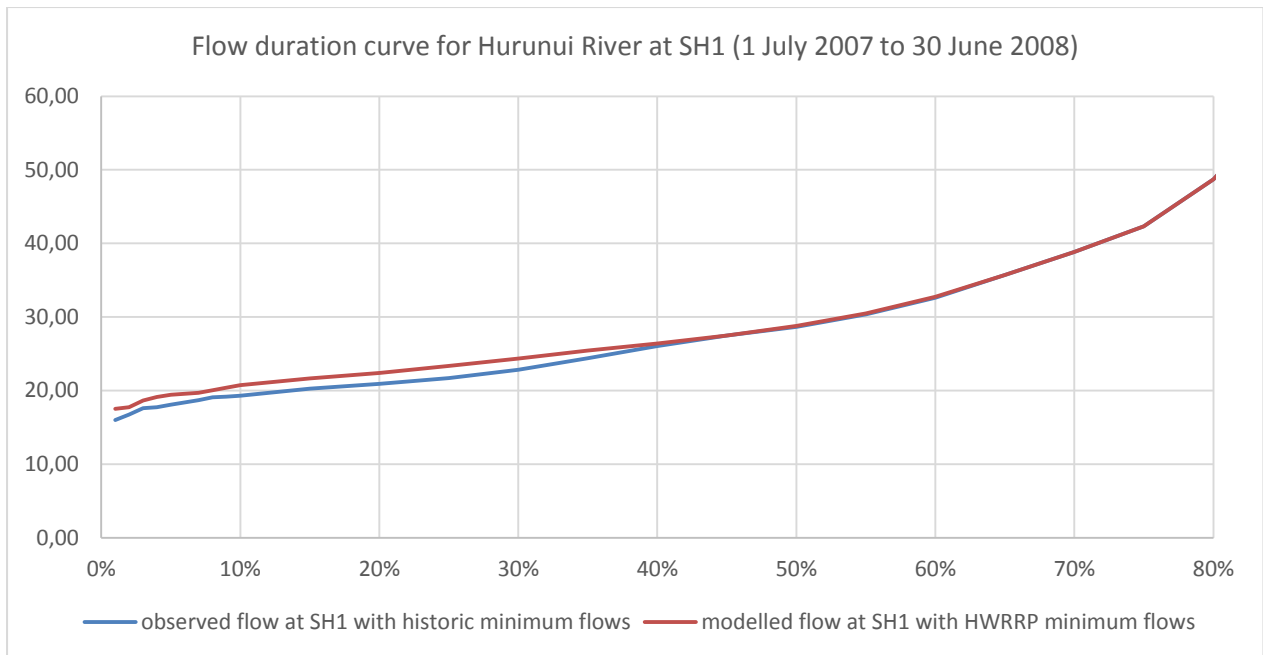


Figure 6: Flow duration curve for the Hurunui River at SH1 for the 2007 water year.

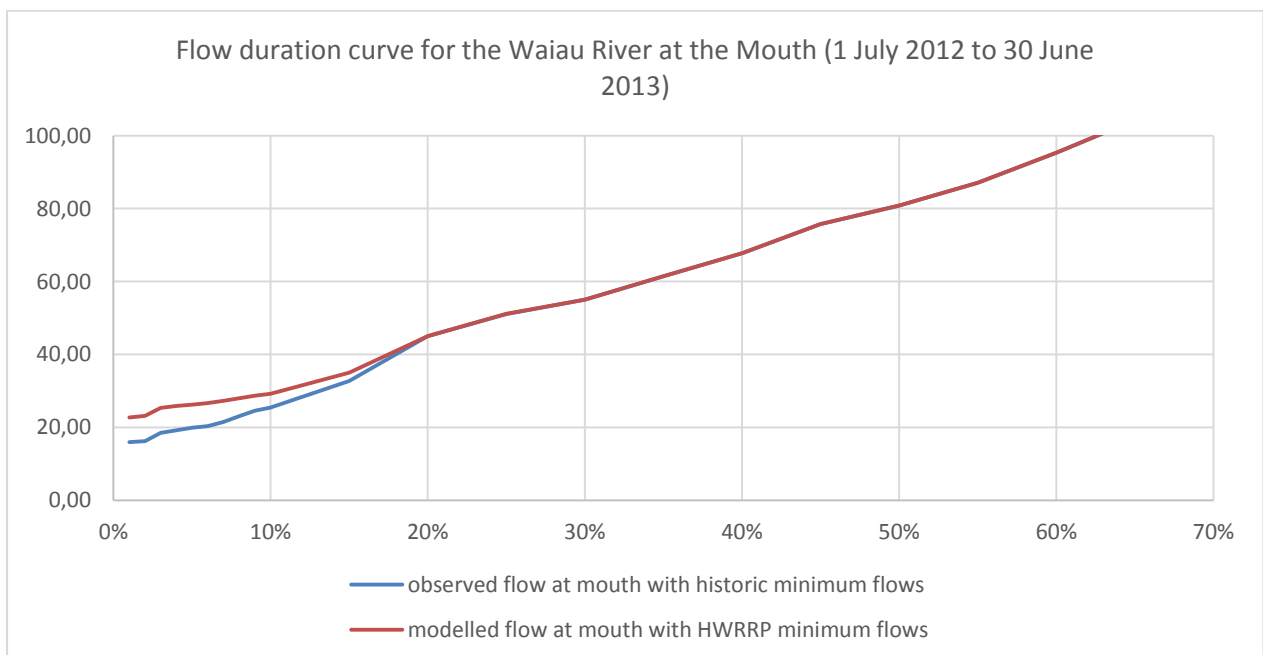


Figure 7: Flow duration curve for the Waiau River at the Mouth for the 2012 water year.

### ***Riverbed bird nesting and feeding***

Evidence presented at the hearing indicated flows of 40 m<sup>3</sup>/s and 25 m<sup>3</sup>/s were optimal to support river bird nesting and feeding respectively, in both the Hurunui and Waiau Rivers. The months of September to December are the peak of the breeding season, and are therefore of most interest in this regard (Hughey 2012).

Analysis of flow duration curves from September to December for the last seven years (2010 to 2016) indicate the current flow regime in the Hurunui River is likely to exacerbate the impacts of low flows on bird feeding and nesting opportunities during the breeding season only in years with reasonably low flows. In 2010 for example, the current flow regime resulted in flows approximately 2 m<sup>3</sup>/s less than those modelled under the HWRRP minimum flow rules for 15 consecutive days in



December (Figure 8). Flows during this period were approximately 20 m<sup>3</sup>/s. For 5 out of 7 years there is no significant effect of the current regime on the frequency of flows falling below the optimum flows identified by Hughey (2012). For the other two years the current flow regime increased the magnitude but not the duration of flows falling below the optimum flows identified. Using habitat suitability curves generated by Duncan (2012), it is estimated that black fronted tern habitat suitable for feeding on invertebrates would be reduced because of the current flow regime compared to the HWRRP regime. Increases in habitat for wrybill feeding and black-fronted tern habitat suitable for feeding on fish are reasonably small, but still increase as flow increases.

For the Waiau River, there is no notable difference in the observed and modelled HWRRP flow regime during the months of September to December from 2010 to 2016. The hydrograph for this period in 2014 illustrates this clearly (Figure 9). The most significant effects of the current minimum flow and allocation regime are observed outside the breeding season. Flow duration curves for a number of full water years (2010 to 2016) indicate ideal flows for river bird feeding are likely to be available approximately 5% less frequently under the current flow regime than the HWRRP flow regime. Modelling by Duncan and Bind (2009) indicates habitat suitable for black-fronted tern feeding is likely to increase reasonably significantly under the HWRRP minimum flow rules, with only modest habitat increases predicted for wrybill.

### Conclusion

Flows during the nesting season (September to December) for the 7 years analysed (2010 to 2016) were slightly lower under the current flow regime relative to the HWRRP flow regime in very dry periods in the Hurunui River. Flows in the Waiau River during this period have been largely unaffected by the current flow regime compared to the HWRRP flow regime. The current flow regime is likely to reduce the area available for feeding for both black-fronted terns, and to a lesser extent wrybill, outside of the breeding season.

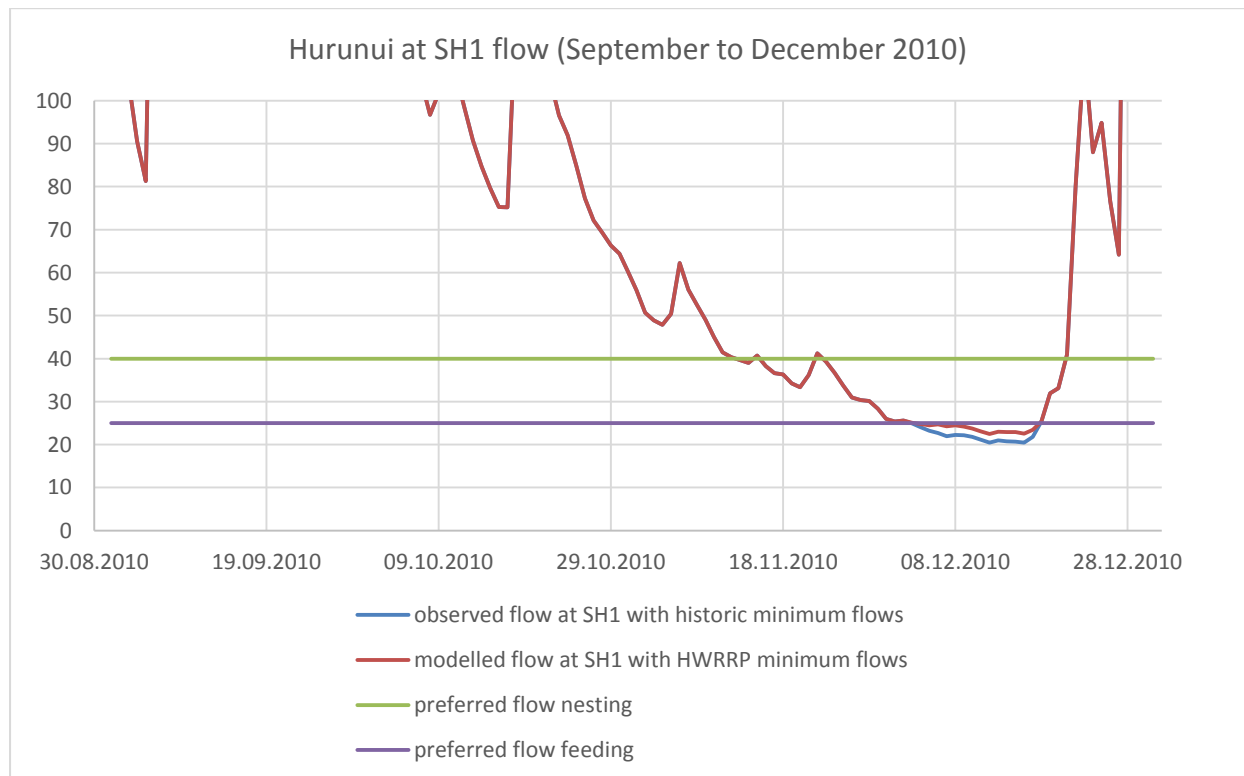


Figure 8. Observed and modelled flows in the Hurunui River at SH1 for September to December 2010 compared to optimum flows for river bird nesting and feeding.

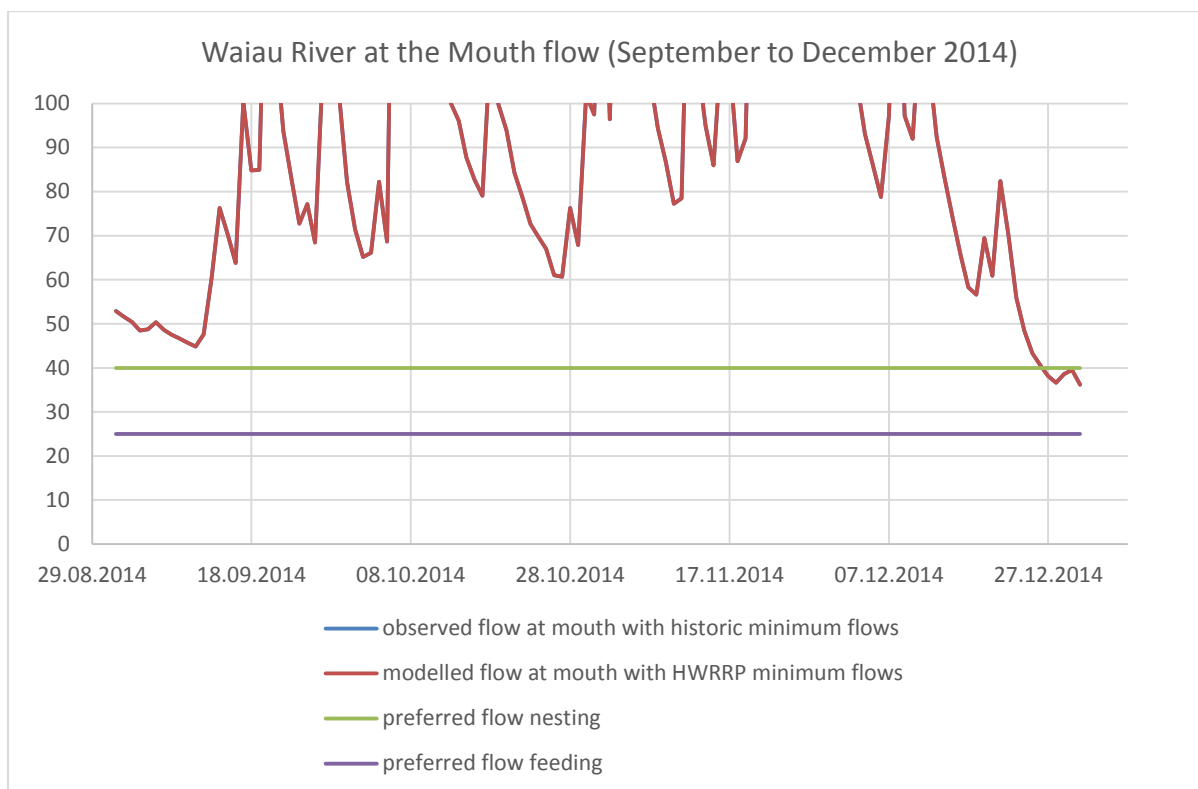


Figure 9. Observed and modelled flows in the Waiau River at the Mouth September to December 2014 compared to optimum flows for river bird nesting and feeding.

### Other points for consideration

#### *Amuri Irrigation's piping project*

We expect overall return flows to both rivers to decrease and the effects to be greater and more noticeable in the Waiau River based on information from AIC.

#### *Groundwater*

Implementing the HWRRP minimum flows is not expected to have a noticeable effect on groundwater quality. This assessment doesn't include the impact of the AIC piping project which is expected to reduce recharge to the groundwater system which will lower groundwater levels and consequently impact groundwater quality.

#### *Sediment Transport and Geomorphology*

The effects of further deferring the consent review will be insignificant on these factors as the consent review will affect the minimum flow conditions, whereas the main driver of change in bedload transport, channel maintenance, fine sediment flushing and bed turnover is change in actual water use (Hicks 2012).

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AGENDA ITEM NO: 6 (b)	SUBJECT MATTER: <b>Cost to AIC to retain reliability of supply with HWRRP minimum flows</b>
REPORT BY: Ian Whitehouse, Environment Canterbury	DATE OF MEETING: 21 August 2017

**Action required**

- Committee members note the attached memo from Amuri Irrigation Company.

**Background**

Considering deferring a review of water take consents (with respect to HWRRP minimum flows) to lever more action to improve water quality is one of the zone committee's nine key issues.

The attached memo provides an estimate of the cost to AIC to retain reliability of supply with the HWRRP minimum flows.

Please note the costs for water storage in the memo are for construction only and do not account for the purchase of land for the pond, which would be a very significant cost, particularly for Waiau.

Andrew Barton, AIC, will briefly talk to this item and related matters at the meeting.

**Attachment**

Memo: Cost to AIC and shareholders of the change in minimum flows



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Christchurch, New Zealand

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Fax: + 64 3 964 6520

Email: a.kashima@aqualinc.co.nz

## Memorandum

<b>To:</b>	Andrew Barton	Amuri Irrigation Company (AIC)
<b>From:</b>	Aya Kashima	29 November 2016
<b>Reviewer:</b>	Peter Brown	
<b>Subject:</b>	Cost to AIC and shareholders of the change in minimum flows	

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With piping, and your current share sales, reliability for Balmoral will be 96.8% with current consented flow. Reliability reduces to 92% with the HWRRP minimum flows. To retain current liability you would need to construct 4,500,000 m<sup>3</sup> of on-plains storage. Constructing a series of large ponds to provide this capacity, near the top of the Balmoral scheme would cost in the order of \$18-22M. Alternatively, constructing this much storage with individual on-farm ponds would cost about \$40m, because in addition to the pond construction cost the land costs are high and pumps need to be installed (since most farms receive water under pressure with the piped supply).

With piping and the new shares the Waiau scheme will be 99.5% reliability with the current consent conditions. Reliability reduces to 96.2% with the HWRRP minimum flows. To retain current reliability with HWRRP flows would require 16.6Mm<sup>3</sup> of on-plains storage, at a cost of \$60M+. Constructing a series of large ponds to provide this capacity near the top of the Waiau scheme would cost \$4-\$5/m<sup>3</sup> or \$10/m<sup>3</sup> if ponds were to be constructed on farm.

AGENDA ITEM NO: 7	SUBJECT MATTER: <b>Timing for targeted plan changes</b>
AUTHOR: Lisa Jenkins, Environment Canterbury	DATE OF MEETING: 16 October 2017

### **Actions required**

1. The Zone Committee **considers** the opportunity to notify a targeted plan change for making dryland farming a permitted activity in July 2018.
2. The Zone Committee **notes** that in order to notify a Plan change in July 2018, the Committee's recommendations to Environment Canterbury would need to be made by the end of March 2018.
3. The Zone Committee also **notes** that in order to notify a Plan change in July 2018, aspects of the work programme will need to be deferred until after July 2018 and additional workshops and meetings will need to be scheduled for early 2018. The committee, in deciding whether to support notifying plan change(s) in 2018, should consider:
  - a. If further discussion on consent reviews to fully implement the HWRRP minimum flows should be deferred until after July 2018;
  - b. That Environment Canterbury would not be in a position to notify a plan change in 2018 in relation to water storage;
  - c. If further discussion on braided riverbed management should be deferred until after July 2018.
  - d. That additional workshops, committee meetings and community meetings would be required in January, February and March.
4. The Zone Committee **decides** if they are comfortable working to this timeframe and revised work programme.

### **Background**

The Canterbury Regional Council has given some thought to the timing of a review of the Hurunui Waiau Rivers Regional Plan. Councilors recognise that the Zone Committee has done a lot of thinking about how to address the 10% rule in the Hurunui Waiau Zone.

A range of options for making dryland farming a permitted activity have been presented to the Hurunui Waiau Zone Committee and the Committee has asked for Environment Canterbury Staff to seek the views of wider stakeholders.

The Council recognises how important it is to the Hurunui Zone to resolve issues with the 10% rule as soon as possible and has been looking at its work programme to see if it would be possible to fast track the targeted plan change. There is an opportunity in Environment Canterbury's current work programme to notify a change to the HWRRP in July 2018 alongside the Orari, Opihi, Temuka and Pareora Sub Region Plan Change.

The Council is intending to finalise its draft budget for the next 10 years (from July 2018 to June 2028) in December 2017, while there will be further opportunities for the Hurunui Waiau Zone Committee to influence this work programme it would be useful for the Council to get an indication from the Zone Committee if it too sees the benefit of a possible targeted plan change in mid 2018.

Work on resolving the eight other issues the Zone Committee has identified will continue regardless, but there would be implications for progressing some issues between now and July 2018. The Committee can expect to see results of some technical work in November and December. That work will, among other things, inform whether it is possible or desirable to notify a plan change to strengthen water quality limits for the Waiau river in July 2018.

The Committee is also considering how it could help to achieve integrated water storage for the Hurunui and Waiau catchments. A plan change to provide for a more permissive plan framework across development Zone B is not achievable by July 2018. A plan change to provide for a specific option (e.g. a small Glenrae) might be possible but would need to be prepared by developers if it is to be progressed in July 2018.

#### **Implications for the Zone Committees work programme.**

Should the Zone Committee decide to pursue a 2018 notification for addressing the 10% Rule, there will be flow on effects for the wider work programme.

#### **Implementing minimum flows in the Hurunui**

Further discussion on whether or not the Zone Committee will recommend consent reviews to implement the Hurunui minimum flows is needed. This could be deferred until after July 2018, however it may be possible and desirable for the Zone Committee to come to a decision earlier. An earlier decision may require additional meetings or workshops.

#### ***Integrated storage***

Environment Canterbury will not be in a position to notify a Plan Change to provide for integrated storage within the Hurunui Waiau Zone by July 2018. However, if developers are able to prepare a plan change (including technical assessment, community engagement, section 32 and plan drafting) to provide for a specific option (e.g. small Glenrae), there is an option for the Regional Council to adopt the plan change, notify it in July 2018 and take it through the hearing process.

#### ***Braided rivers***

Further discussion on the delineation of the river bed and braided river management would need to be deferred until after July 2018. On ground “zone delivery” work would continue, including the Immediate Steps braided river native biodiversity flagship project.

#### ***Waipara***

Plan Change 5 to the Land and Water Regional Plan is currently progressing through the appeals process. Community engagement on what Plan Change 5 means for farmers in the Waipara catchment can proceed, but until appeals are settled there is uncertainty.

#### ***Additional meetings and workshops***

To meet the July notification date, the Zone Committee will need to have consensus recommendations by 31 March on what it wants with regards to any plan change(s) to the HWRRP.

We believe the Zone Committee will need to decide at its 19 February 2018 meeting, the scope of the plan change(s). That is, will the plan change(s) address anything other than the 10% rule issue.

In order to meet the July notification date, we believe the Zone Committee will need to schedule additional meetings and workshops to ensure sufficient time for committee discussion and for engagement with stakeholders and the community.

We suggest that, in addition to the Zone Committee meetings scheduled for 19 February and 19 March, the Zone Committee would need to add the following to their 2018 meeting schedule:

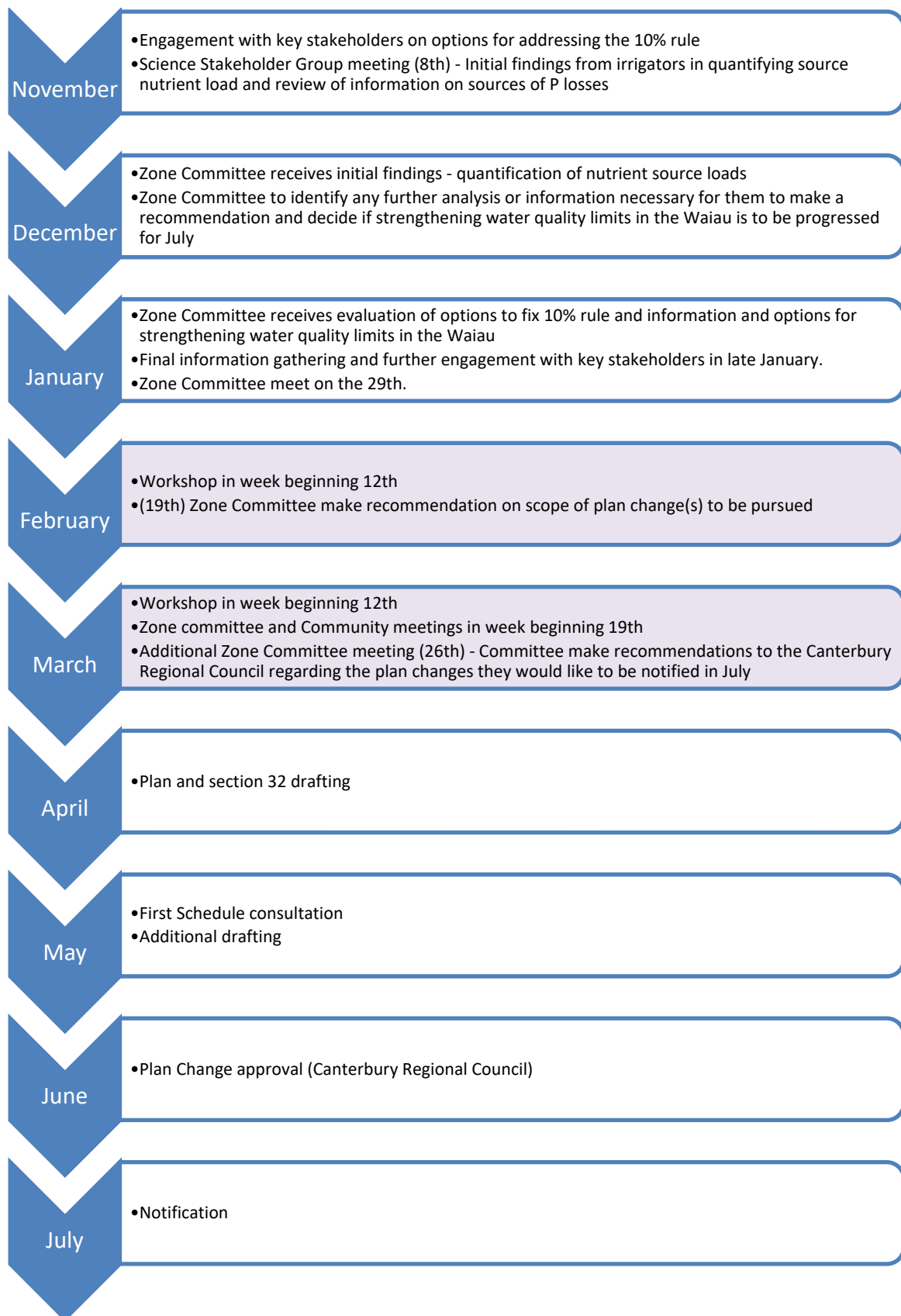
1. A workshop in the last week of January 2018 (29 January)
2. A workshop in the second week of February
3. A workshop in the second week of March – this may be a discussion with stakeholders
4. Community meetings in the week of 19 March to share and seek responses to the Committee's draft recommendations on any plan change(s)
5. An additional Zone Committee meeting on the week of 26 March to finalise the Committee's recommendations.

A draft work programme is set out on the next page. Note the highlighted boxes indicate that key decisions need to be landed within that month.

An updated programme of work to progress the nine key issues in the zone is provided in the next agenda paper.



## Work programme to achieve a July 2018 notification



AGENDA ITEM NO: 8	SUBJECT MATTER: <b>Updated programme of work to progress the key issues in the zone</b>
AUTHOR: Ian Whitehouse, Environment Canterbury	DATE OF MEETING: 16 October 2017

### **Actions required**

- The Zone Committee notes the updated work programme.

### **Programme of work to progress the key issues in Hurunui Waiau zone**

*(Update on a paper provided to the 17 July meeting of the Hurunui Waiau Zone Committee)*

#### **1 Where are we trying to get to . . . in the longer term**

The zone committee has agreed nine important and urgent issues it wants fixed or substantially progressed over the next 18 months. These are:

- Fixing the “10% rule” issue;
- Considering deferring a review of water take consents (with respect to HWRRP minimum flows) to lever more action to improve water quality;
- Braided river bed management;
- All farms at GMP;
- Waipara catchment;
- Toxic cyanobacteria;
- Water quality limits for Waiau River;
- Water storage;
- P load limit methodology for Hurunui River.

Fixing some of the issues will require changes to the HWRRP either “now” or in 2023 when the HWRRP is reviewed.

#### **2 When does it need to be done by . . .**

The longstanding timetable for changes to HWRRP had notification of the plan changes in mid 2019. If this timetable still holds, the zone committee would need to finalise its recommendations on what it wants by the way of plan changes and other actions by about September 2018. These recommendations are likely to be made in a ZIP Addendum.

Environment Canterbury has been thinking about the timing of changes to HWRRP and, as per the previous agenda item, regional councillors have offered the zone committee the opportunity of notifying changes to HWRRP in June/July 2018. If the zone committee supports notification of any proposed plan changes in the middle of next year the programme of work, including the committee’s work programme for 2018, will need to change. This is explored in the previous agenda paper.

### **3 Progressing the nine issues**

#### **3.1 Fixing the 10%-rule issue**

- a) To fix the “10%-rule” issue two things need to be achieved:
  - 1. Making normal dryland farming permitted;
  - 2. Ensuring this is done without increasing nutrient losses to the river (N and P).

Lisa Jenkins (ECan Planner) drafted some options for changes to the HWRRP to deliver the first. These were outlined to the zone committee at its August meeting. The committee added options and asked Environment Canterbury to seek the views of wider stakeholders on the options that should be considered. Environment Canterbury staff will be talking with a wide range of stakeholders during October and November.

- b) Technical work is underway to inform the zone committee’s evaluation of options to fix the 10% rule issue:
  - i. Hurunui District Landcare Group will provide information on what permitting dryland farming would mean in terms of increases in N losses as well as information on uptake of GMPs by dryland farmers. Results (N losses) are expected at the end of November.
  - ii. AIC will provide information on current and GMP nutrient losses from irrigated farms. This information will be available at the end of October.
  - iii. ECan scientists are reviewing monitoring data to assess the “manageable” P losses from different catchments/land uses. This will inform the discussion on whether permitting dryland farming will increase P losses and whether getting irrigated farming at GMP will reduce P losses. This information should be available by late October.
- c) It is expected the Science Stakeholders Group will review the technical information from (ii) and (iii) above at a workshop on 08 November.
- d) The technical information (as per “b ii and b iii” above) will be presented to the zone committee at its 20 November meeting.
- e) The technical information as per “b i” above will be presented to at its 11 December meeting. This may enable the committee to start to evaluate options to fix the 10%-rule issue at the December meeting.
- f) In early 2018 the committee will continue to evaluate options to fix the 10% rule issue. The intensity of the workshops and meetings on this depend on whether the committee wishes to notify a plan change in July 2018 (see previous agenda item).

### ***3.2 Considering deferring a review of water take consents (with respect to HWRRP minimum flows) to lever more action to improve water quality***

- a) Technical work is being presented at this (16 October) meeting to inform the zone committee's evaluation of whether to defer review of water-take consents to lever more action on water quality:
  - Assess hydrological data to describe what river would have looked like with HWRRP flow regime in place. This will consider current flows and modelled flows with all consented takes.
  - Identify the consents that will have the requirement to meet HWRRP flow regime by 2020 (as all new and renewed consents have the HWRRP minimum flows as conditions).
  - Given the changes in flows identified from the work above, use the plan evidence to describe the risks and implications for environmental values of delay in the implementation of the HWRRP flow regime.
  - Irrigators will provide estimates of the costs of moving to the HWRRP minimum flows (where they are not already on them).
- b) The committee has asked for a commentary on the latest advances in research, from John Hayes, Cawthron Institute, to inform flow setting in New Zealand. The record of a workshop on this topic in July has not been finalised. The committee will be briefed once this record is available.
- c) Andrew Barton talked about AIC's ideas on what actions could be done to improve water quality/biodiversity at a workshop immediately before the 17 July zone committee meeting.
- d) Scott Pearson, Fish and Game, will provide his thoughts at the 21 August zone meeting.
- e) It is expected the zone committee will start considering, at its 20 November meeting or in a workshop preceding the meeting, the pros and cons of deferring a review of water take consents (with respect to HWRRP minimum flows) to lever more action to improve water quality.

### ***3.3 Braided river bed management***

- a) The Zone Committee's Biodiversity subgroup's recommendations on an Immediate Steps braided river native biodiversity flagship project were agreed to at the zone committee on 18 September.

### ***3.4 All farms at GMP***

- a) There is increasing buy-in and progress towards GMP through the irrigation collectives and Hurunui District Landcare Group.
- b) The zone committee will receive updates from AIC and the Landcare Group on progress.

### **3.5 Waipara catchment**

- a) The decisions on Plan Change 5 have been released. These will apply in the Waipara catchment once appeals are resolved and the plan change becomes operative.
- b) Hurunui Water Project will apply for a land use/nutrient discharge consent for their command area in the Waipara catchment.
- c) A community workshop could be scheduled at any time, however, until appeals on Plan Change 5 are resolved there would be uncertainty on what Plan Change 5 will mean in the Waipara catchment. A community workshop could cover Plan Change 5, current water quality in the catchment and HWP's plans.

### **3.6 Toxic cyanobacteria**

- a) NIWA and other research organisations have a proposal with central government to do further research on the factors controlling periphyton (including toxic cyanobacteria). The Hurunui River would be one of the study sites. Environment Canterbury is supporting this research proposal.

### **3.7 Water quality limits for Waiau River**

- a) Technical work is underway to inform whether stronger water quality limits are needed for Waiau River and if so by when:
  - a. Estimating current N source loads for the river and for a future scenario with consented AIC development, Emu Plains proposed development and permitted dryland farming. This relies on information from others (see above) and so is expected to be completed after November.
  - b. Assessing what the increase in N concentrations from the future development modelled above would mean for freshwater outcomes in the river.
- b) The delay in the work by the Hurunui District Landcare Group on nutrient losses from dryland farming mean that the presentation to the zone committee on the technical assessment of the likely increase in N concentrations from future development and dryland farming will be delayed to early 2018.

### **3.8 Water storage**

- a) An update on the proposed Emu Plains irrigation development (Waiau River) was provided at the 17 July zone committee meeting.
- b) A presentation on the assessment of water storage options (in relation to RMA and commercial risks, and which options allow integration) was provided to the 21 August zone meeting.
- c) Environment Canterbury will not be in a position to notify a Plan Change to provide for integrated storage within the Hurunui Waiau Zone by July 2018. However, if developers are able to prepare a plan change (including technical assessment, community engagement, section 32 and plan drafting) to provide for a specific option (e.g. small Glenrae), there is an option for the Regional Council to adopt the plan change, notify it in July 2018 and take it through the hearing process.

### ***3.9 Phosphorus load limit methodology for Hurunui River***

- a) This was elevated by the zone committee at its June meeting to an issue that needed sorting sooner rather than later. Further zone committee discussion will be scheduled once the results of technical work (relating to 3.1 and 3.7 above) have been discussed by the committee to identify what needs to be fixed (beyond the 10%-rule issue) regarding the methodology for calculating the P load in the Hurunui River.

### ***4 Hurunui Science Stakeholders Group***

- a) Further Science Stakeholder workshops will be scheduled on an “as required” basis.
- b) Workshops will be scheduled as the technical information becomes available in relation to the 10%-rule issue and Waiau water quality limits. The Science Stakeholders Group will be asked to review the technical information and ensure it is “fit for purpose”. The Science Stakeholders will not be using the technical information to evaluate options for fixing the issues (as this is the role of the zone committee). It is likely that some people who are on the Science Stakeholders Group will be involved in discussions as options are evaluated, however, this will be as representatives of their organisations not as members of the Science Stakeholders Group.
- c) The next Science Stakeholders Group workshop is scheduled for Wednesday 08 November, 3.00 – 6.00pm at the Hurunui District Council, Amberley. The workshop will cover the results of analysis of N losses from irrigators and the review of sources of P losses.
- d) As noted above, the results from the Hurunui District Landcare Group work on dryland nutrient losses has been delayed and will not be available until the end of November. It is unlikely that there will be time for a Science Stakeholders Group workshop prior to these results being presented to the 11 December zone committee meeting.

### ***5 Community engagement***

- Further community meetings (at Waikari and Cheviot) will be scheduled when the committee is at the stage of either short-listing options or near its recommendations on:
  - a. Fixing the 10%-rule issue;
  - b. Considering deferring a review of water take consents (with respect to HWRRP minimum flows) to lever more action to improve water quality;
  - c. Water quality limits for Waiau River;

***Ian “Whit” Whitehouse***

Zone Facilitator

10 October 2017

## Timetable

Issue	October (this meeting)	November	December	early 2018
<b>10% rule</b>		<p>Briefing to Science Stakeholders Group <b>08 November</b> and Zone Committee <b>20 November</b> on:</p> <ul style="list-style-type: none"> <li>• N losses from current and GMP N losses from irrigation;</li> <li>• sources of “manageable” P losses</li> </ul>	<p>Briefing to Zone Committee <b>11 December</b> on:</p> <ul style="list-style-type: none"> <li>• N losses if dryland farming permitted.</li> </ul>	<p>Zone Committee evaluate options to “fix” 10% rule issue.</p>
<b>Consideration of consent review (HWRRP minimum flows)</b>	<p>Briefing on technical evaluation of risk and implications for environmental values.</p> <p>Briefing on cost to irrigators.</p>	<p>Zone Committee discussion on the pros and cons of delaying a consent review to lever more action to improve water quality and biodiversity.</p>	<p>Zone Committee continue discussion seeking consensus.</p>	
<b>Waiau water quality limits</b>				<p>Briefing to Zone Committee on the likely increase in N concentrations from future development and permitted dryland farming in Waiau catchment.</p>

AGENDA ITEM NO: 9	SUBJECT MATTER: <b>Zone Facilitator's Report</b>
REPORT BY: Ian Whitehouse, Environment Canterbury	DATE OF MEETING: 16 October 2017

**Action required**

1. Identify and prioritise, if required, existing/new initiatives and/or work programmes that the Committee considers should be provided for in the Environment Canterbury 2018-2028 Long Term Plan (LTP).
2. Identify what should be included in the "Key achievements 2017" section of the Zone Committee Annual Report 2017 and the projects/initiatives that could feature on page 2 of the report.
3. Note the proposed water quality (E. coli) monitoring programme for 2017/18 summer above SH7 on Hurunui River.
4. Note the publication of the CWMS Targets Progress Report 2017.

**1 Input to Environment Canterbury LTP**

Environment Canterbury's Long Term Plan (LTP) sets out the Council's service priorities, work programmes and resource requirements such as expenditure and funding for a 10-year period. A new Long-Term Plan is produced every three years, which incorporates the Annual Plan for that year. In June 2018 a new LTP (for 2018-2028) will be adopted by the Environment Canterbury Council. Environment Canterbury is currently seeking input from stakeholders on the strategic direction of Environment Canterbury. Environment Canterbury is inviting feedback from all 10 zone committees.

A clear message has been given to Environment Canterbury that the priorities for the coming years must be **water management and native biodiversity**.

The zone committee has written to Environment Canterbury (see "Correspondence") asking for some of the savings from the targeted approach in Hurunui Waiau to be redirected to on-the-ground work programmes in the zone including, though not limited to, conservation management of braided river beds.

*What existing/new solutions does the Committee consider should be provided for in the Environment Canterbury 2018-2028 LTP to deliver on the Freshwater management and Indigenous biodiversity priorities in the Hurunui Waiau Zone?*

**2 Zone Committee's 2017 Annual Report**

The committee's Annual Report for 2017 will be signed off at the first meeting in 2018. The Annual Report forms the basis for the Chair reporting to Hurunui District councillors and to Environment Canterbury councillors. The 2016 Annual Report is attached.

*Committee members are asked to identify the things that they believe should be included in the "Key achievements 2017" section (for example AIC piping, allocating over \$300,000 of Immediate Steps Biodiversity funding to braided river projects).*



*Committee members are asked to suggest the projects/initiatives that will feature on page 2 of the Zone Committee's 2017 Annual Report.*

### **3 Further water quality (E. coli) monitoring in Hurunui River above SH7**

Results from the monitoring in 2016/17 summer were presented and discussed at the September meeting. The committee asked Environment Canterbury to come back with a proposal for further monitoring in the 2017/18 summer. The proposed monitoring is described in the attached paper.

### **4 CWMS Targets Progress Report 2017**

The ten CWMS target areas and the specific goals within these for 2015, 2020 and 2040 are a critical part of implementing the CWMS. Environment Canterbury has provided progress reports, since 2012, on the achievement of the targets.

The CWMS Targets Progress Report 2017 has just been completed – see

<https://www.ecan.govt.nz/your-region/your-environment/water/measuring-progress/>

Printed copies will be available at the meeting.

## **Attachment to Zone Facilitator's Report**

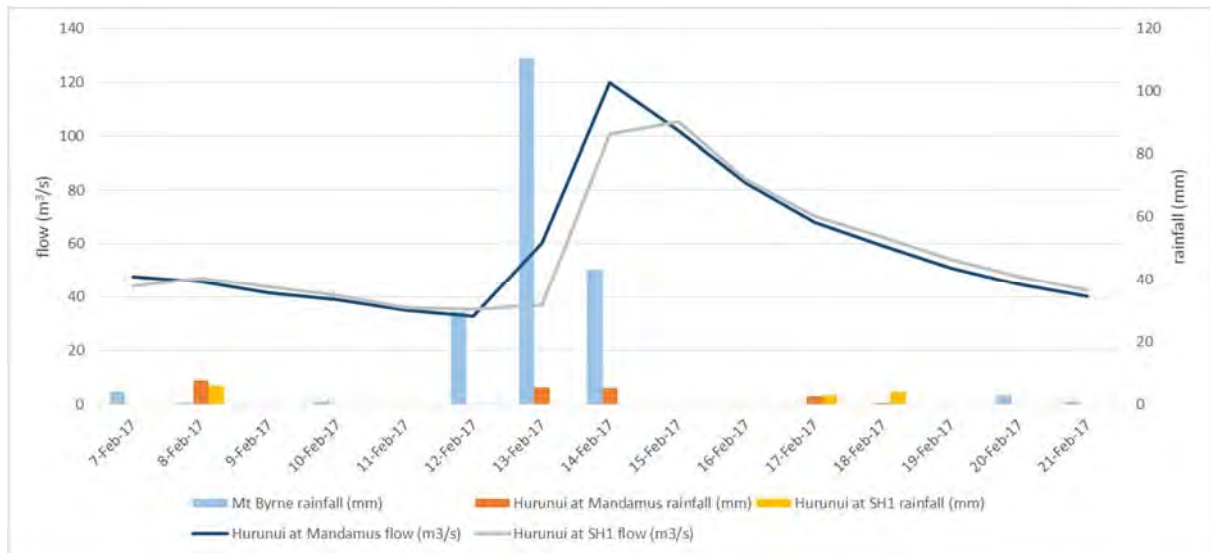
### **Proposed further water quality (*E.coli*) monitoring in Hurunui above SH7 for summer 2017/18**

Following the discussion of results from *E.coli* monitoring at multiple sites in the Hurunui River above SH7 at the last Zone Committee meeting (18 September 2017), the Committee asked the Environment Canterbury technical team to come back with options to further investigate this issue over the coming 2017/18 summer. The Committee was particularly interested in now narrowing the investigation to try and identify what might be causing the consistently elevated *E.coli* results found in the lower part of the study reach (i.e., around Lower River Rd and at SH7). In response the technical team suggest a three-pronged approach for the coming summer season:

1. A one-day visual survey (on foot) of the reach of riverbed between Hocking Rd and SH7 during October-November 2017 to identify presence and type of bird colonies and any other potential sources of *E.coli* evident from the riverbed.
2. A weekly *E.coli* sampling programme similar to the 2016-17 Hurunui programme (i.e. coinciding with ECan's regular recreational water quality programme) but narrowing in on the Lower River Rd site and up to two other sites in addition to the regular SH7 site. The additional sites will be selected following the foot survey mentioned above.
3. Sub-samples from each location and date will be stored (frozen) until the end of summer to retain the option of sending some high *E.coli* yielding samples to the ESR lab for faecal source tracking analysis, to try and distinguish between animal sources.

In addition, Mayor Winton Dalley asked if staff could confirm whether the high flow event seen on 14 February 2017 coinciding with high *E.coli* concentrations in the results presented for last summer was the result of rain in the hills, on the plains or both. The graph below shows river flow and rainfall around 14 February 2017 and confirms that the high flow event was an alpine-fed event apparently without significant contribution from rain on the plains. This raises the question of what sources caused the high *E.coli* results on 14 February 2017 at all sites below Morrisons Rd and whether rising water levels may have contributed by washing faeces from bird colonies. However, this idea does not explain the consistently elevated *E.coli* results throughout the summer at low flows at the Lower River Road site or the poor quality measured at SH7 which is only graded under stable flow conditions. The results to date show that both ruminant animals and birds contribute to *E.coli* measured at SH7 but the exact source location(s) and relative proportions of these contributions remain unclear.

River flow and rainfall patterns will be taken into account in analysing the results from the proposed summer 2017/18 study described above.



# Hurunui Waiau Zone Committee Annual Report 2016

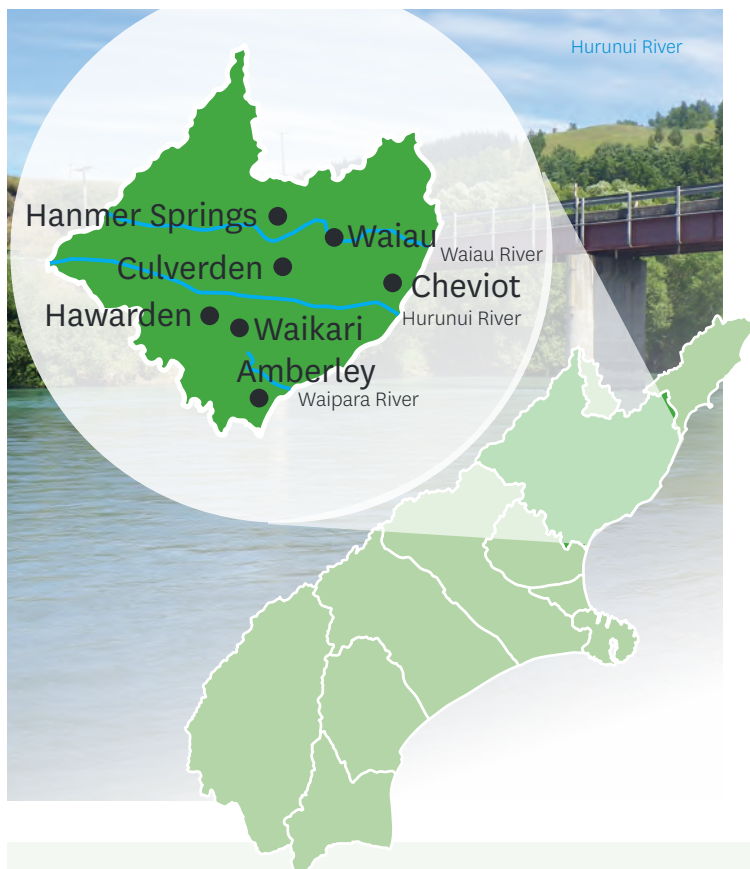
## Working with the community to deliver their aspirations for fresh water

The Hurunui Waiau Zone Committee was formed in 2010 to work with the community, rūnanga and councils to develop and implement water management recommendations that deliver the vision of the Canterbury Water Management Strategy (CWMS).

Our zone features Lake Sumner, the alpine Hurunui and Waiau rivers, the hill-fed Waipara and Conway Tūtaeputaputa rivers, as well as the north Pegasus Bay coastal wetlands and coastal hills.

### CANTERBURY WATER MANAGEMENT STRATEGY VISION:

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



### Key achievements 2016

The CWMS and the zone committee support, drive and celebrate on-the-ground actions to deliver sustainable benefits from water.

- Contact recreation grades improved at popular swimming sites on the Hurunui River, with the sites at State Highway 1 and State Highway 7 now graded as “swimmable”.
- The Hurunui District Landcare Group was established, with membership of over 100, mainly dryland, farmers to increase the update of good environmental farm management practices and to work toward a fair regulatory outcome for farmers with low environmental impact.
- Amuri Irrigation Company (AIC) continues to take a lead role in improving nutrient management. Audits have been done on more than a third of the 150 farm environment plans (FEPs) completed by AIC’s shareholders.
- The Cheviot Irrigators Group was established. Most of the 30 irrigated farms in the lower part of Waiau and Hurunui rivers are now a Nutrient Management Collective under the Hurunui Waiau Rivers Plan. All farms will have audited FEPs.

### Hurunui Waiau Zone

The Hurunui Waiau Zone covers all Hurunui District (except that part of the district in the upper Clarence River) and is a joint committee of Hurunui District Council and Environment Canterbury. It is in the rohe of Te Ngāi Tūāhuriri Rūnanga and Te Rūnanga o Kaikōura.



## Delivering community water aspirations



### Improving the Waipara River mouth

The Waipara River mouth and associated hāpua (lagoon) form an important recreation area and is highly valued by Ngāi Tūāhuriri particularly as a source of mahinga kai.

Neighbouring landowners are concerned about flooding when the river mouth is closed, public access to the north of the lagoon is difficult, and significant damage has been done by recreational 4WD “mud pluggers”.

An action strategy for the Waipara River hāpua was developed following a recommendation of the zone committee’s working group. To get action on the ground to resolve the issues, Environment Canterbury’s Hurunui Waiau Kaikoura Zone team led an intensive consultation with rūnanga, Hurunui District Council, neighbouring landowners, Department of Conservation (DOC), Fish and Game and Environment Canterbury’s river engineers and park rangers.

An opening protocol, centred around flooding and fish passage, has been agreed and a consent application lodged for opening the Waipara River mouth. The consent will be “owned” by the District Council, while the neighbouring landowner contributes to the cost of openings to reduce flooding.

A designated vehicle accessway is being constructed on the boundary of the farmland, with the farmer fencing one side of the access and Environment Canterbury Parks and Reserves installing bollards on the other side. Once the accessway has been established, DOC and Environment Canterbury ecologists will identify ecological values and work to enhance and protect biodiversity.

### A strong collective voice

Many North Canterbury farmers were shocked when they realised the implications of the Hurunui and Waiau River Regional Plan (HWRRP) for land use. As well as having very limited scope to develop in future, they found that seasonal variations in pasture production could be considered “land use change”, meaning they needed to apply for a resource consent to farm. A group of committed and passionate dryland farmers worked with the zone committee and Environment Canterbury to develop an acceptable way forward until the “10% rule” can be properly addressed in the 2018 plan review.

The issue showed the power of acting collectively, especially in a collaborative framework, and the importance of being at the table, rather than being on the menu. It also showed the value of good information.

In response, the Hurunui District Landcare Group was formed to be a collective voice in demonstrating and promoting the sound stewardship of its farmers, to more regularly update good environmental farm management practices and to collect and collate robust evidence.

The Landcare Group has over 100 members, runs workshops and field days, and will appoint a paid coordinator in early 2017.



## Progress towards achieving CWMS targets

Ecosystem health and Biodiversity	Revision of the Hurunui District Plan introduced new regulation to protect biodiversity and manage vegetation clearance. \$27,000 of Immediate Steps funding was allocated by the committee this year to projects to protect and enhance biodiversity.
Natural character of braided rivers	HWRRP protects flushing flows for Hurunui and Waiau rivers. HWRRP prohibits major water storage in upper parts of Hurunui and Waiau rivers.
Kaitiakitanga	Mana whenua participation in the zone committee has significantly increased local understanding of cultural values, though there remains a slow pace of improvement in terms of mahinga kai. The Hurunui and Waiau Rivers Regional Plan (HWRRP) protects the mauri of waterbodies.
Drinking water	Hurunui District Council continues to manage risks to community drinking water. Recent drought has led to difficulties in security of supply.
Recreational and amenity opportunities	The contact recreation grading improved on the two swimming sites on Hurunui River. New minimum flows in HWRRP provide more flow for recreational uses, though these new flows will only be implemented as consents are renewed.
Water use efficiency	Amuri Irrigation Company (AIC) is working on piping its irrigation distribution system, which will reduce losses from races.
Irrigated land area	Hurunui Water Project consent has been granted, which provides for additional irrigation development, mainly on the south side of Hurunui River. AIC has been granted a land use consent that allows for a 6% increase in its irrigated area in Waiau catchment.
Energy security and efficiency	AIC is working on piping its irrigation distribution system. This will provide water under pressure to irrigators, reducing the need for pumping.
Regional and national economies	Economic growth has occurred through land use intensification on farms with consent to take water for irrigation and further intensification is expected as new irrigation development occurs. This intensification is taking place within the water quality limits of the HWRRP.
Environmental limits	Water quality and quantity limits are set in HWRRP.



## Delivering water management priorities through key work programmes

The committee's vision is to deliver economic growth and healthy rural communities in the zone through additional irrigation, while ensuring environmental, rūnanga, local community and recreational values are maintained and, where possible, enhanced.

The committee has championed and supported work programmes by Environment Canterbury and a wide range of other organisations to deliver this vision.

### 1. Improving nutrient management

- Over 330 farms in the zone have FEPs including all dairy farms and all AIC shareholders. Over 60 of the AIC FEPs have been audited.
- As farmers work towards industry-approved Good Management Practice standards, AIC, DairyNZ, Beef and Lamb and Hurunui District Landcare Group have held workshops and field days to support wide uptake of GMP.

### 2. Integrated irrigation development

- The Hurunui Water Project is at the feasibility stage, working to prove that the proposed irrigation development is commercially viable. The proposed scheme now focuses on irrigating parts of each farm, rather than whole farms. It is expected that around 70% of the new irrigated land will be used for arable, sheep and beef production.
- AIC started work in December 2016 on piping its irrigation schemes.
- The Hurunui Water Project, Ngāi Tahu Farming and AIC resolved their differences on allocation of consented nitrogen loads. This paved the way for the three companies to work together on integrated water infrastructure including the best option for major water storage. The zone committee has asked Environment Canterbury for an assessment of all options for major water storage against the CWMS targets and other criteria. The committee considers Lake Sumner is off the table as a water storage and expects the assessment of storage options to help proponents understand why the committee believes Lake Sumner is off the table.





## 55 Opportunities and challenges

### Natural disasters

On going drought and the Kaikoura earthquake made 2016 a challenging year. The impact of these varied from place to place. The earthquake was devastating in the north-east of the district.

### Healthy rivers – productive land project

The Hurunui Waiau Zone Committee, with Environment Canterbury, is starting the development of a long-term water management solutions package for the zone – “Healthy rivers – productive land”. As part of the solutions package, a plan change will be notified in mid 2019 with zone-specific limits and rules for the Hurunui Waiau Zone where required. The Hurunui Science Stakeholders Group has been established to help access all relevant information and get buy-in on what the monitoring results and science mean.

### Biodiversity protection

Attitudes shaped more than 15 years ago in a battle over significant natural areas on private land mean that it is very difficult for the zone committee and Environment Canterbury to make progress on increasing biodiversity protection on private land. The committee has underspent its Immediate Steps Biodiversity Funding, with only \$27,500 allocated in 2016. The committee is developing a multi-year flagship project, possibly for the Hurunui River above SH7, to improve management of the braided river.



## Key events for 2017

The “Healthy rivers – productive land” project will develop a long-term water management solutions package for the entire zone. This will include notifying a plan change in mid 2019. As part of this process the Hurunui Science Stakeholders Group will meet frequently and will focus for the first part of the year on water quality in the Hurunui River.

A Waipara Stakeholders Group will be established to work on long-term water management solutions for the catchment, including nutrient management regulation and limits.

There will be community meetings on what we know about water quality in the Hurunui, Waipara and Waiau rivers and their catchments.



## Zone committee membership 2016

Each of the region's 10 zone committees includes four to seven community members whose membership is regularly refreshed to ensure a wide range of perspectives is reflected.

John Faulkner (Chair, community member)  
James McCone (Deputy Chair, community member)  
Ben Ensor (community member)  
Dr Michele Hawke (community member)  
Dan Shand (community member)  
Professor Ken Hughey (community member)  
James Costello (community member)  
Olmec Sinclair (community member)  
Raewyn Solomon (Kaikōura Rūnanga)

Makarini Rupene (Ngāi Tūāhuriri Rūnanga)  
David Bedford (Environment Canterbury Councillor)  
Vincent Daly (Hurunui District Council)  
Mayor Winton Dalley (Hurunui District Council)

Towards the end of the year there were changes in membership with Olmec Sinclair resigning and Councillor Cynthia Roberts replacing David Bedford as the Environment Canterbury representative. The Kaikōura Rūnanga position is vacant.

If you would like more information on the Hurunui Waiau Zone Committee contact Ian Whitehouse:  
email: [Ian.Whitehouse@ecan.govt.nz](mailto:Ian.Whitehouse@ecan.govt.nz) or phone: 027 500 1833

Brought to you by the Hurunui Waiau Zone Committee working with



# Hurunui Waiau Zone Water Management Committee

## Terms of Reference

The area of the Hurunui Waiau Water Management Zone is shown on the attached map.

### Establishment

The Committee is established under the auspices of the Local Government Act 2002 in accordance with the Canterbury Water Management Strategy 2009.

The Committee is a joint Committee of Environment Canterbury (the Regional Council) and Hurunui District Council (the Territorial Authority).

### Purpose and Functions

The purpose and function of the Committee is to:

- Facilitate community involvement in the development, implementation, review and updating of a Zone Implementation Programme that gives effect to the Canterbury Water Management Strategy in the Hurunui Waiau area; and
- Monitor progress of the implementation of the Zone Implementation Programme.

### Objectives

- 1) Develop a Zone Implementation Programme that seeks to advance the CWMS vision, principles, and targets in the Hurunui Waiau Zone.
- 2) Oversee the delivery of the Zone Implementation Programme.
- 3) Support other Zone Implementation Programmes and the Regional Implementation Programme to the extent they have common areas of interest or interface.
- 4) Ensure that the community of the Zone are informed, have opportunity for input, and are involved in the development and delivery of the Hurunui Waiau Implementation Programme.
- 5) Consult with other Zone Water Management Committees throughout the development and implementation of the Hurunui Waiau Implementation Programme on matters impacting on other zone areas.
- 6) Engage with relevant stakeholders throughout the development of the Hurunui Waiau Implementation Programme.
- 7) Recommend the Hurunui Waiau Implementation Programme to their respective Councils.
- 8) Review the Implementation Programme on a three yearly cycle and recommend any changes to the respective Councils.
- 9) Monitor the performance of Environment Canterbury, Hurunui District Council, and other agencies in relation to the implementation of the Hurunui Waiau Implementation Programme.
- 10) Provide Environment Canterbury and Hurunui District Council with updates on progress against the Zone Implementation Programme.



### **Limitation of Powers**

The Committee does not have the authority to commit any Council to any path or expenditure and its recommendations do not compromise the Councils' freedom to deliberate and make decisions.

The Committee does not have the authority to submit on proposed Resource Management or Local Government Plans.

The Committee does not have the authority to submit on resource consent matters.

### **Committee Membership**

The Zone Committee will comprise:

- 1) One elected member or Commissioner appointed by Environment Canterbury;
- 2) One elected member appointed by each Territorial Authority operating within the Zone Boundary;
- 3) One member from each of Tūāhuriri and Kaikōura Rūnanga;
- 4) Between 4-7 members appointed from the community and who come from a range of backgrounds and interests within the community;
- 5) Environment Canterbury and Hurunui District Council will appoint their own representatives on the Committee. Tūāhuriri and Kaikōura Rūnanga will nominate their representatives and the appointments will be confirmed by Environment Canterbury and Hurunui District Council.

### **Selection of Community Members**

To be eligible for appointment to a Zone Committee the candidate must either live in or have a significant relationship with the zone. Recommendations on Community Members for the Hurunui Waiau Zone Committee will be made to Environment Canterbury and Hurunui District Council by a working group of representatives from Environment Canterbury, Hurunui District Council, Tūāhuriri and Kaikōura Rūnanga. The recommendations will take into account the balance of interests required for Hurunui Waiau, geographic spread of members and the ability of the applicants to work in a collaborative, consensus-seeking manner. Environment Canterbury and Hurunui District Council will receive the recommendations and make the appointments.

### **Quorum**

The quorum at a meeting consists of:

- (i) Half of the members if the number of members (including vacancies) is even; or
- (ii) A majority of members if the number of members (including vacancies) is odd.

### **Chair and Deputy Chair**

Each year, the Committee shall appoint the Chair and Deputy Chair from the membership by simple majority. There is no limit on how long a person can be in either of these positions.

### **Term of Appointment**

Members of Committees are appointed for a term of three years. To coincide with Local Government Election processes terms shall commence from January each year, with each Committee requiring confirmation of membership by the incoming Council. The term for community members will be staggered so that one third of the community members is appointed (or reappointed) each year. There is no limit on the number of consecutive terms.

## Financial Delegations

None

## Operating Philosophy

The Committees will at all times operate in accordance with the requirements of the Local Government Official Information and Meetings Act 1987, and will observe the following principles:

- 1) Give effect to the Fundamental Principles, Targets and goals of the CWMS;
- 2) Be culturally sensitive observing tikanga Maori;
- 3) Apply a Ki uta ki tai (from the mountains to the sea) approach;
- 4) Work with the CWMS Regional Committee to support the implementation of the CWMS across the region as a whole;
- 5) Give consideration to and balance the interests of all water interests in the region in debate and decision-making;
- 6) Work in a collaborative and co-operative manner using best endeavours to reach solutions that take account of the interests of all sectors of the community;
- 7) Contribute their knowledge and perspective but not promote the views or positions of any particular interest or stakeholder group;
- 8) Promote a philosophy of integrated water management to achieve the multiple objectives of the range of interests in water;
- 9) Seek consensus in decision-making where at all possible. In the event that neither unanimous agreement is able to be reached nor a significant majority view formed, in the first instance seek assistance from an external facilitator to further Committee discussions and deliberations. Where the Committee encounters fundamental disagreements, despite having sought assistance and exhausted all avenues to resolve matters, recommend that the respective Councils disband them and appoint a new Committee.

## Meeting and Remuneration Guidelines

- 1) The Committee will meet at least eight times per annum and with workshops and additional meetings as required. At times, the workload will be substantially higher. Proxies or alternates are not permitted.
- 2) Any Committee may co-opt such other expert or advisory members as it deems necessary to ensure it is able to achieve its purpose. Any such co-option will be on a non-voting basis.
- 3) Remuneration for members will be paid in the form of an honorarium currently set at the following levels:
  - a. Appointed members - \$4,000 pa
  - b. Deputy Chair - \$5,000 pa
  - c. Chair - \$6,000 pa.

Staff or elected members of Territorial Authorities or the Environment Canterbury shall not be eligible for remuneration.

Mileage will be reimbursed.

## Committee Support

The Committee shall be supported staff from the Territorial Councils and Environment Canterbury, primarily through the Committee Secretary and the Zone Facilitator.

### Map showing Hurunui Waiau Water Management

