

9.1. LWRP Noting Policy Direction for Manuherekia

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PURPOSE

[1] To note the policy provisions that will form the basis of consultation for the Manuherekia rohe, which is part of the Clutha Mata-au Freshwater Management Unit. The policy provisions and associated consultation feedback will inform the development of the draft Land and Water Regional Plan (LWRP).

EXECUTIVE SUMMARY

[2] Engagement for the Manuherekia rohe is programmed to occur in late October, as part of the wider engagement on the draft LWRP. Staff will be seeking feedback on both water quality and water quantity provisions.

[3] The specific details for engagement, in addition to region wide provisions that will apply are:

- a. *Consents required for dairy farming and dairy support; and*
- b. *A permitted activity cultivation rule; and*
- c. *A minimum flow at campground of 900l/s from the date of notification of the Plan; and*
- d. *A minimum flow at campground of 1200l/s from 2030; with consents that expire beyond 2030 to be called in and reviewed; and*
- e. *A minimum flow at campground of 2500l/s from 2040; and*
- f. *A requirement for metering on all water takes, retakes and discharges; and*
- g. *A maximum instantaneous rate of take of 32,000 litres a second to enable reconsenting; and*
- h. *Reconsenting based on actual use, not previous allocation; and*
- i. *Reconsenting based on an efficiency test; and*
- j. *A requirement for fish barriers on the tributaries before the minimum flow can be raised beyond 1200l/s; and*
- k. *Over time, minimum flows in the upper catchment and/or residual flows on the tributaries; and*
- l. *Over time, water allocation will be addressed, likely via a future plan change; and*
- m. *No new water to be allocated; and*
- n. *Groundwater aquifers will either be managed by a default method, or if connected to surface water, by a river regime;*
- o. *More enabling flow harvesting provisions for the Manuherekia River while still allowing for flow variability at higher flows; and*

- p. *A list of 11 water bodies that have been assessed as meeting the criteria for Outstanding Water Bodies (OWB);*
- q. *A narrative take limit for the Blue Lake ;and*
- r. *Any takes from Falls Dam, Lower Manorburn Dam and the Idaburn Dam will be included within the take limit that applies to the wider rohe; and*
- s. *No environmental levels or take limits will apply to any of the off-stream reservoirs in the rohe provided there is no hydrological connection.*

[4] The policy position for engagement has been developed based on a number of factors, including:

- The principles that underpin Te Mana o te Wai; and of setting a minimum flow that reflects where a rivers' range would naturally sit; and
- Taking into account a range of inputs, including cultural, economic, science and policy constraints; and
- Proceeding on the basis of best information available which is consistent with Clause 1.6 of the NPSFM;

RECOMMENDATION

That the Council:

- 1) **Notes** *this report.*
- 2) **Notes** *the policy provisions that will form the basis for consultation with the community to manage the Manuherekia rohe, as set out in paragraph 3 of this paper; and*
- 3) **Notes** *the Council will be asked in June 2024 to adopt the section 32 report, and publicly notify the proposed Land and Water Regional Plan.*

BACKGROUND

[5] The process to establish provisions to manage water quality and quantity in the Manuherekia rohe has been extensive. In particular the water quantity work has been ongoing since 2018 and involved a considerable investment of time and money from the community, and ORC staff. The substantial portion of that investment occurred prior to August 2021, with a smaller investment of time and resources ¹ over the last 2 years.

[6] In November 2019, ORC made a commitment to the Minister of the Environment to implement a "take all necessary steps to develop a fit for purpose freshwater management planning regime". This included a commitment to notify a new Land and Water Plan (LWRP) by 30 June 2024².

[7] The work of the Technical Advisory Group, including the Hydrology Group from August 2021 was presented to the Environmental Science and Policy Committee on 22 August, and included updated information in relation to the hydrology and ecology of the river, and the flows required to support a healthy ecosystem and has informed the policy provisions for engagement.

¹ Approximately 1400 staff hours, and \$417,000 of consultant /community spending has occurred since August 2021. This does not include policy or science staff working on region wide provisions that also apply in the Manuherekia rohe.

² The 2029 recommendations included notification by December 2023, but the Minister approved a 6 month extension in March 2023, which extended the notification date out to June 2024.

[8] There have been extensive and detailed studies undertaken to inform the flow regime and water quality attribute targets for the Manuherehia catchment. These studies include those presented in August 2021, as well as :

- Habitat and ecology - Allibone, R. (2021) *Manuherehia minimum flow scenarios assessment*, Water Ways Consulting.
- Natural character - Boffa Miskell Limited (2021) *Manuherehia River and Tributaries – Natural Character, Riverscape and Historic Values Assessment prepared for Otago Regional Council*, Boffa Miskell Limited
- Recreation - Greenway, R. (2020) *Manuherehia River and Dunstan Creek Recreation Values Assessment*, Rob Greenway and Associates
- Hydrology - Lloyd, I. (2021) *Manuherehia Hydrology Model – Scenario Results – Final Draft Memorandum*, Davis Ogilvie
- Farm economics - Glennie, S and Harburg, S (2021) *Manuherehia Enterprise Model Methodology*, Abacus Bio
- Catchment economics – Wynne-Lewis, T (2021) *Manuherehia Catchment Economics – Discussion document*, Lewis Tucker & Co.
- Regional economics - McDonald, N & Yang, A (2021) *Economy-wide Impacts of Proposed Policy Options for the Manuherehia Catchment*, m.eResearch.
- Cultural values - Tipa, G. (2021) *Cultural Preferences for Flows in the Manuherehia Catchment*, a report prepared for Kāi Tahu ki Otago and Aukaha Ltd.
- Climate change - Zammit, C. (2020) *Potential climate change impacts on streamflow in the Manuherehia catchment*, NIWA.
- Water quality - Otago Regional Councils (2021) *State and Trends of River and Lake Water Quality in the Otago Region 2000 – 2020*, ORC.

DISCUSSION

Science

[9] There has been an extensive work programme over several years to understand the river environment, in addition to the work undertaken by the Technical Advisory Group (TAG).

[10] The hydrology reports identify a complicated hydrological catchment due to plumbing and a lack of representative metering data. The hydrology is considered to represent the best available information. In spite of this a naturalised time series flow estimation was not able to be developed due to a lack of metering data.

[11] Natural time series estimations were available through two models – the CHES/Topnet Model and the Manuherehia Catchment Model. Across older and more recent studies there was reasonable agreement on a naturalised Mean Annual Low Flow (MALF) of $4.0\text{m}^3/\text{s}$ (+/- 20%) when measured at campground.

[12] The ecology work was equally comprehensive with a range of instream habitat models, invertebrate drift studies, fish surveys, temperature logger, and periphyton and invertebrate sampling (as part of our State of the Environment work programme).

[13] The habitat modelling work was supported by a risk framework developed by the TAG, and the scoring was completed by relevant experts.

- [14] For the habitat modelling work, ratings of *Low* and *Very Low* were used as proxies for ecosystem health (the requirement of the NPSFM), and determined that a minimum flow of 2m³/s at campground provided a good level of ecosystem health.
- [15] The minimum flow figure above is further refined by the principal that a river should flow within its natural flow range, and setting a minimum flow outside of that flow range is the equivalent of putting the river through an extreme drought annually.
- [16] The Manuherekia hydrology catchment model indicated that a flow of 2m³/s at campground should never occur and the CHES/TopNet model indicated it would occur 0.41% of the time (68 days over a 47 year dataset).
- [17] Taking this into account, a minimum flow of 2m³/s would set the river outside of its natural flow range annually, and a flow of 2.5m³/s and upwards would be more appropriate.

From 1974 -2020		
Campground minimum flow (m ³ /s)	Manuherekia Catchment Hydrology Model	BOC -Lake TopNet
0.9	Never	Never
1.2	Never	Never
1.5	Never	0.04%
1.7	Never	0.13%
2.0	Never	0.41%
2.5	0.16% ¹	0.86%
3.0	1.04% ²	1.63%

Table 1 : Percent of time estimated natural flow is less than range of minimums set at Campground.

Economics

[18] Three specific reports were undertaken in 2021 to support better understanding of the financial and economic impacts of a variety of minimum flow scenarios. These were a Farm Scale study that modelled three case study farms using data from 1973 to 2020 as well as an investigation into impacts for a cherry grower; a Catchment Scale project to understand the on-farm impacts of an average, wet and dry year, and a Regional Scale Input: Output Analysis.

[19] As expected, there were a range of outcomes, dependent on a range of minimum flow scenarios. Table 2 below demonstrates the impacts of a range of scenarios, from 1500l/s up to 3000l/s, and under three different rainfall scenarios.

		Policy scenario			
		1500 l/s	2000 l/s	2500 l/s	3000 l/s
Value added (\$2020 mil) [1]					
Rainfall scenario	Average	-0.95	-2.51	-4.55	-6.46
	Wet	-0.30	-0.54	-1.28	-1.79
	Dry	-0.37	-2.16	-5.64	-10.67
Employment (MECs) [2]					
Rainfall scenario	Average	-2	-7	-14	-21
	Wet	-2	-3	-6	-5
	Dry	6	6	3	-15

Note (1): All results are Type II results from the Input-Output Model and therefore include induced impacts from changes in household income and expenditure in 2020 dollars. (2) MECs are 'Modified Employment Counts'. This measure is based on Statistics New Zealand's Employment Count (EC) statistic but also includes an estimate of the number of working proprietors.

Table 2 : New Zealand Annual Average Value Added and Employment Impacts by Scenario (2025-2040)³

[20] The main findings from the Farm Scale work was that farmers and growers are facing complex challenges that would be exacerbated with reduced irrigation reliability. The ability to manage the shortfall is constrained by several factors, there would be more years where farm business is unprofitable, and more risk of back-to-back dry seasons, or an extreme dry season.

[21] At a catchment scale, the work identified a steep reduction in profitability for all farm types, but sheep and beef farms are the most at risk, and at a regional scale, higher minimum flows are more influenced by rainfall scenarios in terms of value added and employment.

[22] The economic reports were all prefaced on the sudden imposition of a higher minimum flow, rather than the economic and financial impacts of introducing a higher minimum flow over time.

³ McDonald, N & Yang, A (2021) *Economy-wide Impacts of Proposed Policy Options for the Manuherehia Catchment*, m.e Research.

Kāi Tahu⁴

[23] This part of the report is taken from the August 2021 report and reflects the position of Kāi Tahu in 2021.

[24] To understand the impacts of different flow scenarios, a Cultural Flow Preference Study (Tipa, 2021) was undertaken in the Manuherehia catchment to determine the river flows that mana whenua believe would be sufficient to protect cultural interests and restore cultural use.

[25] The Kāi Tahu recommendation for the minimum flow at Campground is 2,500 l/s to 3,100 l/s in summer and 4,300 l/s in winter, with one or more freshes in summer of at least 4,300 l/s for at least 48 hours required to support ecosystem health. Minimum flows not less than 90% 7-day MALF for tributaries are also recommended, with flows from tributaries being proportionate to the naturalised flow pattern.

[26] Kāi Tahu consider that the water quality should be consistent with the 'A' band set out in the NPSFM within 10 years, and an immediate requirement to comply with NPSFM bottom lines where they apply.

Water Quality

[27] The contaminants of concern in the Manuherehia rohe are arsenic and *E.coli* for groundwater, and *E.coli*, Nitrate Nitrite Nitrogen(NNN), Periphyton and Suspended Fine Sediment.

[28] In addition to the region wide rules that will address some of the above contaminants, staff are recommending additional 'going further' provisions that will result in consents required for dairying and dairy support, and a permitted activity rule for cultivation.

Recommendation

[29] Following consideration of all the above and ensuring alignment with the hierarchy of obligations in Te Mana o te Wai, staff recommend the following package of water quality and quantity provisions for the Manuherehia rohe, in addition to the region wide provisions that will apply.

[30] Consent will be required for dairy farming and dairy support to contribute towards reductions in contaminants to water. Particular contaminants being managed are NNN, *E.coli*, and suspended fine sediment; and

[31] A permitted activity rule for cultivation to contribute toward reductions in contaminants to water. The particular contaminant being managed is suspended fine sediment but also NNN, *E.coli*, and phosphorus; and

⁴ McIntyre, S obo Te Rūnanga o Ōtakou and Kāti Huirapa Rūnaka ki Puketeraki (2021) Manuherehia Rohe Freshwater Management Regime: Kāi Tahu Ki Otago Recommendations

- [32] A staged increase in minimum flows over time to achieve ecosystem health for the river. This would be implemented as follows;
- a. 900 l/s minimum flow, measured at campground, at the date of notification and
 - b. 1200l/s minimum flow, measured at campground, from 2030;and
 - c. 2500l/s minimum flow, measured at campground by 2040.
- [33] To support the minimum flows, ORC would call in all water take consents that expire after 2030 for review and apply the 1200l/s minimum flow. This would be done to ensure that all water abstractors were subject to the same minimum flow and to ensure the minimum flow is able to be achieved.
- [34] In addition, all water takes, uses and discharges will be required to be metered, to enable better understanding of where water is being taken, and discharged. The requirement for meters will enable additional technical work to determine if a minimum flow is also required in the upper catchment, and /or residual flows are required on the tributaries.
- [35] A maximum instantaneous rate of take of 32,000 litres/second, to enable re consenting. The 32,000 litres/second figure is based on paper allocation in the catchment and has been set at that level to enable existing water users to re consent watertakes.
- [36] The re consenting of water will be conditional upon
- a. The amount of water to be re consented will be based on actual use; and
 - b. It will be an average amount over a time period still to be determined but that takes into account a range of seasonal conditions;and
 - c. The amount sought will be required to be reasonable, and the definition of reasonable will be set out;and
 - d. No new water will be allocated;
- [37] In order to protect native species, fish barriers will be required to be installed in up to 4 tributaries, to prevent predation by trout that could result from higher flows. These barriers will be signaled in the Plan at notification, and required to be installed before the minimum flow moves from 1200l/s to 2500l/s;and
- [38] More enabling flow harvesting provisions for the Manuherekia River, while still allowing for flow variability at higher flows. This will enable water users to harvest higher flows and store water; and
- [39] Groundwater in the Manuherekia Claybound aquifer, the Ida Valley Groundwater Management Zone, the Manuherekia Groundwater Management Zone, and the Manuherekia Alluvium aquifer will be managed either through default methods, or if connected to surface water, through a minimum flow river regime; and
- [40] A narrative take limit is proposed for the Blue lake, which will prohibit any new takes, damming, diversions from the lake or its upper catchment. This take limit will also ensure that the lake's natural minimum water level can be maintained as its environmental level.

[41] For instream reservoirs, such as Falls Dam, the Lower Manorburn Dam and the Idaburn Dam, it is proposed that any takes, diversions or damming activity associated with these reservoirs are included within the take limit that applies to the wider Manuherekia rohe. Similarly, any damming, takes or diversions from these reservoirs will be made subject to the environmental flows (i.e. minimum flows) that apply to the Manuherekia rohe.

[42] No environmental levels or take limits apply to any of the off-stream reservoirs in the rohe (provided there is no hydrological connection with any of the Rohe's waterbodies).

[43] The identification of the following water bodies, as Outstanding Water Bodies(OWB), in accordance with Clause 3.8(3)(d) of the NPSFM and the criteria in the proposed Regional Policy Statement (pRPS). The reason for identifying OWB's is to address Policy 8 of the NPSFM which requires the significant values of OWB's to be protected;

- *Upper Manuherekia*
- *Hopes Creek*
- *Manuherekia*
- *St Bathans*
- *Manorburn and Greenland Reservoirs*
- *Poolburn Reservoir*
- *Upper Lauder Creek*
- *Upper Dunstan Creek*
- *Poolburn Gorge*
- *Ophir Gorge*

[44] A future plan change is likely to enable consideration of any additional minimum flows or residuals required, and to address allocation. Any future plan changes are conditional upon the installation of meters on takes and retakes, to provide a good level of data before determining any additional environmental flows or limits required.

OPTIONS

[45] Staff are recommending the above package of policy provisions for community engagement. No other options are recommended at this stage of the process, however other options for managing water quality and water quantity are available.

[46] The options available to Council are to approve the recommended package of policy provisions for consultation, or to decide on an alternative package of policy provisions based on the information presented.

CONSIDERATIONS

Strategic Framework and Policy Considerations

[47] The minimum flows align with several of the Strategic Directions, in particular *Healthy Water, Soil and Coast, Healthy and Diverse Ecosystems, Effective Response to Climate Change and Regional Leadership*.

[48] The NPSFM requires regional councils to set limits for resources use (and develop action plans) to achieve water quality attribute targets and include these limits as rules in the LWRP. Rules for restrictions on allowed takes (minimum flows) and discharges to achieve environmental flows are also required to be set as rules in the LWRP.

[49] The policy provisions are considered to be consistent with the NPSFM 2020 framework and Te Mana o te Wai hierarchy of obligations. The limits will be included as rules in the Manuherekia rohe chapter of the LWRP when it is notified.

[50] Clause 1.6 of the NPSFM requires the best information available to be used and, where practicable, use complete and scientifically robust data. Clause 1.6 further requires that a person who is required to use the best information available must not delay making decisions solely because of uncertainty about the quality or quantity of the information available. Significant work has been done to develop robust and defensible evidence which underpins these provisions.

Financial Considerations

[51] The process of engagement with the community does not have a particular financial consideration as it was anticipated to occur and can be accommodated within existing budgets.

[52] The final package of policy recommendations will have a financial impact on the community, and in particular those people who take and use water for productive purposes. The exact impacts are not yet known, and will be partially offset by the staged approach being proposed.

Significance and Engagement

[53] The policy package proposed will be taken to the community for feedback, in accordance with the requirements of the NPSFM. When notified, the plan will be subject to the public consultation provisions in the Resource Management Act 1991, and consistent with *He Mahi Rau Rika : Significance, Engagement and Māori Participation Policy*.

Legislative and Risk Considerations

[54] The recommended provisions are consistent with the NPSFM 2020.

[55] Staff consider any risks from this process to be consistent with the process being undertaken across Otago.

Climate Change Considerations

[56] Original findings were that over a 10-year timeframe potential flow changes due to climate change were expected to be within historic flow variability and it was not considered necessary to specifically consider climate change when developing flow regimes for the Manuherehia Catchment.

[57] However, the recent Intergovernmental Panel on Climate Change Report highlighted significantly increased rates of change. The updated information and rates are expected to have an impact on the earlier predictions for the Manuherehia Catchment particularly when considering 20+ year timeframes.

[58] Climate change impacts have been assessed in the Manuherehia Catchment. Predicted impacts vary both spatially and in terms of hydrological impact. For most of the catchment, it is expected that Annual Mean and 7-day MALF statistics will not change substantially in the period to 2050. It is also expected that the frequency of high flow events will increase by approximately 5% especially in Autumn, Winter and Spring. The exception to this is the catchment above the above Falls Dam where periods of low flow are expected to decrease by up to 5%.

Communications Considerations

[59] The policy provisions will form a package of materials for engagement with the community.

This is consistent with the Communications Plan developed for the draft LWRP.

NEXT STEPS

[60] The provisions will be presented to the community in late October and all feedback will be summarised and presented to Council in December.

[61] Final plan provisions for the proposed Land and Water Regional Plan, including those for the Manuherekia rohe will be presented to Council in due course.

ATTACHMENTS

Nil