

**BEFORE THE HEARINGS PANEL  
FOR THE PROPOSED WAIMAKARIRI DISTRICT PLAN**

**UNDER** the Resource Management Act 1991 (RMA)  
**IN THE MATTER** of the Proposed Waimakariri District Plan  
**AND**  
**IN THE MATTER** of Hearing Stream 3: Natural Hazards Chapter

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**STATEMENT OF EVIDENCE OF JOLENE MARGARET IRVINE ON BEHALF  
OF THE CANTERBURY REGIONAL COUNCIL**

**NATURAL HAZARDS CHAPTER**

**10 July 2023**

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## SUMMARY STATEMENT

- 1 The Canterbury Regional Council (**CRC** or **Regional Council**) has a statutory function to provide flood, erosion, and drainage protection to the Waimakariri District Community.
- 2 The Regional Council sought amendments to the Proposed Waimakariri District Plan so that the rules within the Natural Hazards chapter enable community flood, erosion and drainage protection works delivered by the Regional Council to be undertaken.
- 3 My evidence provides details of the protection works undertaken within the Waimakariri District.

## INTRODUCTION

- 4 My full name is Jolene Margaret Irvine. I am a Rivers Planning Advisor at the Regional Council.
- 5 I have been employed by the Regional Council for over 14 years. I have been in my current position as a Rivers Planning Advisor for 10 years and prior to that I was a Consents Planner.
- 6 I hold a Masters of Science with Distinction in Zoology from University of Otago, a Post Graduate Diploma in Science with Distinction in Environmental Science from Canterbury University and a Bachelor of Science in Zoology (major) and Ecology (minor) from University of Otago.
- 7 My current role and relevant experience include providing plan interpretation and consenting advice to the Rivers Section, which delivers the Regional Council's flood, erosion and drainage responsibilities and river enhancement works. I provided advice on those parts of the Regional Council's submission on the proposed Waimakariri District Plan (**pWDP**) that related to the delivery of the Regional Council's flood, erosion and drainage responsibilities.
- 8 I have prepared this planning evidence on behalf of the Regional Council.

## CODE OF CONDUCT

- 9 While this is a Council level hearing, I can confirm that I have read and am familiar with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and I agree to comply with it while giving any oral evidence during this hearing. Except where I state that I am relying on the evidence of another person, my evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.
- 10 Although I am employed by the Regional Council, I am conscious that in giving evidence in an expert capacity that my overriding duty is to the Hearing Panel.

## SCOPE OF EVIDENCE

- 11 I have been asked to provide evidence in support of the Regional Council's submission as it relates to the Natural Hazards chapter in the pWDP. My evidence addresses the potential limitations the pWDP places on the Regional Council's ability to deliver flood, erosion and drainage protection to the Waimakariri community.
- 12 In preparing my evidence I have reviewed the following documents:
- a. the relevant content in the Section 32 report for Natural Hazards prepared and notified by Waimakariri District Council (WDC);
  - b. the notified provisions of the Natural Hazards chapter of the pWDP, the associated rules relating to Sites and Areas of Significance to Māori, Ecosystems and Indigenous biodiversity, Natural Character of Freshwater Bodies, Natural Features and Landscapes, and Coastal Environment;
  - c. the relevant paragraphs of the s42A report; and
  - d. the Canterbury Regional Code of Practice for Defences Against Water and Drainage Schemes (**COP**).

## **Regional Council flood and erosion protection, and drainage role and responsibilities**

- 13 The roles and responsibilities of managing flood and erosion risks and drainage are outlined within a number of statutes. Key statutes and specific sections outlining the Regional Council's flood and erosion risk responsibilities include:
- a. Section 93 of the Local Government Act 2002 requires that local authorities have a long-term plan (**LTP**), that that plan goes through a public consultative procedure and under section 101B includes an infrastructure strategy. This LTP commits to a level of service in maintaining 'flood protection and control works', and the LTP and Annual Plans (section 95) make commitments to providing an agreed level of service in river and drainage rating districts (**'scheme'** works) and other river enhancement works.
  - b. Section 126 of the Soil Conservation and Rivers Control Act 1941 states that it is a function of a Catchment Board (now regional councils) to minimise and prevent damage within its districts by floods and erosion, and specifies the powers, rights and privileges held by the Regional Council to enable this. Section 133 outlines the actions that can be taken when maintaining and improving watercourses and defences against water.
  - c. Section 17 of the Land Drainage Act 1908 outlines the actions that can be taken within Drainage Boards to construct and maintain drains and watercourses. Section 25 requires that every Board ensures all watercourses and drains under its management are constructed and kept so they are not a nuisance or injurious to health, and to be properly cleared and cleansed, and maintained in proper order.
  - d. Sections 9, 10A, 12 and 13 to 17 of the Resource Management Act 1991 set out the duties and restrictions that apply when undertaking works on or in land, the coastal marine area, river and lake beds, in water or relating to activities that cause discharges and noise. Works are required to meet the requirements of those sections of the RMA, the relevant rules in regional and district plans or be in accordance with any required and obtained resource consent.

- 14 Within the Waimakariri District the Regional Council currently has four established River or Drainage Rating Districts ('**schemes**', one of which crosses a boundary into Selwyn and Christchurch Districts). The spatial extent of those schemes is shown in the map in **Attachment 1**.
- 15 A summary of those schemes, as recorded in the Canterbury Regional Council Asset Management Plans is included in **Attachment 2**. There is considerable investment in existing flood and erosion protection and drainage assets, considerable on-going expenditure for their operation and maintenance and immense community safety and financial benefit. Work delivered within these schemes is primarily funded through targeted rates raised by CRC from landowners adjacent to the schemes who benefit most from the protection work.
- 16 The Regional Council continues to shift towards a more integrated approach to river enhancement works addressing flood, erosion and drainage management, biodiversity, biosecurity, cultural and other community and recreation enhancement. These programs are designed to provide many community benefits alongside our core functions of minimising and preventing flood hazards.

### **Types of Regional Council River and Drain Management maintenance works**

- 17 The physical environments where the Regional Council delivers its flood, erosion and drainage responsibilities includes drains and small watercourses, within single channel and braided rivers, within the vegetated berms/margins of braided rivers and in the coastal marine area. The legislative requirements for the Regional Council's operational river engineering activities in these areas straddle both Regional and District Plan jurisdictions.
- 18 The type of maintenance works may include (among others):
- a. Earthworks: lateral erosion control, channel realignment, placing rock, removing flood debris, vegetative enhancement planting (both exotic and natives), stopbank and groyne maintenance, track maintenance, pole planting and layering, drain maintenance including bank battering, silt removal, drain clearing.

- b. Vegetation clearance: agrichemical spraying, mechanical clearance from river fairways and small watercourses, weed cutting, hand clearance, mowing.

### **Examples of out-of-scheme works**

- 19 Whilst the majority of Regional Council flood protection works occur within established schemes, flood recovery, community requests or other opportunities result in the Regional Council undertaking flood, erosion or drainage protection works, often associated with other river enhancement work, outside of schemes.
- 20 As an example of out of scheme works, the Regional Council worked in partnership with WDC after the significant 2021 floods to address other significant 'out of scheme' issues. An example of this is on the Okuku River (not a current scheme) where \$40,000 of channel works were undertaken to improve the safety of affected properties in a 50:50 agreed cost share between WDC and the Regional Council. In addition to this, further works in the Okuku will be completed this month (July 2023) to the value of \$100,000, subject to a cost share arrangement of 25:75 between WDC and the Regional Council.
- 21 In the main stem of the Ashley/Rakahuri, in the area upstream of the Okuku confluence to the gorge (outside of the current scheme area), the Regional Council has also carried out \$1 million of works in the river with the assistance of 'shovel ready' funding from central government. This work has removed vegetation from a choked channel improving flood and erosion effects and assisting in restoring natural character.
- 22 The Regional Council is also engaging with WDC to discuss opportunities to improve the flood resilience of the wider district. This may mean expansion of work into new areas and/or the adaptation of existing schemes, e.g. addition of secondary stopbank infrastructure or upgrades to existing structures.

### **Regional Council's existing environmental controls**

- 23 The Regional Council has many existing controls in place to ensure potential risks are avoided or mitigated and is committed to continual improvement.

- 24 The river works undertaken by the Regional Council are designed in accordance with the Canterbury Regional Code of Practice for Defences Against Water and Drainage Schemes (**COP**).
- 25 The COP addresses the broad range of potential effects that need to be considered when planning river works. The COP requires the preparation of, and consultation on, Annual Works Plans. These Plans discuss an overview of planned work, identification of sensitivities and appropriate mitigation to demonstrate conformance with our 'Environmental Management Plans and Guidance' and/or any relevant resource consents. Annual Works Plans are shared with Papatipu Rūnanga, the Department of Conservation, and Fish and Game with an invitation to discuss or comment on the content.
- 26 Monthly works plans are also prepared and shared with Papatipu Rūnanga, territorial authorities, the Department of Conservation, Fish and Game and published on the Regional Council's website. Job-specific plans are also created identifying the sensitivities of the site, notification and engagement planning, and the outcomes of those environmental assessments with specific direction of on-the-ground actions.
- 27 The works undertaken by the Regional Council not only provide flood, erosion and drainage protection to the communities, but they also maintain the natural character and biodiversity of these waterways. Examples include weed management within the active river fairways and protection of encroachment from surrounding landowners into the riverbeds.

**Assessment of pWDP on the Regional Council's operational responsibilities for flood and erosion protection and drainage works:**

- 28 The Regional Council's submission requested an amendment to the definition of 'Community scale natural hazards mitigation works' and an addition to Rules NH-R8, 9 and 10. The purpose for these requests are to provide an unambiguous, single-stop rule framework that enables CRC to maintain community flood, erosion and drainage protection works.

- 29 I have reviewed section 3.3 of the s42A Officer's Report and I support the recommended amendment to the definition of 'Community scale natural hazard mitigation works'.
- 30 Sections 3.7.10 through to 3.7.13 of the s42A Officer's Report address the Regional Council's requested amendments to Rule NH8, 9, and 10. I do not agree with all matters of the assessment, nor do I consider the recommended changes address all of the concerns raised in the CRC submission. I have compared the s42A report assessment of those rules, with my own in **Attachment 3** for 10 rules potentially relevant for flood, erosion and drainage protection outside of the Natural Hazards chapter.
- 31 While I note that some of the provisions referred to in Attachment 3 are not being heard as part of this hearing stream, they are included in order to demonstrate the rules other than those within the natural hazards chapter that may affect the Regional Council's flood protection and drainage works within the District.
- 32 The s42A reporting officer's assessment was that:
- "it appears that the maintenance of ECan's flood mitigation structures would be permitted in all the district wide provisions with the exception of potentially Coastal Environment Chapter (CE-R3) and under ECO-R1."*
- 33 The reporting officer then recommended changes to CE-R3 to provide a permitted pathway and commented that the author of ECO chapter was comfortable in making changes to that rule as well (but that they were not needed).
- 34 Key examples of where my assessment differs from the s42A officers include:
- a. ECO-R1 where the s42A officer considers the Regional Council would meet the Permitted Activity. I do not consider the activities described by that rule include Community Scale Natural Hazard Mitigation Works.
  - b. The s42A officer did not assess all rules, such as NATC-R2 (setback issues in NATC-S1) and NFL-R11 (although if adopted, the s42A officer's recommendation for Hearing Stream 4 would alleviate this additional consent requirement).



35 I agree with the s42A officer's assessment of SASM-R4, that there is a permission for 'earthworks and land disturbance in specified overlays for stopbanks within land previously disturbed by previous earthworks to a depth already disturbed', but the integrated and complex solutions required to manage flood, erosion and drainage protection are more than 'just' stopbank works in already disturbed areas of land. In my opinion, this permission does not go far enough to then assume the maintenance of all Community Scale Natural Hazard Mitigation Works would meet that permitted activity rule. As a simpler, more streamlined approach, I recommend Rule NH-R8 is amended to include:

"The rules within any other chapter shall not apply to the activity provided for in NH-R8".

36 The above inclusion will allow for the continuation of maintenance within schemes (an existing activity) as a permitted activity. This would reaffirm the Regional Council's existing use rights. There are already established feedback loops where the Regional Council welcomes any comment from the WDC through their existing reporting and engaging commitments.

37 Whilst I do not agree with all aspects of their assessment (as outlined above), my request is aligned with the s42A reporting officer's presumed permitted activity status for the integrated work package required for the maintenance of existing schemes.

38 In my opinion, it would also be appropriate for the Regional Council to have the most efficient pathway possible for the upgrading, or construction of new community scale natural hazard mitigation works. The Regional Council's established reporting, engaging and environmental planning toolbox (as described earlier in my evidence) can be relied on to manage potential effects.

39 It is unlikely that any upgrading of, or new construction of, community scale natural hazard mitigation works undertaken in the future by the Regional Council would meet the permitted activity options provided in NH-R9 and R10. This is due to the exclusions of works within the Ashley / Rakahuri Saltwater Creek Estuary Outstanding Natural Feature, Waimakariri River Outstanding Natural Feature, Ashley River / Rakahuri Significant Amenity Landscape, (where the majority of our existing schemes are in Waimakariri District), any Sites and Areas of

Significance to Māori or works other than 'soft engineering natural hazard mitigation'.

- 40 Consistent with my recommended amendments to NH-R8 set out above, I recommend amending Rule NH-R9 and R10 to include an exemption to the effect of:

"if the upgrading / construction of new community scale natural hazard mitigation works triggers a consent requirement in any other chapter of this Plan, then this rule is to be the single applicable rule"


- 41 The above inclusion would ensure that Rule NH-R9 and R10 are one-stop-rules, for the upgrading and new works but would not capture small scale, less complex works that would otherwise meet individual permitted activity rules.
- 42 The s42A reporting officer has also recommended an amendment to the definition of 'upgrading' to include a footprint increase of up to 10% of the original scheme. I support this amendment.

## **CONCLUSION**

- 43 The Regional Council is required to deliver flood, erosion and drainage protection to the Waimakariri district. The Regional Council has comprehensive and robust engagement and environmental processes to avoid, mitigate or minimise the impacts of its works.
- 44 Flood, erosion and drainage protection works are an integrated package of vegetation management, earthworks and structures that occur within and adjacent to waterways, and often within highly valued areas (Sites and Areas of Significance to Māori, Natural Environment Overlays). These works therefore span many rules within each of the district plans.
- 45 There are complexities, uncertainties, differing interpretations and inconsistencies in permitted activity provisions and many rules applicable to the delivery of community flood, erosion and drainage protection works throughout district plans in the region.
- 46 In my opinion, there is an opportunity for the pWDP to provide a clear and simple rule framework within the Natural Hazards chapter that enables the holistic and integrated management of flood, erosion and drainage protection. The critical outcome here is to ensure the Regional Council is able to protect the Waimakariri community.

- 47 In my opinion, the amendments I have recommended to Rules NH-R8, R9 and R10 (as well as the amendments proposed to the definition of Community Scale Natural Hazard Mitigation Works) would be more effective and efficient in achieving the desired outcome.

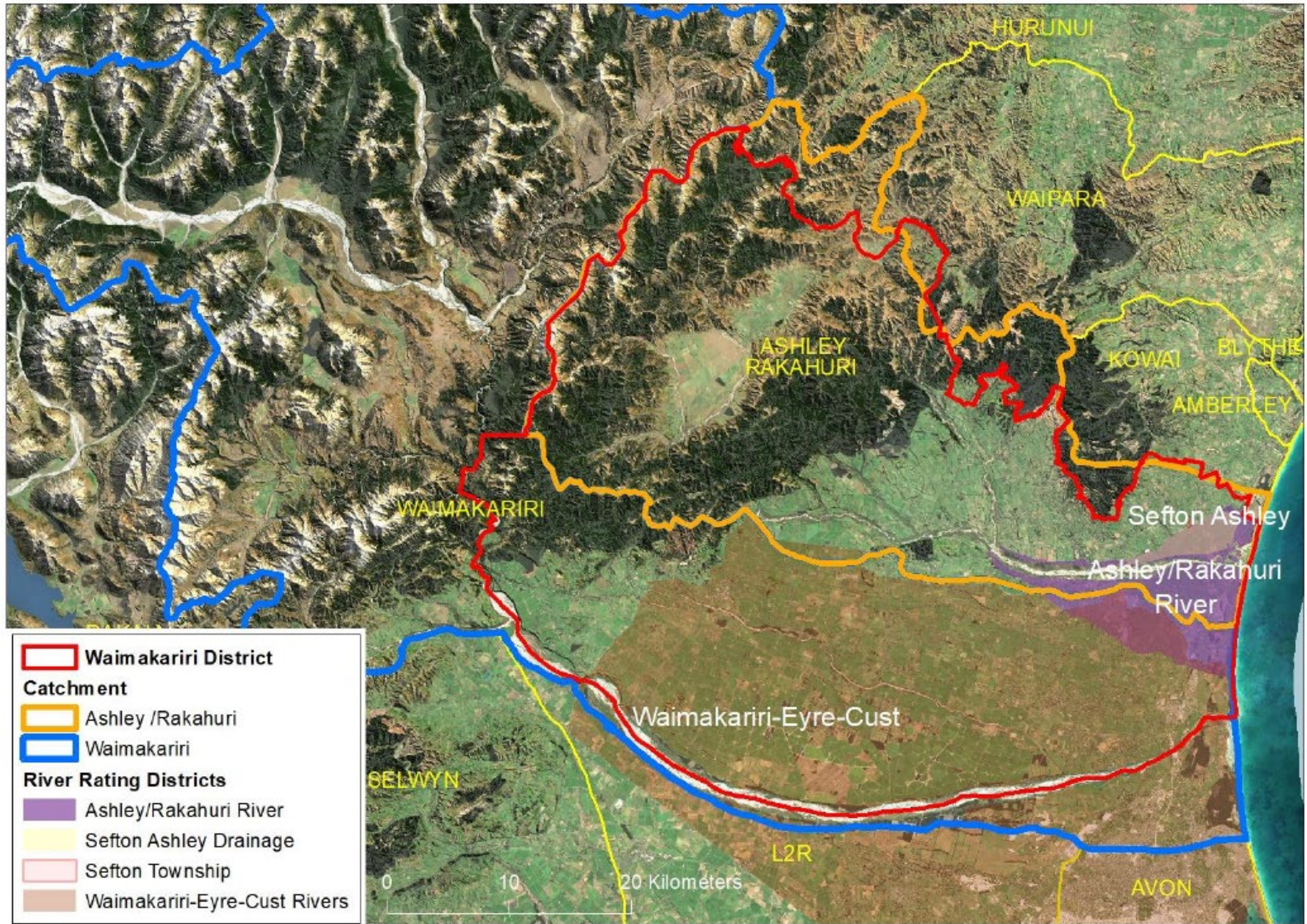
Dated this 10th day of July 2023



Jolene Irvine



Attachment 1: Location of River and Drainage Rating Districts and assets within Waimakariri





Attachment 2: Summary information of River and Drainage Districts within Selwyn District<sup>1</sup>

Scheme	Scheme objectives	Works type	Asset value	Value protected	Annual maintenance budget <sup>2</sup>
<b>Sefton Town</b>	To mitigate against flooding of adjoining assets by providing a clear channel, by managing vegetation, obstructions and gravel deposition.	Channel clearance and gravel removal.	Nil		\$1,700
<b>Sefton-Ashley</b>	Maintain flood capacity in and provide drainage outfall in: Saltwater Creek, The Boyne, Bairds Creek, and Stoney Creek.	Stopbanks (5km), flood protection plantings (3km), floodgates (#3), drains (20.8km).	\$2.315 million	\$94.7 million (May 2021)	\$29,300
<b>Ashley River / Rakahuri Control Scheme</b>	To maintain the Ashley River / Rakahuri system downstream of the Okuku River confluence so that it has the capacity to convey a flow of up to 2400 cumecs without overflow (with a design freeboard of 600mm).	Stopbanks (35.4km), groynes (#23), flood protection planting (43.5km), rock protection (13,200 tonne), culverts and floodgates (#22), and channel clearing.	\$44.9 million	\$6.62 billion (August 2019)	\$597,000
<b>Waimakariri Eyre Cust</b>	<ol style="list-style-type: none"> <li>1. To maintain the Waimakariri River system downstream of the lower gorge so that it has the capacity to convey a flow of up to 5100 cumecs to Crossbank and 4730 cumecs below Crossbank, without overflow.</li> <li>2. To maintain the lower Kaiapoi River system so that it has the capacity to contain water backing up without overflow during a Waimakariri river flood of up to 4730 cumecs.</li> <li>3. To implement structural measures described in the Draft Waimakariri River Floodplain Management Plan, option 3, including erosion control, gravel extraction and stopbank extension designed to prevent overflows on the south side of the river in floods of up to 6500 cumecs.</li> <li>4. To prevent flood overflow from the Eyre Diversion in floods up to 280 cumecs.</li> <li>5. To prevent flood overflow from the Cam River/Ruataniwha downstream of Bramley's Bridge in floods up to a discharge of 34 cumecs.</li> <li>6. To prevent flood overflow from the Cust Main Drain in floods up to 180 cumecs.</li> <li>7. To maintain a clear and stable channel which provides an equitable level of flood protection to land in the Cust Valley</li> <li>8. To enable drainage for land surrounding the Cam/Ruataniwha, Eyre and Cust rivers.</li> </ol>	Stopbanks (144.6km), groynes (#103), flood protection planting (218km), weed management, rock protection (0.5m tonne), gravel extraction, drains (19.9km), culverts and floodgates (#104)	\$217.7 million	\$115.4 billion (August 2019).	\$3,819,000

<sup>1</sup> Reference: Canterbury Regional Council, Flood Protection and Drainage Rating District, Asset Management Plans (2021)

<sup>2</sup> 5yr average 2015-2020

**Attachment 3: Rules relating to the delivery of Community Flood Hazard Mitigation Works**

<b>Rule</b>	<b>S42A Officer comment</b>	<b>My assessment</b>
EW-S1	<i>"I generally agree with ECan's comments on EW-R4. I have spoken to the s42A author of the Earthworks Chapter and we consider that it is acceptable for EW-R4 to be deleted, relying on NH-R8 (and NH-R9) instead."</i>	Agree, EW-R4 should be deleted.
NFL-R5	<i>"expressly states that the structures and building rule does not apply to natural hazard mitigation structures for flooding"</i>	Agree with s42A Officer. This note could be improved by referring to the consistently used and defined term of Community Scale Natural Hazard Mitigation Works.
NFL-R11	Not assessed in regard to Community Scale Natural Hazard Mitigation Works.	Sets a DIS and/or NC consent status for planting any willow species within Waimakariri River ONF and Ashley River / Rakahuri ONF. The s42A officers report for Stream 4 has recommend this only restricts the planting of listed pest-willow. If that change is not made, this rule will trigger consent requirements for the ongoing use of flood protection vegetation. Flood protection vegetation is a critical tool in delivering erosion and flood protection on the banks of the Waimakariri and Ashley/Rakahuri Rivers.
NATC-R2	Not assessed in regard to Community Scale Natural Hazard Mitigation Works.	Provides a permitted activity for planting for (1)(a) erosion or flood control purposes where undertaken by or on behalf of the Regional Council or the District Council or their nominated contractor or agent. To be permitted, compliance with NATC-S1 is also required (under (3)) which requires setbacks of 50 or 20m from most of our managed waterways.  Our Community Scale Natural Hazard Mitigation Works are centred around waterways and flood protection planting is a critical tool used to protect bank erosion and out-of-river flooding. Requiring a setback from water to undertake these activities is counter intuitive.
NATC-R8 NATC-R9	<i>"state in the "Advisory Note" at the end of each rule, that the provision of flood mitigation works is managed through the Natural Hazards Chapter where located within the freshwater body setback area"</i>	Agree with s42A Officer. These advice notes could be improved by referring to the consistently used and defined term of Community Scale Natural Hazard Mitigation Works.
CE-R3	<i>"appears to make ECan's natural hazard mitigation structures RDIS"</i> and makes a recommended change to CE-R3 to exclude maintenance, repair or replacement of existing flood protection works.	Where a plan provides a specific definition or rules relating to 'Community Scale Hazard Mitigation Works', of other flood protection terms, it is normally assumed that other 'structure' rules do not also apply. With the s42A officer's recommended changes, ongoing maintenance in established scheme areas would be provided for. Upgrades and new works would require consent under NH-R9 and NH-10 so there is no need for an additional rule requiring resource consent in the Coastal Environment chapter. This change would not be needed if NH-R8, NH-R9, and NH-R10 are amended as I have suggested.
ECO-R1	<i>"(1)(a) applies to maintenance, repair or replacements works involving indigenous vegetation clearance within mapped and unmapped SNAs and therefore would apply to ECan's natural hazard mitigation activities"</i>	Rule ECO-R1(1)(a) covers maintenance, repair or replacement for four listed activities ( <i>"i. within an existing access track; or ii. within 3m of an existing building; or iii. within 2m of an existing fence, existing gate, existing fire pond, existing stock yard, existing trough, or existing water tank; iv. within 2m of existing critical infrastructure, regionally significant infrastructure, strategic infrastructure or lifeline utility"</i> ).  CRC's public flood, erosion and drainage works does not fit within those activities, and as such my assessment is that vegetation clearance for Community Scale Natural Hazard Mitigation Works would not meet this permitted activity.  There is currently very little overlap between our schemes and mapped SNA. However, knowing that additional SNA's may be assessed, CRC still carries some risk of needing resource consent under this rule unless my requested amendments to NH-R8-R10 are made.

ECO-R2	<i>“(3)(f) and 8(c) expressly permit indigenous vegetation clearance outside of mapped and unmapped SNAs for the maintenance, repair or replacement of existing flood protection works administered by ECan”</i>	Rule ECO-R2 requires that (1), (2) and (3)(f) are met. Clause (2) requires a setback of 20m from banks of rivers or 50m of any wetland. CRC's practices are to avoid clearance of indigenous vegetation as far as practical however since our flood, erosion and drainage protection works is centred around rivers and waterways, these setbacks are likely to overlap in the areas we manage. Again, CRC still carries some risk of needing resource consent under this rule unless my requested amendments to NH-R8-R10 are made.
SASM-R4	<i>“(1)(f) permits earthworks and land disturbance in specified overlays for stopbanks within land previously disturbed by previous earthworks to a depth already disturbed.”</i>	Stopbanks are only one of many critical tools used to protect communities from flooding. This should refer to 'Natural hazard mitigation works' (which is a defined term), and not just stopbanks. Active erosion sites may be into undisturbed land, and without intervention will likely exacerbate the risk of out-of-river flooding.  This rule could be improved by stating each clause is an 'or', not 'and'.