

**BEFORE INDEPENDANT HEARING COMMISSIONERS
APPOINTED BY THE CANTERBURY REGIONAL COUNCIL**

UNDER: the Resource Management Act 1991

IN THE MATTER OF: Proposed Plan Change 7 to the
Canterbury Land and Water Regional
Plan – Section 14: Orari-Temuka-Opihi-
Pareora

**STATEMENT OF EVIDENCE OF MARK WHITBY WEBB ON BEHALF OF
THE OPIHI FLOW AND ALLOCATION WORKING PARTY
(SUBMITTER NO. PC7-382)**

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1. INTRODUCTION

- 1.1 My full name is Mark Whitby Webb. I am employed as a Fish and Game Officer by Fish and Game New Zealand within the Central South Island Region (“**Fish and Game**”) based at Temuka. I have held this position for 35 years.
- 1.2 Fish and Game is a member of the Opihi Flow and Allocation Working Party (“**FAWP**”). This statement of evidence is provided in my capacity as Fish and Game’s representative on the FAWP in support of the FAWP’s submission on Part B of Plan Change 7 to the Canterbury Land and Water Regional Plan (“**PC7**”) but is endorsed by Fish and Game.
- 1.3 I have also prepared a statement of evidence in support of the PC7 submissions by Fish and Game (Submitter ID 351) and the Adaptive Management Working Group (Submitter ID 385). Where I address matters in this statement of evidence that are common with my Fish and Game evidence, I have provided cross-references to that evidence to minimise duplication.

Qualifications and experience

- 1.4 I graduated from the University of Canterbury with a BSc in 1979 and have since worked for the Ministry of Agriculture and Fisheries, the former South Canterbury Acclimatisation Society and from 1990 its successor, the Central South Island Fish and Game Council. With that experience I have acquired a sound understanding of habitat requirements of sports fish and game birds, the recreation supported by these species and conflicts associated with water allocation and use.
- 1.5 I have been a community appointee on the Orari Temuka Opihi Pareora (“**OTOP**”) Zone Committee since its inception in 2010 and have participated on community steering groups that developed the Pareora Catchment Environmental Flow and Allocation Regional Plan and Policies relating to the Orari River Catchment contained in sub-regional section 14.4 of the (then) proposed Canterbury Land and Water Regional Plan.

Background

- 1.6 My role as a Fish and Game Officer has included many days undertaking fish salvage on up to 26km of the Te Ana Wai River up to Albury township. I have never been required to salvage fish in the upper Opihi or the North and South Opuha rivers. I have also undertaken annual spawning surveys on foot in the Te Ana Wai, upper Opihi, North and South Opuha rivers and other tributaries to Lake Opuha.
- 1.7 As a member of the OTOP Zone Committee I have contributed to development of the Zone Implementation Programme. This has involved many public meetings throughout the Zone and I have been a Zone Committee representative on five Catchment Groups including Upper Opihi, Opuha, Lower Opihi and Waihi – Temuka.
- 1.8 The Zone Committee's work culminated in publication of the Zone Implementation Programme Addendum ("**ZIPA**") in December 2018 that contained the Zone Committee's recommendations to Canterbury Regional Council ("**CRC**") for water quality and quantity limits for inclusion in the Canterbury Land and Water Regional Plan ("**LWRP**") through the process known as Plan Change 7 ("**PC7**").
- 1.9 I am familiar with the provisions of PC7 to which these proceedings relate. In preparing my evidence, I have reviewed the relevant parts of the section 32 Report and the section 42A Report. In preparing my evidence, I have also reviewed draft statements of evidence prepared by other FAWP witnesses.

Code of Conduct

- 1.10 I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court's Practice Note as updated in 2014. My evidence has been prepared in compliance with that Code. In particular, unless I state otherwise, this evidence is within my area of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

2. SCOPE OF EVIDENCE

- 2.1 My evidence provides background to the FAWP's formation and workstreams during the development phase of the OTOP ZIPA, including key considerations that informed its recommendations to the OTOP Zone Committee during 2018 and subsequent submissions on PC7. I also address aspects of the Section 42A Report and the recommended changes to PC7 that concern matters addressed in the FAWP's submission.
- 2.2 My evidence is structured as follows:
- (a) The Opihi Flow and Allocation Working Party;
 - (b) Background to the FAWP's submissions on minimum flow regimes for AA, AN and BA permits in the North Opuha, South Opuha, Upper Opihi and Te Ana Wai Rivers; and
 - (c) Background to the FAWP's submissions on the definition of "pro-rata partial restrictions" and minimum flow regimes for high flow "BN" takes.

3. EXECUTIVE SUMMARY

- 3.1 The Opihi Flow and Allocation Working Party was formed in late 2017 to assist the OTOP Zone Committee to gather community feedback in the development of its recommendations on flow and allocation regimes for the North Opuha, South Opuha, upper Opihi and Te Ana Wai rivers
- 3.2 FAWP membership consists of one representative from Central South Island Fish and Game Council, one representative from Timaru District Council, two members from each of the communities of the North Opuha, South Opuha and the upper Opihi rivers and three representatives from the Te Ana Wai River community. Two members of the Zone Committee made themselves available to work with the FAWP. OWL provided facilitation for the Group.
- 3.3 The FAWP has received expert advice on hydrology, ecology, agricultural economics and resource management planning to help it develop its recommendations which were reported back to the Zone Committee.
- 3.4 The FAWP's preferred minimum flow and allocation regimes appear in the December 2018 ZIPA as a "first step" to take effect on 1 January 2025. The

ZIPA includes a further “second step” to take effect on 1 January 2030 that provide increases to minimum flows beyond those preferred by the FAWP for the South Opuha and Upper Opihi rivers. The “second step” also introduces pro-rata partial restrictions for the Te Ana Wai River in a shorter time period to that preferred by the FAWP. The FAWP’s preferred approach to pro-rata partial restrictions for AA and BA permits was not adopted by the Zone Committee.

3.5 The amendments sought by the FAWP include the following, which are set out in more detail in the evidence of the FAWP witnesses -

- (a) Amend definition of “Pro-Rata Partial Restrictions” in Section 14.1A – Orari-Temuka-Opihi-Pareora Definitions in relation to Tables 14(m) (North Opuha), (p) (upper Opihi) and (s) (Te Ana Wai)
- (b) North Opuha
 - i. An “A” allocation of 255 L/sec
- (c) South Opuha
 - i. Delete Table 14(o) that increases December to 14 March minimum flows from 2030
- (d) Upper Opihi
 - i. Delete Table 14(q) that increases November to March minimum flows from 2030
 - ii. Adjustments to allocation limit for “A” allocate of 493
- (e) Te Ana Wai
 - i. Amend Table 14(s) to provide for pro-rata restrictions to take effect from 2035, not 2030
 - ii. Identify that as part of the expected 10-year review of the OTOP sub-regional plan provisions (in 2030 or prior), determine whether any increases beyond the environmental flows set out in Table 14(p) environmental flow regime are necessary.

4. THE OPIHI FLOW AND ALLOCATION WORKING PARTY

- 4.1 The FAWP was established in October 2017, to assist the OTOP Zone Committee gather community feedback in the development of recommendations on flow and allocation for the main tributaries of the Opihi Catchment – the North and South Opuha rivers, Upper Opihi River and Te Ana Wai River.
- 4.2 Given the differences in the hydrology of these rivers and the complex rules that managed existing low flow regimes and water use, the people who lived with those conditions daily had concerns that the Zone Committee appeared not to have robust hydrology and ecology reports to support its recommendations, any understanding of economic impacts on consent holders and there was an absence of engagement with key stakeholders.
- 4.3 Opuha Water Limited (“**OWL**”) facilitated the formation of the FAWP to ensure that information including critical ecological and economic assessments were available to the Zone Committee and that there was an avenue for robust community discussion by affected consent holders and key stakeholders as part of the development of the ZIPA, as envisaged by the Zone Committee’s Terms of Reference.
- 4.4 The Zone Committee supported the assistance that the FAWP could provide in development of the ZIPA and several members of the Zone Committee offered to make themselves available to work with the FAWP. During 2017/2018 when the FAWP was undertaking its investigations and formulating its recommendations to the Zone Committee, meetings were attended by Zone Committee members in addition to those who were either consent holders or stakeholders. Invitations to these meetings and notes from the meetings were also provided to Te Runanga o Arowhenua, the Department of Conservation, and the two Environment Canterbury Council representatives from within the OTOP Zone.
- 4.5 The FAWP’s membership has not changed since its formation and comprises:
- (a) Mark Webb (Fish and Game)
 - (b) Judy Blakemore (Timaru District Council)

- (c) Greg Anderson and Alistair Hay (North Opuha consent holder representatives)
- (d) Dan Davies and Chad Steetskamp (South Opuha consent holder representatives)
- (e) Murray Bell and John Wright (Upper Opihi consent holder representatives)
- (f) Herstatt Ulrich, Dermott O'Sullivan and Mark Hawkins (Te Ana Wai consent holder representatives)

4.6 To inform FAWP recommendations, reports were commissioned from expert advisors:

- (a) Dr Greg Ryder of Ryder Environmental Ltd (freshwater ecology and water quality)
- (b) Richard de Joux of de Joux Consulting Ltd and Keri Johnston of Irricon Resource Solutions Ltd (hydrology)
- (c) Justin Geary of NZ Farm Management Ltd (farm economics)

4.7 In recognition of the wide representation of parties on the FAWP and the common goal being to present agreed and practical recommendations on tributary flow and allocation to the Zone Committee, FAWP members initially agreed that the working party process would:

- (a) value the knowledge of working party members;
- (b) increase the understanding of all members to the ecological and out of stream values and needs for each of the tributaries;
- (c) seek consistency in the approach to setting flow and allocation rules for the tributaries;
- (d) consider and review existing ecological and economic information and seek expert advice where further information was needed;

- (e) assess implications of changes to flow and allocations regimes in the tributaries for their impact on the Opuha Scheme; and
- (f) provide a solutions package that overall was acceptable to all members, while acknowledging that individual components taken on their own may not be acceptable to one or more parties.

4.8 As the FAWP developed its recommendations and reported back to the Zone Committee periodically through to October 2018, a number of key “themes” were identified that contributed to a package of flow and allocation solutions for each tributary:

- (a) Tributary minimum flow regimes should have variable flows that reflect the natural hydrology of the catchment; the need for variable flow to maintain ecological values in those streams; and the variable demands of agriculture for water.
- (b) The four tributaries have differing hydrological and instream habitat characteristics that enable varied flow and allocation regimes to be applied to each.
- (c) In common, water users in all four tributary catchments do not have access to water sources other than surface water so any changes to minimum flow regimes have direct impact on the viability of farming operations.
- (d) Irrigator members of the FAWP supported the continuation of releases from the Opuha Dam that augment flows in the mainstem of the lower Opuha and Opihi rivers, to offset their water takes in the tributaries that cannot be directly augmented from the Dam.
- (e) Realistic timeframes for change were needed where irrigators were being required to accept lower reliability of access to water, given the consequences for farm financial viability.
- (f) The FAWP believed that improvements in river health required improvement to water quality in addition to the changes in water

quantity generated by new flow and allocation regimes. It was accepted that changes in land management were required as part of the solutions package and the added burden of this must be considered in addition to reduced reliability of access to water.

- (g) In the absence of any other defined measures of what constituted acceptable flow and allocation regimes for ecological health, the Zone Committee was guided by interim limits in the Proposed National Environmental Standard for Ecological Flows and Water Levels: Discussion Document 2008 ("**Draft NES**"). The FAWP assessment of consequences from applying the Draft NES identified that in some of the tributaries irrigated farming would not be viable. The FAWP's preferred minimum flow and allocation regimes acknowledged the Draft NES objective but sought as much as possible the wider balance in environmental, social, economic and cultural well-being.
- (h) The Opuha Dam and irrigation infrastructure have been paid for by affiliated abstractors. The environmental, economic and social benefits of the Opuha Dam to the South Canterbury community needed to be recognised.

4.9 In March 2018 the FAWP submitted its first formal feedback to the Zone Committee on its Draft ZIPA released for public consultation in December 2017.

4.10 The Draft ZIPA had not been informed by any ecological or water availability and economic assessments and this information from NIWA and The Agribusiness Group ("**TAG**") respectively did not become available until mid-April 2018. Due to the delay in availability of this critical information to the FAWP and to the interested public, the Zone Committee granted a one week extension for further submissions on the Draft ZIPA. The FAWP provided its preferred environmental flow, allocation and partial restriction regimes to the Zone Committee in May 2018.

4.11 Key information that contributed to the May 2018 FAWP recommendations were:

- (a) A review of the NIWA ecological assessment by Dr Greg Ryder (Ryder Environmental Ltd) that considered the percentage of habitat retained

for species under the alternative flow regimes relative to the amount of habitat available at the naturalised mean annual low flow.

- (b) Fish and Game advice on spawning, migration and other instream requirements of recreational fish in the tributaries.
- (c) Anecdotal information on instream values and recreation in the tributaries from those who live and work on land adjacent to them.
- (d) Hydrological advice from Richard de Joux (de Joux Consulting Ltd).
- (e) It was also necessary for FAWP to commission additional economic and reliability assessments by Irricon Resources Solutions and NZ Farm Management due to serious shortcomings in the TAG assessment.

4.12 In addition to the recommendations submitted by the FAWP to the Zone Committee in May 2018, there were further refinements of the preferred flow and allocation regime over the following five months after continued meetings of FAWP technical advisors and ECan planning and science staff, and presentations by FAWP to the Zone Committee.

4.13 The FAWP's preferred minimum flow and allocation regimes were adopted by the Zone Committee and released for public feedback in the Revised Draft ZIPA on 21 September 2018. The FAWP submitted formal feedback in support of the draft recommendations in October 2018 and further refinements occurred in response to feedback from ECan staff, before the final ZIPA was released in December 2018.

4.14 The FAWP's preferred minimum flow and allocation regimes appear in the December 2018 ZIPA as a "first step" to take effect on 1 January 2025. The ZIPA includes a further "second step" to take effect on 1 January 2030 that provide increases to minimum flows beyond those preferred by the FAWP for the South Opuha and Upper Opihi rivers. The "second step" also introduces pro-rata partial restrictions for the Te Ana Wai River in a shorter time period to that preferred by the FAWP. The FAWP's preferred approach to pro-rata partial restrictions for AA and BA permits was not adopted by the Zone Committee.

- 4.15 The “second steps” from the ZIPA have been carried through to PC7. The “first steps” represent the view of FAWP as a diverse stakeholder group informed by first-hand knowledge of the tributaries and independent expert analysis. Neither the ZIPA nor the section 32 report for PC7 provide justification for the “second steps”. The FAWP’s opposition to the “second steps” including the timetable for implementation of partial restriction regimes in PC7, remains.

5. MINIMUM FLOW REGIMES FOR “A” PERMITS

- 5.1 In the following sections of my evidence, I outline the key considerations that informed the FAWP’s recommendations to the OTOP Zone Committee during 2018 and subsequent submissions on the minimum flow regimes for “AA”, “BA” and “AN” permits in the North Opuha, South Opuha, Upper Opihi and Te Ana Wai Rivers that are proposed in PC7. I also carry out an assessment of the effects of the proposed regimes on recreational fisheries.

North Opuha

- 5.2 As I have noted in my evidence for Fish and Game, the survey of angler use of the Opihi Catchment fisheries undertaken by Fish and Game in 2007/08 confirmed that the North Opuha is a moderately well used trout fishery with an estimated 250 visits by anglers. Cross-referencing of the results of the Fish and Game Opihi Catchment survey with the seven-year NIWA National Angler Survey conducted the same year, indicated the 2007/08 trout fishing season in the Opihi Catchment to have been within the normal range of angler effort.
- 5.3 In the 2007/08 season, angler success in the North Opuha was higher than in the South Opuha and Opuha River below the Dam and more than 80% of fish caught were returned to the water. The high return rate indicated a fishery where anglers enjoyed the challenge of catching a fish above taking it to eat and recognition that as a high country fishery it would not sustain high harvest.
- 5.4 Ms Johnston notes that the current allocation for abstraction from the North Opuha River is 262.5 L/sec of which 7.5 L/sec is for community supply and is the only take upstream of the Clayton Rd recorder site situated about 5.5km upstream from Lake Opuha. Therefore 255 L/sec is “A” allocation for abstraction downstream of Clayton Rd and potentially impacts on ecological and recreational values in the 5.5km reach downstream to the lake.

- 5.5 Setting a minimum flow at a flow recording site that is upstream of the abstractions is not ideal for protecting ecological values unless the prescribed minimum flow takes into account abstraction that is occurring. In the North Opuha in the summer months the current minimum flow is 850 L/sec and there are no partial restrictions. This means that the full 255 L/sec of A allocation that is available downstream of the gauge can be taken until the flow reaches 850 L/sec at the flow recorder. At the most downstream abstraction site and for the remainder of the river down to the lake, flow in the North Opuha could be 596 L/sec.
- 5.6 The FAWP supports the introduction of pro-rata restrictions for a North Opuha water user group from 2025 (PC7 Table 14(m)) that will ensure abstraction is managed to preserve the minimum flow downstream from the flow recording site. However, as I discuss later in my evidence, the FAWP does not agree with the approach adopted by PC7 for identifying the point at which partial restrictions commence for AA and BA consents.
- 5.7 In his evidence, Mr Greg Anderson explains that members of the FAWP who take water from the North Opuha recognise the current low flow management regime could be harmful to the ecology of the lower North Opuha River. They accept that pro-rata restrictions will prevent the current situation where river flow below the recording site can be reduced below the minimum flow and this is beneficial to the river environment.
- 5.8 A site for habitat survey upstream of the Clayton Settlement Road bridge on the North Opuha River was initially selected by NIWA in December 2017 (Jellyman, 2018). Following Cyclone Gita in February 2018, the site was abandoned and no further habitat modelling work was undertaken on the North Opuha River to assist the Zone Committee with reviewing minimum flows. No other habitat modelling assessments have been undertaken on the North Opuha River.
- 5.9 The proposed PC7 Table 14(m) reduction of the minimum flow from ORRP flows by 35 L/sec in summer and 100 L/sec in winter provides consistency with the interim limits set out in the Draft NES, used by the Zone Committee to guide its minimum flow recommendations. This is discussed further in Ms Johnston's evidence. The FAWP considers the proposed reduction in minimum flows in Table 14(m) from current flows is more than compensated for by the positive benefits of requiring abstraction downstream from the flow gauge to comply with

the minimum flow through incentivising formation of a Water User Group and application of pro-rata restrictions. As I have indicated in my evidence for Fish and Game, as the North Opuha currently provides good quality habitat for trout and trout fishing, I do not consider the minimum flows proposed in Table 14(m) will have noticeable impact on the trout fishery or its value as a nursery for Lake Opuha trout.

- 5.10 The inclusion of a cap on the size of the A block allocation that reflects the current level of abstraction in Table 14(m) is supported by the FAWP as a mechanism to improve efficiency of use of water taken for irrigation. However, for the reasons set out in Ms Johnston's evidence, the FAWP considers that the cap should be set at 255 L/s.

South Opuha

- 5.11 The South Opuha River flows for approximately 10km across Ashwick Flat after emerging from the Two Thumb range before flowing into Lake Opuha.
- 5.12 There is one irrigation consent for Cascade Irrigation Race Limited ("**CIRL**") of 634.4 L/sec on the South Opuha and 97 L/sec allocated to community supply. The South Opuha River flow monitoring site is at Monument Bridge approximately 1km upstream from Lake Opuha. The Cascade take and most of the community supply are taken above the flow monitoring site meaning that the flow recording site measures river flow remaining after abstraction. Currently CIRL self-manages its take to maintain flows above the minimum flow. Mr Davies discusses this further in his evidence.
- 5.13 The FAWP supports introduction of pro-rata partial restrictions that formalise CIRL's management of low flows to protect the minimum flow when the natural flow in the South Opuha River is above the minimum flow.
- 5.14 The current minimum flow regime for the South Opuha River provides 500 L/sec for summer months (September to April incl.) and 800 L/sec in winter months (May to August incl.). The FAWP recommended to the Zone Committee that from eight years after implementation of the new plan (estimated to be 2028) monthly, and on five occasions fortnightly, variable minimum flows to better provide for ecological values in the river. The proposed variable minimum flows would dovetail agricultural demand particularly in the shoulder months of the

irrigation season. As Mr Davies has explained, whilst a desktop ecological analysis undertaken by ECan early on in the ZIPA development process indicated that the South Opuha River had good ecological health, there was a desire by non-irrigator members of the FAWP to improve the river's flows at critical times of the year. The FAWP's recommendations to the Zone Committee evolved as expert ecological advice came to hand, and its final recommendations were viewed by all FAWP members as striking an appropriate balance on the ecological needs of the river on the one hand and the water needs of irrigators on the other.

- 5.15 The reach of the South Opuha that was modelled by NIWA for instream habitat availability was, in my opinion, representative of the 10km Ashwick Flat reach from Lake Opuha to the start of the alpine reach.
- 5.16 Proposed PC7 Table 14(n) provides for increases in the current minimum South Opuha River flows across the year including 400 L/sec increases in winter months, 20 L/sec to 50 L/sec increases in mid-summer, and 300 L/sec to 500 L/sec increases in the September, October, November, and April shoulder months. As I have indicated in my Fish and Game evidence, these monthly variable minimum flows better provide for ecological values in the river and match these with reduced agricultural demand in the shoulder months of the irrigation season. This does not occur under the current minimum flow regime.
- 5.17 I consider that benefit to the ecological health of the river from increased minimum flows in mid-summer of 20 to 50 L/sec provides an increased level of potential habitat compared to the existing regime. Dr Ryder discusses this further in his evidence.
- 5.18 Mid-summer is a peak period for agricultural production when the river is naturally low and the needs of agriculture are strong. These competing values were robustly discussed by the FAWP.
- 5.19 PC7 proposes further increases to South Opuha River minimum flows from 2030 (Table 14(o)). These are directed only to summer flows with a flow of 600 L/sec set for December, January, and February - increases from 2025 minimum flows of 50, 80, and 80 L/sec for each month respectively. The 2030 flow for the first 14 days of March has also been raised by 50 L/sec to a level of 600 L/sec.

- 5.20 In my evidence for Fish and Game I record that if the river is at or near its minimum flow in December to March, under the current ORRP or either of the PC7 Table 14(n) or Table 14(o) regimes, trout anglers are unlikely to fish the Ashwick Flat reach of the river, preferring to fish the naturally higher flows in spring and autumn. At the current and proposed December to March minimum flows while habitat modelling indicates adult trout drift feeding habitat is predicted to increase to about 70% of maximum under the PC7 Table 14(o) regime, food availability is not the only requirement adult trout need. The rough nature of the flow and the river bed, and the absence of quiet holding water are likely to be a bigger constraint on adult trout abundance.
- 5.21 Dr Ryder further comments on the significant benefits on potential habitat for all species and life stages modelled in PC7 Table 14(n) shoulder (spring and autumn) months. Minimum flows for spring and autumn months in PC7 Table 14(o) are unchanged from those in PC7 Table 14(n).
- 5.22 The proposed PC7 Table 14(o) December to March minimum flow increases were not recommended to the Zone Committee by the FAWP. In considering the need for further increases in mid-summer environmental flows, the FAWP submitted to the Zone Committee that if further increases were justified by water quality and quantity data gathered during the term of this plan then the appropriate time to consider that would be at the time of ECan's next review of the OTOP sub-regional provisions which would be expected to commence prior to 2030. This submission was not accepted by the Zone Committee and the ZIPA contained additional increases to environmental flows as a second step to take effect eight years after the plan became operative.
- 5.23 The FAWP approach to achieving consensus on minimum flows, allocation, and restriction regimes focussed on the outcome being a package of solutions – while some individual components of the package may have been unacceptable to some members of the working party, when taken as a whole, all members could agree to the package. Unfortunately, the 2030 PC7 changes only look at one component of the package and by attempting to further increase mid-summer minimum flows there is a risk that the present willing partnership of environmental needs and economic security brokered by the FAWP, will be lost.

Upper Opihi

- 5.24 The upper Opihi River from its junction with the Opuha River upstream to Burkes Pass is approximately 43km and the telemetered flow gauge is just below the gorge approximately 4 km upstream from the Opuha junction.
- 5.25 As I have noted in my evidence for Fish and Game, the upper Opihi River is a trout fishery of moderate use with about two-thirds of anglers fishing in the gorge and downstream and one-third fishing above the Gorge in the reach that includes where the NIWA habitat survey was undertaken for PC7. Higher spring minimum flows proposed by PC7 Table 14(p) will benefit trout angling from provision of more adult trout and food producing habitat.
- 5.26 I have also noted in my Fish and Game evidence that the upper Opihi trout fishery sustains a high harvest rate compared to the average across the Opihi Catchment fisheries, indicating anglers value the trout for eating and this is a reflection of the anglers' consideration that habitat quality is good. I also acknowledge the water quality outcomes to be achieved by 2030 contained in Table 14(a), for maintaining or improving water quality in the upper Opihi River.
- 5.27 The Fairlie Basin is identified in PC7 as a High Nitrogen Concentration Area with targets for reduction in nitrogen leaching to waterbodies to be achieved by 2030. Meeting these targets is more likely to contribute to control of nuisance periphyton in the lower Opihi Catchment than increase in the minimum flow of the upper Opihi River as explained in the evidence of Dr Ryder.
- 5.28 I consider that the salmon fishery of the Opihi Catchment is regionally significant and that the reach of the upper Opihi between the top of the Gorge and Fairlie is a preferred spawning area for salmon receiving protection in Schedule 17 of the Land and Water Regional Plan. The FAWP's recommendation to the Zone Committee, which has been reflected in Table 14(p) makes provision for higher minimum flows in autumn and winter to assist sea-run salmon to reach their spawning grounds in the upper Opihi.

5.29 In addition to the Gorge to Fairlie reach that has been subject to habitat modelling, I consider three further upper Opihi River reaches can be distinguished from their different habitat characteristics -

1. There is approximately 25km of river above Fairlie, where the river is steep and fast and retains minor braiding in a bed that is mostly cobble and boulder.
2. There is a 6.5km reach through the Gorge that contains typical gorge habitat – narrow and steep bed, boulder and bedrock substrate, deep pools, fast steep rapids and where foot access is difficult.
3. Between the Gorge and the confluence with the Opuha River at Raincliff, is a further 5km of the upper Opihi River that is a transition between the single steep braid emerging from the Gorge to the braided open riverbed at Raincliff.

5.30 Each of these reaches have their own instream habitat characteristics that will likely sustain different ecological values. These physical habitat differences mean that a minimum flow set for the Gorge to Fairlie reach may not have the same benefits in some or all of the other reaches of the upper Opihi River.

5.31 While increased flow could provide very good trout fishing conditions in the 6.5km Gorge to Fairlie reach, this does not recognise the negative impact increased flow might have on trout fishing in the other 37km of the upper Opihi River or on other ecological values throughout the upper Opihi River.

5.32 For example, the NIWA ecological assessment report (Jellyman 2018, Figure 19) identifies adult trout, adult longfin eel, adult shortfin eel, and food producing habitat in the Gorge to Fairlie reach increasing throughout the range of flows modelled and continuing to increase in flows up to 3.2 m³/s. All other fish species would have deteriorating habitat availability and nuisance algae would have increasing habitat availability (Figure 19, Jellyman 2019).

5.33 NIWA's conclusion that trout and food producing habitat increase with increasing flow in the flow range up to at least 3.2 m³/s at the above gorge site in the upper Opihi River, is not surprising. The survey section is representative of the river over the approximate 6.5km reach between the top of the gorge and the SH8 Bridge at Fairlie. In this reach the river can be described as actively

braided with generally shallow flow over gravel and occasional deeper water associated with instream obstructions and natural channel morphology. At low flow the wetted channel is a small proportion of the riverbed. As flow increases existing braids become wider, dry channels begin to flow and the amount of trout drift feeding habitat and invertebrate food producing habitat increases. It is my belief that a flow of about 5 m³/s would be ideal for trout fishing in the river reach between the gorge upstream to Fairlie even though such a flow could not be sustained by the natural hydrology of the catchment.

- 5.34 The FAWP supports the upper Opihi River environmental flow, allocation and partial restriction regime in Table 14(p), which reflects the FAWP's earlier recommendations to the OTOP Zone Committee. These provide for variable monthly minimum flows that are increased by between 60 L/sec to 220 L/sec over current minimum flows; provide a reduction in allocation by 148 L/sec from the current level of 576 L/sec (as noted by Ms Johnston); and introduce a pro-rata restriction regime, all of these would take effect from 2025.
- 5.35 The most significant increases to the minimum flows from current levels in Table 14(p) have been achieved for the winter months when current irrigation needs are minimal. Allocating the additional 220 L/sec for winter minimum flows protects naturally higher winter flows from the potential for future harvest for irrigation storage. Proposed PC7 2030 Table 14(q) makes no further change to winter flows from those in PC7 Table 14(p).
- 5.36 The increased minimum flows for October, November, March and April were recommended by FAWP to the Zone Committee and these have been carried through to proposed PC7 in Table 14(p). These minimum flows have been increased from current by 160 L/sec in November, 120 L/sec in October, 110 L/sec in March and 220 L/sec in April. These are the shoulder months for irrigation when the requirement for peak demand is less likely and the minimum flow increases will assist with provision of flows to enable trout and salmon passage, without compromising irrigation availability. FAWP supports these minimum flows.
- 5.37 The higher minimum flows proposed from 2030 in proposed PC7 Table 14(q) for November and March are not supported by the FAWP as they encroach further into the irrigation season and do not provide a balance between ecological and agricultural needs.

- 5.38 There is little difference in the availability of juvenile trout and salmon habitat between flows identified in Tables 14 (p) and (q) with both being 90% to 98% of maximum weighted usable area (Jellyman, 2018 Figure 19). Adult brown trout habitat that supports trout fishing in November to March would marginally increase (+2% to + 3%) between minimum flows of 850/900 L/sec (Table 14(p)) and 1,000 L/sec (Table 14(q)) as it would in any increasing flows up to and probably in excess of 3,200 L/sec.
- 5.39 I do not consider that trout fishing in the upper Opihi River in the Gorge to Fairlie reach is an attractive proposition to anglers in flows that are less than 1,500 L/sec. I further consider that a recommendation to increase the minimum flow from 850/900 L/sec to 1,000 L/sec in December to March could not be justified by its improvement to trout fishing or its improvement to juvenile trout and salmon habitat that are already near their maximum availability. As Mr Bell has explained in his evidence, the FAWP considered that such a change had significant adverse effects on water availability for agriculture in November and March and the FAWP could therefore not support these flows in Table 14(q). Dr Ryder notes in his evidence that the minimum flows proposed by FAWP and carried through to PC7 Table 14(p) provide good to excellent habitat retention (relative to habitat at MALF) for most species and further increases in minimum flows to 1,000 L/sec from November to March produce gains and losses in habitat retained.

Te Ana Wai

- 5.40 The Te Ana Wai River is approximately 60km in length from its headwaters in the Rollesby, Dalgety and Albury ranges downstream to its confluence with the Opihi River at Pleasant Point. The flow gauge for consent monitoring is located at Cave, about 15km upstream from the Opihi River confluence. There is a surface water losing reach that starts about 2km upstream from the Opihi confluence and extends upstream for approximately 6km. The losing reach is downstream from the flow gauge.

- 5.41 Ms Johnston notes that current abstraction under AA, AN, and BA permits is 261.1 L/sec with a further 96 L/sec allocated to community supply. A total of 75 L/s of consented A block irrigation abstraction occurs upstream of the minimum flow site. Community supply takes totalling 96 L/s also occur upstream of the minimum flow site. A total of 186.58 L/s of consented A block irrigation occurs downstream of the minimum flow site.
- 5.42 In the Opihi Catchment the Te Ana Wai is unique in that the minimum flow site is in the middle of the catchment. Abstraction upstream of the flow recorder directly affects the flow at the recorder whereas abstraction downstream has the potential to reduce the flow in this reach of the river below the minimum flow.
- 5.43 The Te Ana Wai is a braided river with multiple shallow gravel and cobble lined channels. Below the flow gauge the river tends to be more gravel-bedded. There is a short gorge section of about 2km that starts about 35km above the Opihi confluence. The river reach on which habitat modelling work was undertaken by NIWA in 2018 was located about 4km upstream from the flow gauge.
- 5.44 The reach above Cave was selected for the NIWA habitat survey on the basis that the important ecological values are in this river reach where surface flows are more assured. I consider the survey reach was typical of habitat in the river above Cave where cobble is the dominant substrate but it was not typical of the reach below Cave where the river channels tend to be shallower and more mobile in the gravel bed. The river reach between Cave and Albury is also the most popular with anglers fishing the Te Ana Wai and the NIWA assessment of adult brown trout habitat is relevant to angling in this reach.

- 5.45 The FAWP recommended the following environmental flows for the Te Ana Wai River to the Zone Committee –

Period	Current (L/sec)	FAWP recommended and PC7 Table 14(r) (L/sec)	Change (L/sec)
January	400	450	+50
February	400	450	+50
1-14 March	400	450	+50
15-31 March	400	550	+150
April	400	700	+300
May	600	1,200	+600
June	600	1,200	+600
July	600	1,200	+600
August	600	1,100	+500
September	500	900	+400
October	400	700	+300
1-14 November	400	550	+150
15-31 November	400	500	+100
December	400	450	+50

- 5.46 The Zone Committee adopted the FAWP recommended minimum flows and these appear in PC7 as Table 14(r).
- 5.47 The FAWP supports these minimum flows. They highlight that monthly and split monthly flows enable variability in the flow regime to improve the ecological health of the Te Ana Wai River. As I have discussed in my evidence for Fish and Game, the proposed PC7 Table 14(r) minimum flows provide good flows for adult trout and salmon upstream passage in autumn, and improved conditions for juvenile trout and salmon downstream passage from August through November if the river is at its minimum flow.
- 5.48 Dr Ryder has confirmed in his evidence that proposed monthly minimum flows in winter and early spring in PC7 Table 14(r) and Table 14(s) provide good flows for adult brown trout and these should be favourable for maintaining the fishery and angling amenity.

- 5.49 Minimum flows recommended by FAWP to the Zone Committee and now proposed in PC7 Table 14(r) for December to 14 March, provide for 50 L/sec increases from current flows and will provide only small improvement in adult trout habitat. In mid-summer the Te Ana Wai is naturally low and even if abstraction was totally restricted, I do not consider there would be sufficient flow to improve adult trout habitat to the extent that it supported sustainable harvest. It is the evidence by Ms Johnston, from evaluation of surface water losses below Cave and the impact of increased minimum flows in PC7 Table 14(r) and Table 14(s), that the river may retain a minimum surface flow of about 100 L/sec and may maintain connectivity with a stepped abstraction reduction regime and minimum flows as proposed in PC7 Table 14(r) and Table 14(s). This is a large positive for the health of the Te Ana Wai River.
- 5.50 The FAWP supports the principle that pro-rata restrictions are applied to the permits held by all members of the Te Ana Wai Water Users Group to protect the ecological functions of the environmental flow regime. The FAWP's preference in terms of when the pro-rata restrictions should commence is addressed in the evidence of Mr Hawkins

6. PRO RATA PARTIAL RESTRICTIONS AND HIGH FLOW "B" TAKES

- 6.1 In the following paragraphs I address the FAWP's submissions on PC7's approach to the commencement of pro-rata partial restrictions and the proposed minimum flow and allocation regime for "B" high flow (harvesting) takes in Table 14(y).

Pro-rata Restrictions

- 6.2 The FAWP submitted that including the AN allocations in with AA and BA allocations to determine when pro-rata restrictions will start for water user groups in Tables 14(m) (North Opuha), (p) (Upper Opihi), and (s) (Te Ana Wai), is not justified.
- 6.3 AN permits are not affiliated to the Opuha Scheme. AA and BA permits have shares for the right to access more reliable water through the Opuha scheme. Currently restriction regimes for AN permits are tied to Opihi River mainstem minimum flows at State Highway One Bridge and also tributary specific

minimum flows. Ms Johnston's evidence provides a clear explanation of how these restrictions are applied in practice.

- 6.4 PC7 proposes to include AN allocations with AA and BA allocations for calculating the tributary flows at which pro-rata restrictions start. This unfairly penalises AA and BA consent holders, and as Ms Johnston has noted, has no effect on AN consent holders whose takes are generally restricted by the State Highway One unmodified minimum flow before tributary restrictions. The FAWP therefore maintains the position as expressed in its submission that AN allocation should not be taken into account when defining the point at which pro-rata partial restrictions for tributary AA and BA permits should commence.
- 6.5 The FAWP seeks that AN permits continue to be tied to State Highway One and tributary inflows with partial restrictions starting at the top of the AN+AA+BA allocation block plus the relevant tributary minimum flow. AA and BA permits would start partial restrictions at the top of the AA+BA allocation block plus the relevant tributary minimum flow.
- 6.6 Pro-rata reduction in take is the most efficient method for irrigators to make use of the water that is available when full allocation cannot be taken. Where there are two or more irrigators under the same minimum flow regime the use of a Water User Group (WUG) enables water to be provided within the WUG to those who most need it while ensuring that across the WUG the restriction regime is not breached. It is accepted that not all irrigation systems are able to ramp down their use in increments of 1 L/sec and often voluntary stepped restrictions are implemented as the practical application of a pro-rata regime.
- 6.7 The FAWP submits that AN permit allocation should be stacked on top of AA and BA allocation when partial restrictions are applied. This maintains the current reliability of AN permits tied to two minimum flow sites and protects the improved reliability that purchase of OWL shares provides for AA and BA permit holders.
- 6.8 The FAWP recommended to the Zone Committee that to further incentivise membership to the WUG, partial restrictions on irrigators who are not part of a WUG provide reduced access to water through 50% and 100% restriction steps rather than across more increments. The FAWP supports these provisions in Tables 14(m), 14(n), 14(o), 14(p), and 14(q).

B Block

- 6.9 The “B” Block provides for abstraction to storage in high flow conditions. The current ORRP does not provide an upper limit to “B” allocations for the Upper Opihi, North and South Opuha, and Te Ana Wai rivers.
- 6.10 The FAWP also agreed that in some of these tributaries the flow at which “B” takes could commence under the ORRP was too low and did not provide sufficient space between the upper limit of “A” takes and the commencement of “B” takes to allow for natural mid-range flow variation to be retained in the river. For example, in the Te Ana Wai the “A” allocation band provides for a take of 432 L/sec from the river in flows above the summer minimum of 400 L/sec. At river flows above 832 L/sec the river starts to receive natural flow variation however the provides for “B” takes to commence at 1,100 L/sec and the current allocation to the “B” block is 800 L/sec. This means that at a river flow of 1,900 L/sec potentially 1,232 L/sec can be abstracted and only 668 L/sec retained in the river.
- 6.11 The FAWP recommended to the Zone Committee that “B” take should continue to be provided in the Upper Opihi, North and South Opuha and Te Ana Wai catchments, that the minimum flows for commencement of the “B” allocation be raised, and that the “B” allocation is capped.
- 6.12 The FAWP agreed that basing commencement of the “B” allocation on a river flow statistic is preferable to a calculation that includes the amount of allocation. It was recommended to the Zone Committee that “B” allocation available above a flow of 90% of the naturalised mean flow in the Upper Opihi, and North and South Opuha rivers would provide improved instream conditions and the size of the “B” allocations based on existing use and potential demand would be 800 L/sec, 500 L/sec, and 800 L/sec respectively. The Zone Committee agreed and those recommendations were carried through to PC7 (Table 14(y)).
- 6.13 The FAWP recommended a significant increase in the minimum flow at which “B” takes commence in the Te Ana Wai river from the current 1,100 L/sec to 2,500 L/sec and a cap on the allocation at its current use of 800 L/sec. The minimum flow for “B” takes is halfway between 90% of the naturalised mean flow and the equivalent of 2x the “A” allocation plus the “A” block minimum flow. The deviation from the rule for setting the “B” allocation minimum flow at 90%

of the naturalised mean flow recognises the substantial change the increased minimum flow makes on the reliability of “B” takes and the already existing high use of “B” allocation in the catchment. The Zone Committee agreed and these recommendations were also carried through to PC7 (Table 14(y)).

- 6.14 “B” block minimum flows and allocations have potential to reduce the size and duration of mid-range flows in the rivers where these flows are in the range that provides good angling flows in the summer fishing months. In this respect it is acknowledged that there may be some impact on the area of fishing water and the time it is available however I believe the benefits that have been gained by having the “B” allocation capped and better provision for adult and juvenile trout habitat at flows around the “A” allocation monthly minimum flows, particularly in spring and autumn, outweigh the negative impacts on mid-range flows.

7. SECTION 42A REPORT

- 7.1 In the following sections of my evidence, I comment on the recommendations made in the Section 42A Report to the following PC7 provisions and the FAWP’s submissions on them:
- (a) The recommended amendments to the minimum flow regimes for the South Opuha and Upper Opihi Rivers (Tables 14(n) and 14(p)); and
 - (b) The definition of “pro-rata partial restrictions”.
- 7.2 Mr Hawkins’ evidence addresses the changes recommended in the Section 42A Report to the timeframe for implementation of pro-rata partial restrictions in the Te Ana Wai River. Adjustments the FAWP considers necessary to correct errors in allocation limits are addressed by Ms Johnston. Mr Ensor addresses the planning aspects of the Section 42A report’s response to the FAWP’s submissions and the decisions sought by the FAWP.
- 7.3 The Section 42A Report recommends no change to the minimum flow regimes for “A” permits in the North Opuha and Te Ana Wai Rivers (Tables 14(m) and 14(r)), and “BN” permits in the four main tributaries of the Opihi catchment (Table 14(y)) as notified, which were supported by the FAWP. I have therefore not addressed those aspects of PC7 further.

Table 14(n) – South Opuha

- 7.4 The Section 42A report recommends deletion of Table 14(o) and amendments to Table 14(n) which would have the effect of bringing forward PC7's "second step" of increased minimum flows for the South Opuha (from PC7's Table 14(o)) from 2030 to 2025. These recommendations have the effect of removing the FAWP's recommended flow regime from PC7, which had been proposed in PC7 (Table 14(n)) as a first step to take effect from 2025.
- 7.5 Minimum flows proposed in the Section 42A Report Table 14(n) are the same as those in PC7 Table 14(o) and are different to those in PC7 Table 14(n) only in respect of 50 to 80 L/sec increases from 1 December to 14 March. The increased December to March minimum flows in s42A Table 14(n) provide adult brown trout drift feeding habitat that is about 70% of the maximum habitat predicted to be present at about 1,800 L/sec. It is unlikely that the increased minimum flow will sustain a noticeably increased adult trout population with lack of other adult trout habitat such as refuge habitat and warm summer water temperatures limiting adult trout numbers at that time of year. Other sports fish values including juvenile brown and rainbow trout rearing habitat is very well provided for at 73 to 94% of maximum at flows proposed by FAWP and appearing in proposed PC7 Table 14(n).
- 7.6 I could not justify the increase in December to March minimum flows proposed in Section 42A report Table 14(n) for its benefit to sports fish values when considering the estimated cost to agriculture provided in the evidence of Mr Porter.

Table 14(p) – Upper Opihi

- 7.7 The Section 42A report recommends deletion of Table 14(q) and amendments to Table 14(p) that would have the effect of bringing forward PC7's first and second steps so that:
- (a) The FAWP's recommended regime, which under PC7 (Table 14(p)) took effect from 2025, would instead apply from the operative date of PC7; and
 - (b) The second step (PC7 Table 14(q)) would take effect from 2025.

- 7.8 I do not consider that the PC7 Table 14(q) and Section 42A Report Table 14(q) proposals to increase the minimum flow from 850/900 L/sec to 1,000 L/sec in December to March is justified by its improvement to adult trout habitat and trout fishing. Trout angling habitat is modelled to peak at about 3,200 L/sec and I would consider that flows need to be above 1,500 L/sec to be attractive to anglers.
- 7.9 Dr Ryder notes in his evidence that the minimum flows proposed by FAWP and carried through to PC7 Table 14(p) provide good to excellent habitat retention (relative to habitat at MALF) for most species and further increases in minimum flows to 1,000 L/sec from November to March proposed in the Section 42A Report Table 14(q), produce no clear overall benefit to river habitat.
- 7.10 As Mr Bell has explained in his evidence, the FAWP considered that such a change had significant adverse effects on water availability for agriculture in November and March and the FAWP could therefore not support these flows in PC7 Table 14(q) and equally Section 42A Report Table 14(q).
- 7.11 I do not consider that trout fishing in the upper Opihi River in the Gorge to Fairlie reach is an attractive proposition to anglers in flows that are less than 1,500 L/sec.

Pro-rata partial restrictions

- 7.12 The FAWP's submission on the definition of pro-rata partial restrictions is not expressly addressed in the Section 42A Report. However, the Report recommends the rejection of similar submissions by other parties. Unfortunately, in the analysis of those submissions¹, the author of the Report has mistakenly assumed that the submitters have requested that AN permits be subject to mainstem Opihi River minimum flows only.
- 7.13 For the reasons I have already addressed in my evidence, and those traversed by Ms Johnston, the FAWP remains of the view that AN allocation should not be taken into account when defining the point at which pro-rata partial restrictions for tributary AA and BA permits should commence. The FAWP therefore continues to seek the amendments to the definition of "pro-rata partial restriction" set out in its submission on PC7.

¹ At paras 9.60 and 9.75 of Part 4 of the Section 42A Report.
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8. CONCLUSIONS

- 8.1 The FAWP considers that it has played an important part in providing environmental and economic information and community feedback to the OTOP Zone Committee.
- 8.2 Many of the FAWP recommendations have been included in proposed PC7
- 8.3 The FAWP is concerned that a “second step” of increased minimum flow regimes have been proposed in PC7 and the time for implementing the “first step” and the “second step” has been reduced.
- 8.4 The FAWP is concerned that the appropriate balance has not been struck between ecological benefit to the rivers and economic cost to the local and regional community.



Mark Whitby Webb

17 July 2020