Section 32 Evaluation Report for the Proposed Otago Land and Water Regional Plan

Chapter 11: Damming and diversion

This Section 32 Evaluation Report should be read together with the Proposed Otago Land and Water Regional Plan

Otago Regional Council

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Abbreviations

FMU	Freshwater Management Unit
NES	National Environmental Standard
NESF	National Environmental Standards for Freshwater 2020
NOF	National Objectives Framework
NPS	National Policy Statement
NPSFM	National Policy Statement for Freshwater Management 2020
ORPS	Otago Regional Policy Statement 2019
pORPS	Proposed Otago Regional Policy Statement 2021
pLWRP	Proposed Otago Land and Water Regional Plan 2024
RPS	Regional Policy Statement
RMA	Resource Management Act 1991

Damming and diversion [DAM] - Assessment of Provisions

1. Introduction

1. Damming is the activity of impounding water. In relation to the pLWRP, damming occurs either entirely (or partly) within a water body such as a river, stream, or lake (referred to as in-stream damming), or on land outside of these water bodies and natural inland wetlands (off-stream damming). Diversions involve redirecting water from either its natural or existing flow direction to another direction.

2. In-stream damming is usually associated with the placement and use of a built structure in the bed of a water body, such as a weir or a dam. It can also result from other obstructions of flow in a water body. Weirs are in-stream structures used to raise the water level upstream from another structure or regulate flow. Weirs typically allow water to flow passively over the top of their crest or underneath some sections of the structure. In comparison, dams do not allow water to flow over their crest and usually control water flow using gates, outlets or spillways. Water can be released from dams for a range of purposes, including maintaining or providing variability in downstream water flows and levels, generating electricity, supplying water to downstream users and activities, or managing safety and hazard risks.

3. Placing, using, maintaining, upgrading, demolishing and removing in-stream dams and weirs often requires disturbing the beds of lakes and rivers, which can result in discharges of contaminants, including bed substrate, vegetation, and sediment that has accumulated over the lifespan of a dam or weir. In-stream dams and weirs vary in size, construction materials, operation, age and condition.

4. There are many types of off-stream dams, including 'ring' or 'turkey nest' dams, ponds and reservoirs. Water stored by off-stream dams is usually sourced by capturing surface run-off or by taking water from nearby water bodies or artificial watercourses.

5. Diversions occur within or outside water bodies and can be temporary (for example, to enable in-stream works or alleviate flooding on a property) or longer-term (for example, to realign a water body or direct water to an irrigation intake). Diversions may be undertaken with or without the use of a barrier or structure and often occur together with damming activities.

6. Damming and diversion occur throughout Otago for a wide range of purposes, including to provide for drinking water, firefighting, hydro-electricity generation, water harvesting and storage, irrigation, frost fighting, stormwater detention, flood protection, recreation and amenity, and enabling in-stream works.

7. This part of the report evaluates the provisions proposed in the DAM – Damming and diversion chapter of the pLWRP. That chapter manages the following activities:

    a. Damming and diversion of water

    b. Placement, use, maintenance, upgrading, replacement, demolition and removal of in-stream dams and weirs

    c. Disturbance of the beds of lakes and rivers associated with in-stream dams and weirs

d. Discharge of water and contaminants into water associated with in-stream dams and weirs.

8. The relevant provisions for this section of the report are those contained in the DAM chapter. The taking and use of water associated with a damming or diversion activity are managed in the EFL chapter (EFL – Environmental flows, levels, and allocation). Off-stream damming of water and the diversion of water (both within and outside of the beds of lakes and rivers) associated with flood protection and drainage assets and flood protection and drainage works is managed in the FLOOD chapter (FLOOD – Flood protection and drainage assets). The BED chapter includes provisions that may apply in addition to provisions in the DAM chapter, especially for broader activities in the beds of lakes and rivers related to damming or diversion. The BED provisions manage various activities, such as works within the beds of lakes and rivers, restoration of lake and river extent and values, vegetation removal or planting, and vehicle access.

2. Issues

9. This section outlines the resource management issues that the DAM chapter seeks to address. These issues are:

a. Impacts on ecosystems and the passage of species

b. Reduction in the extent and values of water bodies

c. Impacts on water quality and spread of pest species

d. Modification of channel form, natural flow regimes and sediment transport

e. Creation or exacerbation of flooding, erosion, aggradation and land instability

f. Matters of significance for Kāi Tahu.

10. Additional policy issues with the status quo policy context that the DAM chapter seeks to address are outlined in section 3.2 of this chapter.

2.1. Impacts on ecosystems and the passage of species

11. In-stream dams and weir structures can act as significant barriers to the upstream and downstream movement of freshwater species and restrict their access to suitable spawning sites and habitats. Damming and diversion activities can also affect avian fauna by removing or disturbing the nesting environment. Sustained high water velocity from dam discharges or channelised waterbodies can also prevent some species from accessing upstream habitats.

12. Diversions may restrict access to particular habitats and reduce species abundance and diversity. Off-stream dams can also negatively affect terrestrial ecosystems and values, including inundating land and habitat for the purpose of filling and maintaining water levels in dam reservoirs. Water level fluctuations in off-stream dams can prevent the establishment of aquatic and terrestrial vegetation.

2.2. Reduction in the extent and values of water bodies

13. Damming and diversion activities can reduce the extent of water bodies through channelisation, inundation from reservoir creation, and the use and disturbance of the bed

and banks to place dam, weir and diversion structures. Piping of water bodies to make land available for other uses can result in the loss of significant values. Damming and diversion activities can also negatively affect amenity and natural character values of water bodies.

2.3. Impacts on water quality and spread of pest species

14. In-stream dams, weirs and diversions can cause various negative effects on water quality due to decreased flow velocities, altered sediment movement, and thermal stratification. These effects can include increased water temperatures and nutrient levels, and reduced water clarity, oxygen and visibility. Works in the bed associated with the placement, maintenance, upgrading, replacement, demolition or removal of dam and weir structures can generate discharges of bed substrate and other contaminants.

15. Damming and diversion may also contribute to the spread of pests by providing a conduit for undesirable fish species to access a population of desired fish species. Both in-stream and off-stream damming activities can potentially increase the spread of weeds, pests and unwanted organisms.

2.4. Modification of channel form, natural flow regimes and sediment transport

16. Damming and diversion activities can significantly modify the hydrological functioning of water bodies. This includes impacts on natural flow regimes as water bodies are modified and realigned and structures are placed in the bed, contributing to the potential flat-lining of flows, unnatural fluctuations or low flows, or changes in the benthic structure of the bed of waterbodies. Releasing water from in-stream dams has been used as a method of augmenting downstream flows in water bodies during low flows.

17. In-stream dams and weirs can disrupt the transport of sediment downstream. This can cause sediment to build up behind the structures, alter the composition of the beds of water bodies, and also deprive downstream reaches of sediments essential for channel form, aquatic habitats, and coastal processes.

2.5. Creation or exacerbation of flooding, erosion, aggradation and land instability

18. Damming and diversion activities can create or exacerbate natural hazard risk if not appropriately managed. Potential impacts include:

    a. Flooding of land upstream and downstream of dams and weirs

    b. Effects of sediment build-up upstream and behind dams and weirs and aggradation

    c. Effects of erosion on bed, bank and land stability and structures, including from discharges from dams and modified hydrology.

2.6. Matters of significance for Kāi Tahu

19. The pORPS sets out the resource management issues of significance to iwi authorities in the region. All of these are relevant to damming and diversion, however, the impacts of these particular activities are emphasised in the following places:

a. RMIA-WAI-I1: The loss and degradation of water resources through drainage, abstraction, pollution, and damming has resulted in material and cultural deprivation for Kāi Tahu ki Otago.

20. The explanation of this issue outlines that "…barriers to fish passage and changes to flow regimes as a result of damming have had significant negative impacts on Kāi Tahu. These activities degrade the mauri of the water and the habitats and species it supports, therefore also degrading mahika kai and taoka species and places."

a. RMIA-WAI-I3: The effects of land and water use activities on freshwater habitats have resulted in adverse effects on the diversity and abundance of mahika kai resources and harvesting activity.

21. The accompanying explanation to RMIA-WAI-13 describes how the loss of mahika kai resources and places of procurement is a loss of Kāi Tahu cultural and affects the intergenerational transfer of mātauraka. It states that activities, such as the construction of barriers to fish passage (such as in-stream dams) and altered flow regimes, all impact on Kāi Tahu access to, and use of, resources.

a. Under RMIA-WAI-I5, the pORPS notes that the concerns across all issues identified are interrelated. Some specific concerns relevant for this topic are:

i. "The effects of damming on disruption of natural flow patterns, loss of freshwater habitats and migrations of indigenous fish species."

ii. "The effects on the mauri of the water body from diversion of watercourses upstream and downstream of mines."

3. Status quo policy context (including operative provisions)

3.1. Overview of the RPW provisions

22. The provisions relevant to damming and diversion activities are contained within multiple chapters of the Water Plan:

a. Chapter 4 outlines Kāi Tahu values and aspirations for freshwater in Otago.

b. Chapter 5 sets out objectives and policies for protecting natural and human use values supported by Otago's lakes and rivers and their margins.

c. Chapter 6 sets out objectives and policies for managing water quantity which is particularly relevant to the damming and diversion of water.

d. Chapter 7 sets out objectives and policies for managing water quality, with a focus on discharges to water. Direction to avoid damming or diversion of water over contaminated land where it would result in contamination of water is included.

e. Chapter 8 sets out objectives and policies for managing the beds and margins of Otago's lakes and rivers, including for the establishment, operation and maintenance of damming and diversion structures.

f. Chapter 12 includes rules that regulate the damming and diversion of water. It also includes rules regulating the discharge of water from dams (e.g., if they have a spillway or other outlet).

g. Chapter 13 includes rules that regulate land use on lake or river beds or regionally significant wetlands. These rules apply to damming and diversion structures.

h. Schedule 1 identifies the natural and human use values supported by Otago's lakes and rivers. Consideration of these values is required when assessing some damming and diversion activities. Schedule 6 identified water bodies in the region where damming is prohibited.

23. Under the existing plan there are approximately 272 current water permits authorising the damming of water in the Otago region. 230 of these permits have been issued over the past two decades, including 85 issued after 2020 (approximately 30% of the total number issued). This is due to the expiry of many deemed permits in 2021, many of which contained authorisation for damming activities that needed to be reauthorised under the provisions of the Water Plan introduced by Plan Change 7. Figure 1 shows the spatial distribution of these water permits in the region, with the majority situated in the Central Otago district.

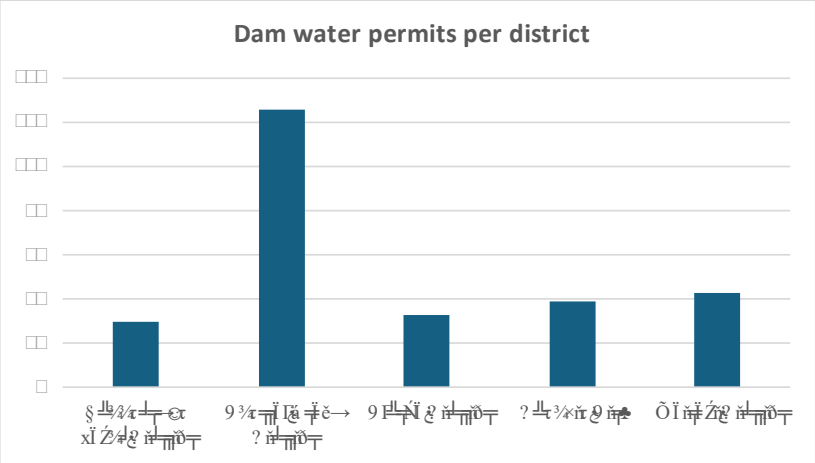

Figure 1: Dam water permits per district

24. Table 1 below shows the minimum, maximum, and median processing costs for resource consent applications that resulted in at least one water permit to dam water being issued. The "number of examples" column shows how many applications resulted in that number of consents being issued. For example, in the 2022/23 financial year, there were ten resource consent applications that resulted in two resource consents being issued (at least one of which was a permit to dam water).

25. The information shows that the processing costs vary considerably. In 2022/23, most applications that resulted in a permit to dam water resulted in two or three consents being issued and the median cost of these applications was between $6,694.75 and $8,410.50. In the 2023/24 year, there were far more applications resulting in multiple consents. These generally incurred higher costs than applications resulting in fewer consents. Overall, the costs of processing applications resulting in two or more permits to dam water ranged from $2,561.99 to $27,770.29.

Table 1: Processing costs for resource consent applications that resulted in at least one water permit to dam water being issued.

Financial year	Number of consents issued	Minimum cost	Maximum cost	Median total cost	Number of examples
2022/23	2	$2,676.99	$20,858.77	$6,694.75	10
	3	$2,561.34	$27,770.29	$8,410.50	10
	4	$5,622.66	$18,409.62	$6,836.79	3
	5	$10,303.00	$16,343.44	$13,323.22	2
	6	$10,897.45	$23,770.88	$13,614.53	3
	7	$6,853.56	$6,853.56	$6,853.56	2
	9	$9,538.06	$18,683.46	$15,225.00	5
	16	$18,212.19	$18,212.19	$18,212.19	2
2023/24	2	$10,680.66	$10,680.66	$10,680.66	1
	3	$7,915.44	$14,159.37	$12,048.95	3
	4	$7,259.42	$11,885.04	$7,259.42	3
	5	$7,690.66	$11,975.39	$7,690.66	3
	6	$10,309.87	$10,309.87	$10,309.87	2
	9	$14,573.11	$14,573.11	$14,573.11	2
	15	$20,555.47	$20,555.47	$20,555.47	3
	21	$24,431.80	$24,431.80	$24,431.80	3
	23	$55,490.44	$55,490.44	$55,490.44	7

26. There are approximately 185 current water permits authorising the diversion of water in the Otago region. Similar to the water permits for damming, the vast majority of diversions have been issued over the past two decades (155 water permits). Fifty permits (27% of all permits issued) have been issued since 2020. Like damming, this is a result of the expiry of deemed permits and the need for these diversions to seek resource consent under the provisions of the Water Plan introduced by Plan Change 7. Figure 2 shows the spatial distribution of these water permits in the region, with the majority situated in the Queenstown Lakes district.

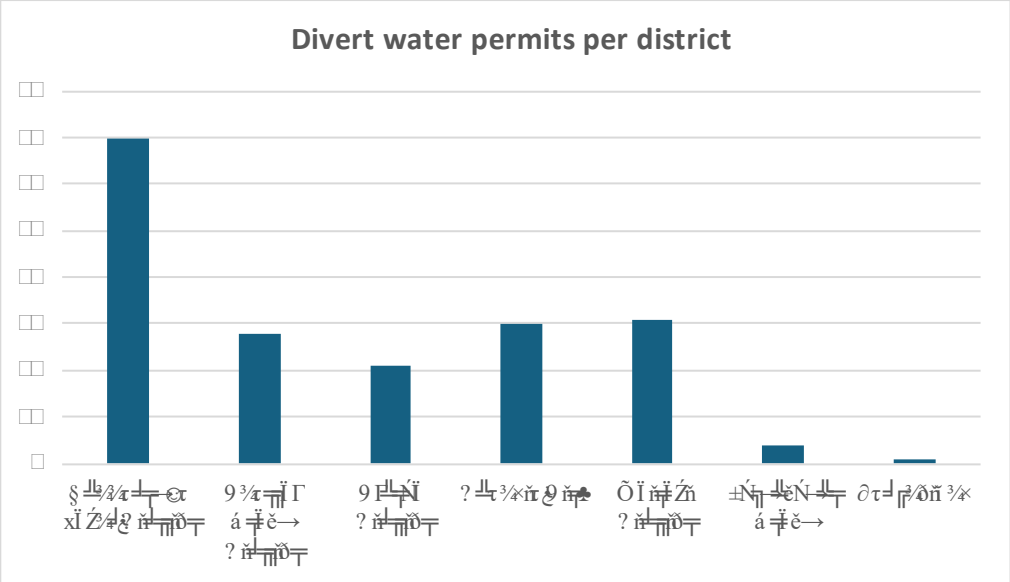

Figure 2: Divert water permits per district

27. Table 2 below shows the minimum, maximum, and median processing costs for resource consent applications that resulted in at least one permit to divert water being issued. The "number of examples" column shows how many applications resulted in that number of consents being issued. For example, in the 2022/23 financial year, there were seven resource consent applications that resulted in two resource consents being issued (at least one of which was a permit to divert water).

28. The information shows that the processing costs vary considerably. In 2022/23, most applications that resulted in a permit to divert water resulted in three consents being issued and the median cost of these applications was $9,870.68. Overall, the costs of processing applications ranged from $1,718.59 to $24,431.80.

Table 2: Processing costs for resource consent applications that resulted in at least one permit to divert water being issued

Financial year	Number of consents issued	Minimum cost	Maximum cost	Median total cost	Number of examples
2022/23	2	1,718.59	7,637.48	4,539.58	7
	3	5,772.55	10,802.28	9,870.68	4
	4	5,314.26	10,656.70	7,985.48	2
	5	10,303.00	17,291.71	13,653.32	3
	6	13,614.53	13,614.53	13,614.53	1
	7	11,676.45	11,676.45	11,676.45	2
	9	9,538.06	17,209.49	17,209.49	3
2023/24	2	11,049.15	11,049.15	11,049.15	1
	3	22,380.89	22,380.89	22,380.89	1
	4	6,179.69	14,558.72	12,970.49	4
	5	7,690.66	7,690.66	7,690.66	1
	7	22,758.95	22,758.95	22,758.95	1
	8	9,086.70	25,895.15	17,490.93	2
	21	24,431.80	24,431.80	24,431.80	1

3.2. Issues with the status quo

29. There are several issues with the Water Plan approach for managing damming and diversion, namely:

    a. Needing to give effect to new national directions or align with current national requirements.

    b. Provisions in the Water Plan are inadequate to manage the environmental effects of damming and diversion activities.

    c. Overlapping regulatory requirements for dams.

    d. Provisions in the Water Plan are piecemeal.

3.2.1. Needing to give effect to new national directions or align with current national requirements

30. There have been significant changes to relevant national directions and regulations and proposed changes to the RPS since the Water Plan became operative, including the need to implement Te Mana o te Wai. These changes are outlined in chapter 5 of this report because they affect the whole of the pLWRP and are, therefore, not repeated here.

31. In addition to its objective and policies, three parts of the NPSFM specifically direct the way damming and diversion activities are to be managed in regional plans that are not yet given effect in Otago:

a. Avoiding the loss of river extent and values,

b. Providing for fish passage, and

c. Setting take limits and environmental flows that apply to the damming or diversion of water or associated activities.

3.2.1.1. Avoiding the loss of river extent and values

32. Clause 3.24 of the NPSFM requires the following policy to be inserted into all regional plans:

"The loss of river extent and values is avoided, unless the council is satisfied that:

a. there is a functional need for the activity in that location; and

b. the effects of the activity are managed by applying the effects management hierarchy."

33. The clause sets out the requirements for: information to be included in consent applications for activities provided for in the policy above, the decision-making process for councils to follow when assessing those applications, and matters to be controlled by consent conditions. The policy above is included as Policy 5.4.2A in the Water Plan.

34. Any type of damming with a functional need to locate in a particular place where there will be effects on the extent or values of a river must be managed by applying the effects management hierarchy. In most cases, a resource consent process will be required to achieve this. The effects management hierarchy requires applicants to consider actions to avoid, remedy, mitigate, offset and then compensate for any residual effects. The inclusion of Policy 5.4.2A in the Water Plan and wider direction in clause 3.24 of the NPSFM is a significant change for the management of in-stream damming in Otago and makes activities more challenging to undertake.

35. While the Water Plan includes this mandatory policy direction, the wider suite of policies and rules does not adequately allow for the consideration or avoidance of the loss of river extent and river values.

3.2.1.2. Providing for fish passage

36. Clause 3.26(1) of the NPSFM requires the following objective (or words to the same effect) to be inserted into all regional plans:

a. "The passage of fish is maintained, or is improved, by instream structures, except where it is desirable to prevent the passage of some fish species in order to protect desired fish species, their life stages, or their habitats."

37. Clause 3.26(2) also requires regional plans to include policies that identify desired fish species for which in-stream structures must provide passage and the water bodies they occur within, and undesirable fish species whose passage should be prevented. The mandatory objective above is included as Objective 8.3.5 in the Water Plan. Although the Water Plan contains this objective, the relevant policies and rules do not clearly identify how it will be achieved. For example, as discussed in chapter 8 of this report, the provisions do not provide direction on which species are desired and which species are undesirable or the rivers and receiving environments for which this is the case. Therefore, the Water Plan does not meet the requirements under clause 3.26(2) of the NPSFM.

38. Clause 3.26(2) is particularly relevant for in-stream dams, weirs and diversions that affect fish passage and is considerably more stringent than the existing direction in the Water Plan for fish passage.

3.2.1.3. Setting take limits and environmental flows that apply to the damming or diversion of water or associated activities

39. Clause 3.16 of the NPSFM requires environmental flows and levels to be expressed in terms of the water level and flow rate (including variability) at which any taking, damming, diversion, or discharge of water meets the relevant environmental outcomes.[1] Similarly, Clause 3.17 of the NPSFM requires regional councils to set take limits, which must be expressed as a total volume, rate, or both, at which water may be taken, diverted, or dammed.[2] Clause 3.17 further requires that regional plans must identify the flows and levels at which damming or diversion will be either restricted or no longer allowed or discharges will be required.[3]

40. The Water Plan does not contain any take limits which explicitly limit the volume, rate, or both, at which water may be dammed or diverted in a water body or catchment. The permitted activity rules for placing new in-stream dams and diversions require limited consideration of the environmental flow and level regime of affected water bodies. The Water Plan includes provisions which manage flow levels in water bodies to avoid or mitigate adverse effects from damming activities that do not comply with the permitted activity rule conditions.[4] However, these provisions, particularly Policy 6.5.4, are unlikely to give effect to Te Mana o te Wai, as they do not prioritise the health and well-being of the water body over the existing needs of consumptive water users.

41. Given the complexity of freshwater management and monitoring in some catchments within Otago, such as the Taiari and Manuherekia, there are challenges for ORC to determine how much water is dammed, taken, discharged, conveyed by secondary water bodies, and/or retaken by downstream water users. Therefore, it is difficult to accurately estimate the effects these activities are having on flow regimes and catchment hydrology. From a freshwater accounting and allocation perspective, there are difficulties with distinguishing 'run-of-river' takes below in-stream dams from takes of water that are 'stored' and released by dam owners for their shareholders downstream. As a result, there has previously been 'double counting' of stored water where water is temporarily 'taken' from the water body via storage by the dam in winter, and then abstracted for a primary take in summer when it is released from the dam. Inaccurate accounting and information for these activities have made it very difficult to provide for natural flow variability.

3.2.2. Provisions in the Water Plan are inadequate to manage the environmental effects of damming and diversion activities

42. Damming and diversions are prohibited within particular water bodies or parts of waterbodies listed in Schedule 6 of the Water Plan and in Roto-nui-a-Whatu/Lake Tuakitoto

[1] Clause 3.16(3), NPSFM

[2] Clause 3.17(2), NPSFM

[3] Clause 3.17(3), NPSFM

[4] For example, Objective 6.3.6 and Policy 6.5.4 of the Water Plan.

when the lake level is low. Damming and diversions are also generally non-complying activities within Regionally Significant Wetlands.

43. Resource consent is required for damming and diversions within the Waitaki catchment to align with the Waitaki Catchment Water Allocation Regional Plan 2005. The rule activity status for these activities varies from restricted discretionary to non-complying, based on whether the activity, along with any other taking, using, damming, or diverting, complies with the allocation volumes specified in the Plan. Damming or diversions within Welcome Creek are non-complying activities. The rationale for these provisions is explained further in chapter 5 of this report.

44. Outside these areas, the damming or diversion of water (regardless of whether it is an existing or new activity) is currently permitted as long as conditions can be met.[5] These conditions can be summarised as:

    a. The size of the catchment upstream of the dam or weir is no more than 50 hectares in area.

    b. The water immediately upstream of the dam is no more than 3 metres deep, and the volume of water stored by the dam is no more than 20,000 cubic metres.

    c. No lawful take of water is adversely affected.

    d. Any damming within a Regionally Significant Wetland was lawfully established prior to 2 July 2011 and there is no change to its water level range or hydrological function, and no damage to fauna or native flora in or on the wetland.

    e. No flooding of any other person's property, erosion, land instability, sedimentation or property damage occurs.

45. In addition to the above, diversions for the purpose of land drainage or for allowing the erection, placement, repair or maintenance of lawful structures are also permitted as long as conditions can be met relating to the location of the activity, protecting Regionally Significant Wetlands, maintaining water levels, and avoiding flooding, erosion and property damage.

46. The most significant issue with these provisions is that, for permitted activities, there is no ability to consider the adverse effects of damming or diversion on environmental flows and levels of affected water bodies or in-stream values. Even where there is a flow regime in place, the lack of conditions on permitted activities means that complying with that regime is not required. Permitting these activities can also potentially contribute to cumulative adverse effects on water yield within catchments by allowing the headwaters of waterbodies to be dammed or diverted. Additionally, the permitted activity conditions do not require resource users to notify ORC about the water that is being impounded or meter the water that is taken from permitted dams under Rule 12.1.2.3. This makes freshwater accounting

[5] Permitted activity rules relevant to damming and diversion activities include rules 12.1.2.3 (taking and use of surface water from any artificial lake), 12.3.2.1 (damming or diversion), 12.3.2.2 (diversion of water for the purpose of land drainage), 12.3.2.3 (diversion of water for the purposes of allowing the erection, placement, repair or maintenance of structures), 12.B.1.10 (discharges of contaminants excluding settled sediment to water from consented dams), 12.C.1.2 (discharges of water or contaminants to water through permitted dams), and 13.2.1.3 (erection or placement of structures for the damming of water that are fixed in or on the bed of any lake or river),

and understanding how various activities affect catchment hydrology more challenging for ORC.

47. Permitted activity status for activities that change the form and function of a water body and interrupt the connections between different parts of the system is a significant concern with respect to iwi aspirations relating to protection of mauri and of wāhi tupuna values (as well as concerns about effects on mahika kai and taoka species). Many of these issues have arisen as a result of the piecemeal approach the Water Plan takes to managing activities like damming and diversions (discussed in more detail in section 3.2.4 below).

48. The provisions in the Water Plan take an overly broad approach to managing damming and diversion activities that does not generally distinguish between activities with different types of effects. For example:

    a. There is no distinction between different types of damming activities, such as in-stream and off-stream dams, temporary and permanent activities, and weirs and dams.

    b. The provisions do not differentiate between diversions that occur fully within a water body and those that occur outside of a water body. Diverting water outside of the bed or banks of the water body, even if it is temporary or non-consumptive, is generally managed as a take or a take and discharge rather than a diversion in other regions because the water is being removed from the source water body.

49. Currently, there is little direction on matters that need to be considered when renewing resource consents for damming. Policy direction is largely focused on enabling water takes and providing for productive use. This approach is inconsistent with the requirements of the NPSFM to avoid the loss of river extent and river values and provide for fish passage and is unlikely to give effect to Te Mana o te Wai, which requires prioritising, first, the health and well-being of water bodies and freshwater ecosystems.

3.2.3. Overlapping regulatory requirements for dams

50. The Building Act 2004 contains rules for the construction, alteration, demolition and maintenance of new and existing buildings in New Zealand, including dams. Large dams are defined under the Building Act 2004 as dams that have a height of four or more metres and hold 20,000 or more cubic metres volume of water or other fluid. The Act has controls around their construction, including the requirement for a building consent from the relevant regional authority. On 12 May 2022, the Building (Dam Safety) Regulations 2022 were introduced to improve the safety and resilience of New Zealand's dams. These regulations came into effect on 13 May 2024 and seek to ensure that classifiable dams are well operated, maintained and regularly monitored. Dams are classifiable if they are four or more metres in height and store 20,000 or more cubic metres volume of water, or other fluid. ORC's dam register lists 98 classifiable dams in the Otago region, and another 34 that are close to the classifiable dam threshold and require further investigation. Of these, 82 are in the Central Otago and Queenstown Lakes districts, and 45 are in the Dunedin, Waitaki and Clutha districts.[6]

[6] This information was based on a preliminary assessment undertaken by ORC prior to the implementation of the Building (Dam Safety) Regulations 2022. It is expected that this data will be updated following the provision of specific information by dam owners as required by the Regulations.

51. The Water Plan does not clearly identify the overlapping jurisdiction between the Building Act 2004, Building (Dam Safety) Regulations 2022 and RMA for dams, particularly around their maintenance, risks and safety. Misalignment between the Water Plan and national direction, including the definitions of terms, can also create confusion when applying for and processing resource consent applications for damming activities. Regional authorities are responsible for ensuring that dams meet the requirements of both the Building Act 2004 and the RMA. Any management approach for dams must be aligned with both pieces of legislation, and any regulations, and ensure there is no 'doubling up' of consent conditions.

3.2.4. Provisions in the Water Plan are piecemeal

52. Damming and diversions are distinct activities with different environmental effects, but the Water Plan bundles them into the same provisions. This issue is an example of the fundamental challenges with the Water Plan covered in chapter 3 of this report. While there is some similarity in the types of effects the activities lead to, this bundling approach means that some provisions do not 'fit' the activity they are managing very well, for example, because they do not require consideration of the most important types of adverse effects arising from the activity.

53. Provisions managing damming and diversion activities are currently spread across six separate chapters of the Water Plan, which artificially divides the management of the overall activity. For example, provisions for structures used for damming are separate from provisions for the actual damming of water despite the clear relationship between the two activities (i.e. the dam or weir structure results in water being dammed). This approach makes it difficult for plan users to find and understand all of the provisions relevant to their activity, and the lack of clarity can affect implementation. As well as being more difficult to use, separating activities in this way can make assessing resource consent applications more complex and costly because it requires assessing more provisions.

4. Objectives

54. Section 32(1)(b) requires an examination of whether the provisions in a proposal are the most appropriate way to achieve the objectives. The objectives and environmental outcomes that are particularly relevant for this topic are:

    a. All of the objectives in the IM – Integrated management chapter, and

    b. All of the environmental outcomes included as objectives in chapters FMU1 to FMU5 (including chapters CAT1 to CAT5).

5. Overview of sub-topics

55. The reasonably practicable (and where relevant, discounted) options for damming and diversion have been presented and assessed below on a sub-topic basis, with five sub-topics defined as follows:

    a. Off-stream damming

    b. Existing in-stream dams and weirs and associated activities

    c. New in-stream dams and weirs and associated activities

    d. Maintenance, demolition and removal of in-stream dams and weirs

e. Diversions.

56. Several overarching matters are relevant to all the sub-topic options and are discussed in section 6 below. These matters relate to the structure of provisions, new definitions, standard conditions within rules, and an explanation of the relationship between the provisions for weirs and the NESF.

6. Overarching matters

57. In each of the reasonably practicable options discussed below, damming and diversion are managed by separate rules, unless the diversion activity is directly associated with a dam or a weir. Different types of damming activities, such as in-stream dams and weirs and off-stream dams, temporary and longer duration activities, and different stages of management such as placement, use, maintenance, replacement, upgrading and demolition or removal of dams and weirs are also covered in separate rules.

58. All related activities are managed under the same rules and are permitted or consented along with the primary activity. For example, the placement and use of an in-stream dam also includes the associated damming or diversion of water, use and disturbance of the bed of a lake or river, deposition of bed substrate, and discharge of water or contaminants into water or onto or into land in circumstances where a contaminant may enter water (including during works in the bed and the release of water from the dam or weir). The intent of this approach is to enable a more holistic assessment of each activity and to reduce the administrative burden for plan users.

59. New definitions are introduced to provide clarity on the scope of damming and diversion activities and to, where appropriate, align with definitions in higher-order documents and other legislation (e.g., the Building Act and Building (Dam Safety Regulations) 2022). New definitions are proposed for the following terms:

Table 3: pLWRP definitions particularly relevant to the DAM provisions

Term	pLWRP definition
Classifiable dam	means a *dam* that has a height of 4 or more metres and stores 20,000 or more cubic metres volume of *water*. For the purpose of this definition: (a) the height of the *dam* is the vertical distance from the crest of the *dam* and must be measured: (i) in the case of a *dam* across a *water body*, from the natural bed of the *water body* at the lowest downstream outside limit of the *dam*; and (ii) in the case of a *dam* not across a *water body*, from the lowest elevation at the outside limit of the *dam*; and (iii) in the case of a canal, from the invert of the canal; and (b) in measuring a *dam's* stored volume, the stored volume of *water* does not include:

Term	pLWRP definition
	(i) in the case of a *dam* across a *water body*, *water* that is lower than the natural ground level at the lowest downstream outside limit of the *dam*; and (ii) in the case of a *dam* not across a *water body*, *water* that is lower than the natural ground level at the lowest elevation at the outside limit of the *dam*; and (iii) in the case of a canal where the canal invert (the lowest point of the inside of the canal *structure* that stores *water*) is below the natural ground level, *water* that is lower than the natural ground level at the lowest elevation at the outside limit of the canal *structure*.
Dam	(a) means a *structure* used or to be used for the primary purpose of impounding *water* (and any substances dissolved in, suspended in or otherwise combined with the *water*); and (b) does not include: (i) a stopbank designed to control *floodwaters*; or (ii) a *weir*.
Damming	(a) means the activity of impounding *water* (and any substances dissolved in, suspended in or otherwise combined with the *water*); and (b) does not include *floodwaters* controlled by a stopbank.
Diversion	means the redirecting of *water* flow from its natural or existing direction of flow. For the purposes of this Plan, taking *water* from the *bed* of any *water body* is considered a take or a take and *discharge*.
Floodwaters	means surface *water* that has inundated a property as a result of the breaching or overtopping of the banks of a *lake* or *river*.
In-stream dam	means any *dam* which is located in part or in whole in, on, under or over the *bed* of a *lake* or *river*.
Off-stream dam	means any *dam* of which no part is located in, on, under or over the *bed* of a *lake* or *river*, or within a *natural inland wetland.*
Weir	means an open-topped *structure* within the *bed* of a *lake* or *river* that: (a) alters the *water* level and the flow characteristics of the *water*; and (b) allows *water* to flow passively through or over top.

60. To implement the relevant objectives in the IM and FMU chapters, damming and diversion activities are required to meet any relevant environmental flows and levels and take limits, provide for fish passage, and avoid the loss of river and natural lake extent and values. Several standard conditions (used in other chapters of the pLWRP) are also included in permitted activity rules where they are relevant to the activity. These align with standard conditions included in other chapters of the pLWRP for activities in the beds of lakes and rivers, management of discharges, and the protection of sensitive areas and sites. Standard conditions include:

    a. Activities do not:

        i. Occur within the habitat of a threatened freshwater-dependent species described in APP6, a mātaitai or taiāpure, a drinking water protection zone, or on contaminated or potentially contaminated land.

        ii. Occur within or adjacent to a nohoaka entitlement from 1 August to 30 April (inclusive).

        iii. Disturb the roosting or nesting of indigenous birds and bats.

        iv. Impede the passage of a desired fish species or enable the passage of an undesirable fish species where this passage does not already exist.

        v. Frustrate or prevent the exercise of any lawful take of water by any other person.

        vi. Frustrate the use or integrity of any nationally significant infrastructure, regionally significant infrastructure or other lawfully established structure.

        vii. Cause or exacerbate flooding of any other person's property, erosion, land instability, sedimentation, or property damage.

        viii. Disturb the spawning habitat of desired fish species during their spawning seasons.

    b. The accidental discovery protocol is applied if the activity disturbs an archaeological site.

    c. Discharges do not contain any hazardous substance, pest, pest agent, unwanted organism or organism of interest, and comply with the relevant water quality standards.

    d. Any plant, equipment, or machinery associated with the activity is removed from the bed, the surrounding bed is returned as near as practicable to its original state, and any debris associated with the activity are removed within ten days after the completion of the activity.

61. Several of the options below seek to manage weirs in the beds of lakes and rivers. Regulations 72 and 73 of the NESF control the placement, use, alteration, extension or reconstruction of weirs in, on, over, or under the bed of any river or connected area with respect to fish passage. The permitted activity conditions within regulation 72(2) contain design requirements to provide for fish passage, including that:

    a. The weir must provide for the same passage of fish upstream and downstream as would exist without the weir, except as required to carry out the works to place, alter, extend, or reconstruct the weir; and

b. The fall height of the weir must be no more than 0.5 m; and

c. The slope of the weir must be no steeper than 1:30; and

d. The face of the weir must have roughness elements that are mixed grade rocks of 150 to 200 mm diameter and irregularly spaced no more than 90 mm apart to create a hydraulically diverse flow structure across the weir (including any wetted margins); and

e. The weir's lateral profile must be V-shaped, sloping up at the banks, and with a low-flow channel in the centre, with the lateral cross-section slope between 5° to 10°.

62. The objectives in the pLWRP are not restricted to fish passage or activities solely in the beds of rivers and seek to achieve a broad range of outcomes relating to freshwater quality and quantity and in-stream values for both rivers and natural lakes. Section 43A(5) of the RMA states that, if an NES allows an activity and states that a resource consent is not required for the activity, or states that an activity is a permitted activity:

a. a plan or proposed plan may state that the activity is a permitted activity on the terms and conditions specified in the plan, and

b. the terms and conditions specified in the plan may deal only with effects of the activity that are different from those dealt with in the terms or conditions specified in the standard.

63. The options below, therefore, require that the placement, use, maintenance, replacement, upgrading, demolition or removal of weirs in the beds of lakes and rivers are subject to the same rules and conditions as in-stream dams in order to manage the adverse effects that are different from those managed under the NESF, and to achieve the objectives of the pLWRP and give effect to the NPSFM. The relevant proposed permitted activity rules in the pLWRP require that, for a weir located in, on, over, or under the bed of any river, the placement and use of the weir meets the permitted activity conditions under regulation 72(2) of the NESF to ensure that these effects are clearly managed.

64. Regulation 6 of the NESF also provides for regional plan rules to be more stringent than regulation 72 and 73, or more lenient if it is for the purpose of preventing the passage of fish in order to protect particular fish species, their life stages, or their habitats. The proposed rules for the placement and use of temporary in-stream dams and weirs in the pLWRP include a fish passage condition that is more stringent than the equivalent condition in regulation 72(2) of the NESF (identified in paragraph 61(a) above) as it does not provide an exemption during works to place the weir.

65. Section 32(4) of the RMA requires that, if a proposal will impose a greater or lesser prohibition or restriction on an activity to which a NES applies than the existing prohibitions or restrictions in that standard, the evaluation report must examine whether the prohibition or restriction is justified in the circumstances of each region or district in which the prohibition or restriction would have effect.

66. As discussed in chapter 8 of this report, barriers to fish passage have had significant negative impacts on Kāi Tahu and are a key environmental issue in the Otago region. Otago also has the most threatened freshwater fish fauna in New Zealand, both in terms of the number of species and threat status. While not the only cause, in-stream infrastructure, such as weirs, can delay, restrict or prevent fish movements when adequate provision for fish passage is not provided in their design, installation and maintenance. This disrupts critical population

processes and limits access to, and free movement within and between aquatic ecosystems. The consequence is a reduction in the distribution and abundance of freshwater species. Restricting fish passage during the placement of in-stream structures, especially for prolonged periods, can adversely affect desired fish species. Consequently, it is considered necessary to include an additional condition in the Otago region that ensures that the passage of desired fish species is not obstructed by weirs. to. This is required to ensure that key objectives in the pLWRP are met (including IO-O1, IO-O2, IO-O3, IO-O4, IO-O6 and IO-O7).

67. The NESF also regulates the damming or diversion of water within, or within a 100-metre setback from, a natural inland wetland. The proposed rules do not apply to the damming or diversion of water within natural inland wetlands. These activities are regulated by the NESF.

7. Sub-topic: Off-stream damming

7.1. Introduction

68. This sub-topic covers the damming of water by off-stream dams. The status quo approach for off-stream damming was not considered to be a reasonably practicable option as it was not fit for purpose. The reasons for this are outlined in full in section 3.2 of this chapter. This included the lack of consideration for all relevant adverse effects in the rules, including impacts on habitats of threatened species, and indigenous birds and bats. Additionally, the status quo approach did not require resource users to provide ORC with information regarding the scale and location of the activity, creating challenges for freshwater accounting and a lack of understanding regarding potential cumulative effects. Managing off-stream damming under the same rules as in-stream damming also created confusion for plan users about which conditions were relevant to their activities.

7.2. Discounted options

69. The status quo is not a reasonably practicable option for the reasons identified above in the 'Issues with the status quo' section.

7.3. Reasonably practicable options

70. Two reasonably practicable options to manage off-stream damming were identified to achieve the objectives:

    a. **Option 1**: Permitted activity pathway for off-stream damming (preferred option)

    b. **Option 2**: Additional restrictions including requiring resource consent for all off-stream damming and stronger policy direction.

71. Both options below seek to give effect to national direction and to resolve the issues identified in section 3.2 above. Aspects of the options were informed by workshops and other discussions with staff from Council, Aukaha and Te Ao Marama, and external stakeholders as part of NOF engagement.

7.3.1. Option 1: Permitted activity pathway for off-stream damming (preferred option)

72. The pORPS includes direction to:

a. "Provide for the harvesting and storage of fresh water to meet increasing demand for water, to manage water scarcity conditions and to provide resilience to the effects of climate change."[7]

b. "Provide for the allocation and use of fresh water in accordance with LF-FW-P7A, including by providing for off-stream water storage."[8]

73. Overall, Option 1 takes a permissive approach to off-stream damming and enables the construction and use of off-stream dams (and the associated damming of water) where they are located and managed appropriately. This option:

a. introduces a new definition for 'off-stream dam'[9]

b. provides enabling policy direction to support off-stream damming where health and safety risks are managed, new activities are located outside of habitats of threatened freshwater-dependent species, contaminated or potentially contaminated land and areas subject to a natural hazard, and applicants demonstrate that activities will not cause incidental discharges of contaminants other than discharges of water to land

c. permits the damming of water by off-stream dams provided new dams are located outside of the areas listed above in (b), the dam is maintained in a good and safe condition and is managed in accordance with the Building (Dam Safety) Regulations if it is a classifiable dam and other standard conditions are met[10]

d. requires resource consent as a discretionary activity for any damming of water by off-stream dams that does not comply with the permitted activity conditions.

74. No maximum storage volume limit is included in the permitted activity rule conditions for off-stream dams. The primary reason for assessing the volume of water stored by an off-stream dam through an RMA consenting process is to manage the health and safety risks associated with the dam structure. However, from 13 May 2024, dam safety for classifiable dams will be managed by the Building (Dam Safety) Regulations 2022. To avoid doubling up on assessments and consent conditions for health and safety between the RMA, Building Act 2004 and Building (Dam Safety) Regulations 2022, no volume threshold has been included. Under Option 1, dams that do not meet the classifiable dam definition must be maintained in a good and safe condition, and classifiable dams maintained in accordance with the Building (Dam Safety) Regulations 2022. The taking of water into off-stream dams (and off-stream artificial lakes) and any subsequent use of that water must comply with the provisions of the EFL chapter. These provisions require that any water taken complies with any relevant environmental flows and levels or take limits, and any subsequent use is reasonable and efficient for the intended use.[11]

75. Currently, there is no requirement for dam owners to notify or provide information to ORC when constructing permitted dams. ORC does not hold information on the location, size, and type of small off-stream dams in the region. The potential cumulative adverse effects of

[7] LF-FW-P7A, pORPS.

[8] LF-FW-M6, pORPS.

[9] 'Off-stream dam' is defined in the pLWRP as '...any dam of which no part is located in, on, under or over the bed of a lake or river, or within a natural inland wetland."

[10] Including that the activity does not cause or exacerbate flooding, erosion, land instability, sedimentation or property damage, or disturb the roosting or nesting of indigenous birds and bats.

[11] EFL-P9, EFL-P11 and EFL-P14.

these dams are not well understood. Option 1 therefore requires owners of off-stream dams storing over 1000 m^3 to provide ORC with information on the location, reservoir capacity and dimensions of the dam within 20 working days after its construction.

7.3.2. Option 2: Additional restrictions including requiring resource consent for all off-stream damming and stronger policy direction

76. Option 2 adopts a similar approach and structure to Option 1. However, it contains additional controls and restrictions. Option 2 removes the permitted activity pathway for off-stream damming and associated activities regardless of location and scale. Under Option 2, all off-stream damming would require a resource consent as a discretionary activity. This option also provides more restrictive and precautionary policy direction than Option 1 by requiring that new off-stream damming is explicitly avoided in habitats of threatened freshwater-dependent species, on contaminated or potentially contaminated land, and in areas subject to natural hazards. New activities proposing to locate within these areas would be assessed as non-complying activities under the rules.

7.4. Clause 3 consultation feedback

77. The key feedback from clause 3 parties on the provisions for off-stream damming included:

a. General support for enabling off-stream dams based on the reasoning that they can contribute to reducing over-allocation and providing resilience to climate change

b. Requests for clearer policy guidance and rule conditions to manage discharges from off-stream dams to water, or to land where it may enter water

c. Requests for requirements to align the information requirements for new off-stream dams with the “classifiable dam” volume rather than 1000 cubic metres

d. Requests for the rules to be more enabling to further encourage off-stream dams, including by amending the activity status of the drop-down rule from discretionary to controlled

e. Requests to broaden the rules to protect a wider range of values and/or apply an appropriate size limit for new off-stream dams.

78. The following feedback was received from Aukaha with respect to the off-stream damming provisions:

a. Request to amend the definition of ‘off-stream dam’ so that it references ‘natural wetlands’ rather than the narrower subset of ‘natural inland wetlands’

b. Request to amend DAM-R1-PER1 to include setbacks from rock art sites, mapped wāhi tupuna sites, and ephemeral streams

c. Request to clarify whether threatened species include plant species.

79. In response to clause 3 feedback, changes to the relevant policies were made to clarify what is expected of resource consent applicants regarding the management of potential discharges from off-stream dams. Providing as-built plans to ORC for new off-stream dams was considered to be too onerous and unnecessary for the intended use of the information (i.e. developing a better understanding of the location, size, and type of off-stream dams in the region). As such, this was replaced by more general information requirements. Other

minor changes were made to the rule conditions to align with other permitted condition wording across the pLWRP.

80. No changes were made to the activity status of the drop-down rule (where the permitted activity rule cannot be met) given that the permitted activity conditions seek to manage adverse effects on a range of values and areas. It was therefore considered appropriate for ORC to retain the ability to decline resource consents in particular situations.

81. No changes were made in response to the feedback from Aukaha. It was considered that the requested changes would result in additional restrictions on off-stream damming activities (e.g., more activities would be captured as "in-stream" and subject to more restrictive provisions). This would not align with direction received from Council to provide an enabling pathway for off-stream damming. Threatened freshwater-dependent species are listed in APP6 and include indigenous species of both flora and fauna that rely on water bodies for at least part of their life-cycle and meet the criteria for Nationally Critical, Nationally Endangered, or Nationally Vulnerable in the New Zealand Threat Classification System Manual.

7.5. Clause 4A consultation feedback

82. Clause 4A feedback was received on the definition of 'off-stream dam'. It sought that the definition be amended as follows:

means any dam which is located in part or in whole in, on, under or over the bed of a lake or river, or within a ~~natural inland~~ wetland.

83. No specific reasoning was provided with this request; however, it is assumed that it relates to the same clause 3 request by Aukaha to broaden the scope of the reference to wetlands in the definitions of 'off-stream dam' and 'in-stream dam'. In response to this feedback, a change was made to remove the reference to 'within a natural inland wetland' entirely from the definition of 'in-stream dam'. The provisions in the WET chapter together with the relevant IM policies provide the necessary direction for the consideration of a consent application for a damming activity under the NESF. In addition, the requested change would result in additional restrictions on off-stream damming activities (e.g., more activities would be captured as "in-stream" and subject to more restrictive provisions). This would not align with direction from Council to provide an enabling pathway for off-stream damming.

84. Other clause 4A feedback was received more broadly on the DAM chapter seeking:

a. Permitted activity conditions are reviewed against environmental outcomes and the attributes in Tables 4 and 5 of the pLWRP to check whether they address the appropriate range of effects on environmental outcomes.

b. Limits are included on permitted activities to ensure that consent will be required in sensitive locations and for large scale activities.

c. Permitted activity provision is removed for activities with potentially significant effects on the benthic environment or the natural form of a water body.

85. In response to the clause 4A feedback, the provisions were reviewed to ensure that they addressed the concerns raised above. No changes were made to the off-stream damming provisions as it was considered that they addressed the appropriate range of effects on

environmental outcomes. It was also considered that the permitted activity limits and restrictions in sensitive locations are appropriate for the off-stream damming provisions.

7.6. Effectiveness and efficiency assessment

86. Table 4 below identifies and assesses the environmental, cultural, social, and economic benefits and costs anticipated from implementing the provisions proposed for each option for the off-stream damming sub-topic.

Table 4: Benefits and costs for the off-stream damming sub-topic

	BENEFITS	COSTS
Option 1 (preferred option)	• Implementation of the provisions is expected to better protect the habitats of threatened freshwater-dependent species by requiring new off-stream dams to be located outside of these habitats. • Implementation of the provisions is expected to improve the management of adverse effects on indigenous birds and bats by requiring these to be managed via a consent process. • Enabling off-stream storage may support water users from shifting away from in-stream storage approaches. • Enabling off-stream storage of water in dams will contribute to the Otago region's resilience against the effects of climate change and will provide for the economic and social well-being of local communities and the wider region. • Enabling off-stream storage of water is a key environmental action for responding to reduced reliability of supply as a result of new and more restrictive minimum flows and take limits.	• Some existing off-stream damming activities, which may be negatively affecting the habitats of threatened freshwater-dependent, will not require consent and therefore adverse effects on these habitats may persist. • Some existing activities currently permitted under the Water Plan may require resource consent, for example, if they disturb the roosting or nesting of indigenous birds and bats, or are not maintained in a good and safe condition. Non-notified and limited-notified consent application deposits are $3,000, while publicly notified application deposits are $25,000. These costs do not include the cost to prepare a consent application, nor any processing costs that may be incurred over and above the deposit. A summary of processing costs for previous dam water permit applications is outlined in section 3.1 of this chapter. Annual inspection reports are $145 for small dams and $280 for large dams. Additional costs may therefore be incurred by dam owners to obtain resource consent and/or comply with permitted activity

- Enabling off-stream storage of water may also contribute to other social values due to the recreational opportunities and amenity values provided by reservoirs and ponds.
- Option 1 is likely to benefit Kāi Tahu values and the Kāi Tahu economy by incentivising alternatives to in-stream damming. Compared to in-stream damming, off stream storage is less likely to result in modification or changes in the extent of water bodies. Consequently, off stream storage is anticipated to have better outcomes in terms of impacts on mahika kai species and is more likely to continue to allow Kāi Tahu to connect with their environment and engage in social and economic activities (i.e. harvest of mahika kai species).
- Removing the size and volume restriction for off-stream damming in the permitted activity rule may result in less resource consents being required, which will save resource consent costs for dam owners and compliance, monitoring and enforcement costs for ORC.
- Requirements for the provision of information to ORC for permitted off-stream damming activities will improve the information currently held by the council, particularly in respect to the location of activities and potential cumulative effects.
- Improved plan structure, readability and alignment with conditions and standards. The scale, timing and location of these costs are difficult to quantify and will depend on the location of habitats and condition of off-stream dams in the region. The costs and time associated with obtaining resource consents for some off-stream damming activities may ultimately disincentivise off-stream storage of water.

	other legislation (e.g. removing potential duplication with the Building Act 2004 and Building (Dam Safety) Regulations) will provide greater clarity for plan users and reduce administrative burden and costs for consent applicants.		
Option 2	• Requiring resource consent for all activities may result in better environmental outcomes by allowing ORC to consider a broader range of adverse effects and values and potentially decline resource consent applications. • Requiring resource consent for all off-stream damming activities would increase ORC oversight of these activities and improve the ability of the compliance, monitoring and enforcement team to monitor them. • Same as Option 1 in terms of improving the information currently held by the council. • Same as Option 1 in terms of improved plan structure, readability and alignment with other legislation.	• Additional costs will be incurred by dam owners in relation to the requirement to obtain resource consents for all off-stream damming activities. There are approximately 61 current damming permits for off-stream dams. These are primarily located within the Clutha Mata-Au and Taiari FMUs. This option would require all of these activities to be reconsented. • Additional costs will be incurred by ORC in relation to processing, monitoring and enforcing resource consents for more off-stream damming activities. • The costs and time associated with obtaining resource consents for all off-stream damming activities may ultimately disincentivise off-stream storage of water. This could therefore decrease the Otago region's resilience against the effects of climate change and the ability for people and communities to provide for their economic and social well-being. It may also restrict the ability for people to respond to reduced reliability of supply as a result of new and more restrictive minimum flows and take limits. • Compared to Option 1, Option 2 is less likely to benefit Kāi Tahu values and the Kāi Tahu	

	economy. As Option 2 reduces the attractiveness of off-stream damming by requiring this activity to be authorised by a resource consent, water users are more likely to resort to proposals for on-stream damming. However, on-stream damming is more likely to have adverse long-term impacts on the ability of Kāi Tahu to connect with their environment and engage in social and economic activities.

87. Table 5 below assesses the effectiveness and efficiency of the proposed provisions for each option in achieving the objectives.

Table 5: Objectives effectiveness and efficiency assessment for each option

	Effectiveness
Option 1 **(preferred option)**	• Option 1 is effective at achieving the relevant objectives in the pLWRP and implementing the NPSFM. Providing an enabling pathway for off-stream damming will contribute to achieving the IM and FMU objectives in the pLWRP. Although off-stream damming occurs outside of water bodies, the policy direction and relevant rule conditions ensure that Te Mana o te Wai is implemented by, first, requiring protection of the habitats of freshwater-dependent species and managing water quality effects before providing for the activity and the ability for people and communities to provide for their social, economic and cultural well-being. • Option 1 outlines clear expectations for managing new and existing activities in comparison with the status quo. Providing a permitted activity pathway for some off-stream damming activities presents a degree of risk for achieving the objectives, particularly with regard to potential cumulative effects. However, given the breadth of the permitted activity conditions, and the controls in the EFL chapter for managing any associated take and use of water, this risk is considered relatively low. • Option 1 responds to direction from the community and mana whenua, as expressed in the environmental outcomes and long-term visions[12] for Otago. It also addresses concerns from the

[12] LF-FW – Fresh water Chapter of the pORPS.

	community and stakeholders by removing duplication of administrative requirements for dams under the Building Act and RMA, reducing plan complexity, and improving the clarity of policies and rules. Impacts of Option 1 will largely be borne by applicants for new dams seeking to locate these activities in sensitive areas, or existing dam owners who need to obtain resource consent or make changes to their operations to comply with the permitted activity conditions, particularly the state of repair of dams. This is considered to be equitable given the higher environmental risks associated with these activities.
Option 2	• Option 2 is effective at achieving the relevant objectives in the pLWRP and implementing the NPSFM for similar reasons as Option 1. Requiring resource consents for all off-stream damming enables a broader consideration of adverse effects on the environment and an assessment of activities against the relevant objectives and policies in the pLWRP. This may result in consent conditions being applied, or the decline of resource consent applications, that result in the objectives in the pLWRP being achieved faster. • Option 2 is less aligned with direction from the community regarding providing an enabling pathway for off-stream storage of water, and as expressed in the environmental outcomes and long-term visions, in the pLWRP.
	Efficiency
Option 1 **(preferred option)**	• Option 1 is an efficient option for achieving the objectives. As shown in Table 4 above, the benefits associated with this option outweigh the costs. For example, the environmental, social and cultural costs as a consequence of freshwater quality and quantity issues within Otago are well documented, including in higher order documents such as the pORPS. • Overall, Option 1 will likely result in fewer resource consents than the status quo due to there being no restrictions on catchment size or volume stored as a permitted activity. Some additional resource consents and information may be required and, as a result, increased costs for resource users and ORC through administrative, consenting, compliance and enforcement requirements. However, direction to improve monitoring and information gathering to determine the location, type and adverse effects of damming and diversion activities in the region will enable ORC to manage environmental effects and distribute compliance resourcing to higher risk activities more effectively. Option 1 may restrict the viability of some new and existing activities. However, it is likely that these costs are justified by the improvement in water bodies and the associated benefits to local communities.

	• An enabling pathway for off-stream damming will also encourage efficient allocation and use of water, including through water harvesting in periods of higher flows in rivers, and protecting in-stream values and uses. • Efficiencies will be gained for consent applicants and ORC staff from clear direction and guidance for applying or and processing activities. Resource users will also have clarity on the types of activities that are anticipated by the Plan and the adverse effects that must be managed for each stage of an activity. Removing duplication of requirements for dam owners under the Building Act and RMA will improve the efficiency of their operations.
Option 2	• Option 2 is less efficient than Option 1, given that while the benefits will be similar, it would require significant regulatory costs for ORC and communities due to the requirement for resource consents for all off-stream damming activities. There are considerable costs associated with obtaining resource consents, complying with consent conditions and undertaking monitoring and enforcement for a large number of anticipated consents required. • Option 2 may unnecessarily constrain activities with potentially less than minor adverse effects on the environment. Overall, the costs associated with requiring resource consent for all activities and the additional constraints on the uses of water and land will, in turn, have considerable negative impacts on economic growth and employment, and are considered to outweigh the overall net benefits gained.

88. Section 32(2)(c) of the RMA requires ORC to take into account the risk of acting or not acting if there is uncertain or insufficient information.

89. As discussed in section 3.2 of this chapter, there is limited information about the nature and extent of smaller off-stream damming activities that are permitted under the Water Plan. As such, there is a level of uncertainty regarding the full impacts of implementing Option 1. However, there is sufficient information about the current water quality and quantity issues and the associated environmental, social and cultural impacts in Otago. The deficiencies of the Water Plan for managing damming and diversion activities are also well understood. These circumstances warrant the implementation of a more restrictive regime than the status quo. Overall, the information supporting Option 1 is suitably certain and sufficient that there is a minimal risk of acting.

7.7. Conclusion

90. The effectiveness and efficiency assessments have shown that, overall, Option 1 is a more effective and efficient way to implement the national direction and achieve the relevant

objectives of the pLWRP than Option 2. Therefore, based on these assessments, Option 1 is considered the most appropriate way to achieve the objectives of the pLWRP.

8. Sub-topic: Existing in-stream dams and weirs and associated activities

8.1. Introduction

91. This sub-topic addresses the use of existing in-stream dams. The replacement or upgrading of existing in-stream dams is not discussed here; instead, it is covered in section 8 below, which assesses options for new in-stream dams. The status quo approach was not considered to be a reasonably practicable option for managing the use of existing in-stream dams and weirs as it was not fit for purpose. The reasons for this are outlined in full in section 3.2 of this chapter, including the lack of consideration for how existing activities aligned with relevant environmental flows and levels and managed other key adverse effects, such as fish passage.

8.2. Discounted options

92. The status quo is not a reasonably practicable option for the reasons identified above in the 'Issues with the status quo' section.

8.3. Reasonably practicable options

93. Two reasonably practicable options to manage the use of existing in-stream dams were identified to achieve the objectives:

    a. **Option** 1: Permitted activity pathway for small existing in-stream dams and weirs (preferred option)

    b. **Option 2**: Additional restrictions including requiring resource consent for existing in-stream dams and weirs smaller than the classifiable dam threshold or where they are located in sensitive areas, and stronger policy direction.

94. Both options seek to give effect to national direction and to resolve the issues with the status quo identified in section 3.2 above. Aspects of the options were informed by workshops and other discussions with staff from Council, Aukaha and Te Ao Marama, and external stakeholders.

8.3.1. Option 1: Permitted activity pathway for small existing in-stream dams and weirs (preferred option)

95. Overall, Option 1 provides a permitted activity pathway for the continued use of small, lawfully established in-stream dams and weirs (i.e. dams that do not meet the definition of a "classifiable dam")[13], provided that they are structurally sound, meet environmental flow and levels, provide for fish passage, and do not cause adverse effects such as flooding,

[13] The definition of "classifiable dam" in the pLWRP aligns with the height and volume expressed in the equivalent definition in the Building (Dam Safety) Regulations 2022. Under the Building Act, a "large dam" is also defined as a dam that has a height of 4 or more metres and holds 20,000 or more cubic metres volume of water or other fluid.

sedimentation and erosion. Large existing in-stream dams and weirs and/or those with more significant adverse effects on water bodies and freshwater ecosystems are unlikely to meet the permitted conditions and will require resource consent.

96. Option 1 permits the use of in-stream dams and weirs that are lawfully established as at 31 October 2024, and associated activities, including the use of the bed of a lake or river, damming or diversion of water and discharge of water or contaminants into water or onto or into land in circumstances where a contaminant may enter water provided that permitted conditions are met. These conditions require the following:

    a. the in-stream dam or weir is:

        i. not a classifiable dam

        ii. maintained in a good and safe condition

        iii. not located in the Waitaki catchment

    b. the placement and use of weirs located in, on, over or under the bed of any river complies with regulation 72(2) of the NESF,

    c. if the in-stream dam or weir is identified in an action plan as requiring remediation to provide for passage of a desired fish species or to prevent the passage of an undesirable fish species, the remediation has been completed by the date specified in the action plan,

    d. the activity does not reduce river flows or lake levels below an environmental flow or level, and

    e. any discharges from the in-stream dam or weir comply with the relevant receiving water standards and do not contain any hazardous substances, pests, pest agents, unwanted organisms or organisms of interest unless they are associated with the passive flow of water through or over the in-stream dam or weir.

97. The use of existing in-stream dams and weirs is generally a discretionary activity where the permitted activity conditions cannot be met. To align with the Waitaki Catchment Water Allocation Regional Plan 2005, the use of an existing in-stream dam or weir and any associated activities is a discretionary activity in the Waitaki catchment, and a non-complying activity in Welcome Creek. Policy direction relevant to the assessment of damming activities in the Waitaki catchment (including Welcome Creek) is contained in the FMU3 (North Otago FMU) chapter of the pLWRP.

98. New policy direction requires existing in-stream dams and weirs to demonstrate how any relevant take limits and environmental flows and levels will be met, including by specifying a series of time bound steps to be implemented to achieve any necessary water quantity improvements required to achieve the environmental flows and levels and take limits, and demonstrating measures that will avoid significant adverse effect and minimise other adverse effects on the health and well-being of water bodies and freshwater ecosystems to the extent practicable. In-stream dams and weirs that are not classifiable dams must also be structurally sound and operated and maintained in accordance with industry guidelines for dam safety.

99. New policy direction is included to manage discharges from in-stream dams to provide for ecological health and maintain natural variations in flow patterns below in-stream dams.

This direction seeks to address the issues identified in section 3.2.1.3 of this report related to freshwater accounting and providing for natural flow variation by:

a. requiring water to be discharged from in-stream dams for the purpose of maintaining flow variability in the water body

b. where stored water is conveyed via a water body for secondary takes, encouraging management of the secondary takes by the consent holder for the damming of water by the in-stream dam and a number of actions to better inform freshwater monitoring and accounting.

100. The ongoing use of lawfully established in-stream dams and weirs smaller than classifiable dams is permitted by the pLWRP, provided all other conditions are met. The definition of a "classifiable dam" includes two relevant parts: (1) the height of the structure, and (2) the volume of water stored by the structure.

101. The volume of water stored by the structure is not necessarily an ecological concern, except for the potential transfer of undesirable fish species into parts of waterbodies where they do not exist. A minor issue may arise when water levels increase due to impoundment, causing the water body that supplies the dam or weir to back up and change the inundated section from a flowing (lotic) to a still (lentic) system. The significance of this change depends on the in-stream values present. For instance, Otago non-migratory galaxias usually do not occupy lake-type ecosystems, whereas common bullies will occupy lakes/ponds. Regarding the height of the structure, when considering the effects on fish passage, the actual height of the dam or weir wall is not overly critical, as most fish species cannot pass once the wall reaches a certain height. Even a dam with a fall height of less than 1 metre can prevent most fish from moving upstream. Therefore, dam wall height is important when designing fish passage mitigation. Water velocity is also another key consideration, as species have limited swim speeds, and faster flows may prevent their movement. As dam height increases, fish passage becomes more complex and generally more costly to address.

102. The inclusion of the classifiable dam size threshold in the permitted activity rule is a trigger beyond which the risk of these activities negatively affecting the health and well-being of water bodies and freshwater ecosystems is increased and warrants an assessment of actual and potential adverse effects through a resource consent process. Below this threshold, it is considered that the breadth of permitted activity conditions (including those related to fish passage and compliance with environmental flows and levels and receiving water standards) are appropriate to manage adverse effects.

8.3.2. Option 2: Additional restrictions including requiring resource consent for existing in-stream dams and weirs smaller than the classifiable dam threshold or where they are located in sensitive areas, and stronger policy direction.

103. Option 2 adopts a similar approach and structure to Option 1. However, it contains additional controls and restrictions to further protect the health and well-being of water bodies and freshwater ecosystems and achieve improvements more quickly.

104. Option 2 reduces the volume threshold for existing lawfully established in-stream dams and weirs requiring resource consent from 20,000 or more cubic metres (in accordance with the classifiable dam definition) to 5,000 or more cubic metres. Option 2 also requires resource consent as a discretionary activity for all existing in-stream dams and weirs regardless of size

within mapped habitats of threatened freshwater-dependent species, mātaitai or taiāpure, drinking water protection zones, and outstanding water bodies.

8.4. Clause 3 consultation feedback

105. The key feedback from clause 3 parties on the provisions for the use of existing in-stream dams and weirs included:

a. Opposition to the requirement for resource consent for any existing damming activities citing existing use rights.

b. Opposition to the requirement for takes into existing in-stream dams to be measured and modelled based on the costs of compliance and a lack of justification for the requirements.

c. Support for the use of existing in-stream dams and weirs as a permitted activity but requests for clarification of the intent of the rule with regard to requiring resource consent for classifiable dams and activities in the Waitaki catchment.

d. Requests for in-stream dams and weirs to remain permitted activities if they meet the requirements under the Building (Dam Safety) Regulations 2022.

e. Requests to clarify the purpose of action plans with regard to remediation of existing structures to provide for fish passage.

f. Requests for existing in-stream dams and weirs to require a resource consent to enable these activities to be assessed against the policies and objectives of the pLWRP.

106. The following feedback was received from Aukaha with respect to existing in-stream dams and weirs:

a. Request to amend policy direction to include the full range of effects that in-stream dams and weirs may have on freshwater outcomes.

b. Request to ensure that takes into existing dams are subject to the provisions for consent review in over-allocated catchments.

c. Request to ensure that existing dams can be assessed in terms of the outcomes being sought in the pLWRP at the time their current consents expire.

107. DAM-P6 (now DAM-P5) was amended and DAM-R6 deleted in response to feedback from clause 3 parties to clarify the approach for managing discharges of water from in-stream dams and encourage future actions by consent holders for dams to improve freshwater accounting and management.

108. No other changes were made in response to clause 3 feedback, including feedback from Aukaha. Requiring resource consent for larger existing in-stream dams and weirs, and those contributing to significant adverse effects on water bodies and freshwater ecosystems, is considered appropriate to enable these activities to be assessed against, and to implement, the wider suite of objectives and policies under the pLWRP. Requiring resource consent for existing in-stream dams and weirs in the Waitaki catchment is consistent with the Waitaki Catchment Water Allocation Plan 2005. Although the Building (Dam Safety) Regulations 2022 manage the health and safety risks associated with classifiable dam structures, they do not manage all relevant environmental adverse effects of damming activities. The classifiable dam size is therefore used as a threshold in the conditions, beyond which the risks of an

existing in-stream dam or weir negatively impacting the health and well-being of a water body or freshwater ecosystem are increased.

109. The NPSFM requires ORC to change its regional plan to promote the remediation of existing structures and the provision of fish passage (other than for undesirable fish species) where practicable. The NPSFM also requires an action plan to support the achievement of the fish passage objective (discussed in section 3.2.1.2 above). This action plan must, at a minimum, set targets for remediation of existing in-stream structures. The relevant rule condition for existing in-stream dams and weirs, therefore, seeks to implement the direction in the NPSFM and the relevant provisions in the pLWRP, including IP-P14 and IO-O6.

8.5. Clause 4A consultation feedback

110. No specific clause 4A feedback was received on the provisions for existing in-stream dams and weirs. Feedback was received on the definition of "in-stream dam" seeking to remove the reference to 'natural inland' from the definition, which is relevant to the existing in-stream dam provisions. The response to this request is provided above in section 7.5 of this chapter.

111. Other clause 4A feedback was received more broadly on the DAM chapter seeking:

a. Permitted activity conditions are reviewed against environmental outcomes and the attributes in Tables 4 and 5 of the pLWRP to check whether they address the appropriate range of effects on environmental outcomes.

b. Limits are included on permitted activities to ensure that consent will be required in sensitive locations and for large scale activities.

c. Permitted activity provision is removed for activities with potentially significant effects on the benthic environment or the natural form of a water body.

112. In response to the clause 4A feedback, the provisions were reviewed to ensure that they addressed the concerns raised above. No significant changes were made to the provisions for existing in-stream dams and weirs as it was considered that they addressed the appropriate range of effects on environmental outcomes. It was also considered that the permitted activity limits and restrictions in sensitive locations are appropriate for the provisions for existing in-stream dams and weirs. One minor amendment was made to DAM-P4 (which provides direction for resource consent applications for in-stream dams or weirs) to address adverse effects on water quality and indigenous species more clearly and to align with changes to the IM chapter.

8.6. Effectiveness and efficiency assessment

113. Table 6 below identifies and assesses the environmental, cultural, social, and economic benefits and costs anticipated from implementing the provisions proposed for each option for the existing in-stream dams and weirs and associated activities sub-topic.

Table 6: Benefits and costs for the existing in-stream dams and weirs and associated activities sub-topic

	BENEFITS	COSTS
Option 1	• Implementation of the provisions is expected to	• There may be a delay between the notification of

	BENEFITS	COSTS
(preferred option)	improve the health and well-being of water bodies and freshwater ecosystems by requiring existing activities to meet relevant environmental flows and levels and manage discharges to achieve receiving water standards in order to be permitted. If a resource consent is required for these activities, consent holders will be required to demonstrate how environmental flows and levels are to be achieved, and other measures to avoid significant adverse effects and minimise other adverse effects on the health and well-being of water bodies and freshwater ecosystems. • Improved freshwater quality and quantity arising from implementing the provisions is likely to enhance mauri, mahika kai and taoka species with respect to the areas where these dams or weirs are located. • Improved freshwater quality and quantity, habitats and passage for desirable fish species (including from the remediation of structures identified in action plans) will support the recovery of freshwater-dependent threatened species. • Permitting some small existing in-stream dams and weirs will reduce potential resource consent application costs for dam and weir owners and increase business viability and	the pLWRP and many current water permits for damming coming up for renewal due to their expiry dates. For example, of the approximately 272 current water permits for damming, 169 (or approximately 62%) do not expire until after 2035. Therefore, the transition time may delay improvements in water bodies and freshwater ecosystems and result in further degradation in the short-term. This may result in costs for present generations, and for future generations if the gap between the state of the environment and the achievement of environmental outcomes and long-term visions[15] becomes larger and more significant interventions are required. • Some smaller existing in-stream damming activities will be permitted by the new rules which may have adverse effects on in-stream values and uses of water. • Permitting smaller existing in-stream damming activities provides less opportunity for reducing the impacts of existing in stream dams on Kāi Tahu values or improving or restoring mauri, mahika kai and taoka species in river systems affected by existing in-stream damming activities. • Some dam and weir owners and shareholders may incur financial costs in improving

[15] LF-FW – Fresh water Chapter of the pORPS.

	BENEFITS	COSTS
	certainty. Administrative costs will also be reduced for ORC in processing applications in addition to monitoring and enforcement. • Including a consenting pathway for large existing in-stream dams and weirs will provide for activities that contribute to social, economic and cultural well-being. For example, the Clutha Dam and Roxburgh Dam power stations provide an estimated combined power supply of 865 MW to the New Zealand power grid. In most years, the Clutha power stations generate about 10% of New Zealand's gross electricity demand.[14] Therefore, the operation of these dams contributes to benefits at the local, regional and national scale. • Improved plan structure, readability and alignment with other legislation (e.g., the Building Act 2004 and Building (Dam Safety) Regulations will provide greater clarity for plan users and reduce administrative burden and financial costs for consent applicants and ORC.	practices to meet permitted activity conditions and standards. Meeting some permitted activity or potential consent conditions (e.g., to meet environmental flows and levels) may not be feasible in some situations due to prohibitive financial costs or practical difficulties. Retrofitting old infrastructure is very expensive. As such, particular individuals or local communities may be more impacted than others. Timing of upgrades may also depend on consent expiry dates and direction under dam safety legislation.
Option 2	• Requiring resource consent for all existing in-stream dams and weirs will enable a more holistic assessment of all relevant adverse effects of existing in-stream damming	• As above, despite requiring resource consent for all existing in-stream dams and weirs, there may be a delay between the notification of the pLWRP and many current water permits for damming coming up for renewal due to

[14] Yang, Y. & Cardwell, R. (2023). Otago Region Economic Profile for Land and Water. Otago Regional Council (LWRP Economic Work Programme), Dunedin.

BENEFITS	COSTS
activities against the outcomes of the pLWRP. • Implementation of the provisions is expected to improve the health and well-being of water bodies and freshwater ecosystems by requiring existing activities to meet environmental flows and levels and manage discharges to achieve receiving water standards. • Improved freshwater quality and quantity arising from implementing the provisions will enhance the mauri of water bodies, have benefits for Kāi Tahu values, including mahika kai and taoka species, and have a positive impact on the Kāi Tahu economy. These improvements are expected to be more widespread than Option 1 given the consenting process will better enable mana whenua involvement and allow them to exercise kaikiakitaka. • Improved freshwater quality and quantity, habitats and passage for desirable fish species (including from the remediation of structures identified in action plans) will support the recovery of threatened species. • Requiring consent for all existing in-stream dams and weirs will enable ORC to gain a better understanding of how these activities potential cumulative effects. • Improved plan structure, readability and alignment with	their expiry dates. This may result in the transition time costs outlined for Option 1. • Resource consents will be required for more existing in-stream dams and weirs, including those that are currently permitted by the Water Plan. This will result in additional costs for consent applicants and ORC. Non-notified and limited-notified consent application deposits are $3,000, while publicly notified application deposits are $25,000. These costs do not include the cost to prepare a consent application, nor any processing costs that may be incurred over and above the deposit. A summary of processing costs for previous dam water permit applications is outlined in section 3.1 of this chapter. Annual inspection reports are $145 for small dams and $280 for large dams. It is difficult to determine the number of potential extra consents given the lack of information about permitted damming activities in Otago. • Some dam and weir owners and shareholders will incur financial costs in improving practices to meet potential consent conditions (e.g., to meet environmental flows and levels) which may not be feasible in some situations due to prohibitive financial costs or practical difficulties.

	BENEFITS	COSTS
	other legislation (e.g., the Building Act 2004 and Building (Dam Safety) Regulations will provide greater clarity for plan users and reduce administrative burden and financial costs for consent applicants and ORC.	

114. Table 7 below assesses the effectiveness and efficiency of the proposed provisions for each option in achieving the objectives.

Table 7: Effectiveness and efficiency of the proposed provisions for each option in achieving the objectives.

	Effectiveness
Option 1 **(preferred option)**	• Option 1 is effective at achieving the relevant objectives in the pLWRP and implementing the NPSFM and NPSREG. Clear direction for existing small activities to meet environmental flows and levels and, if necessary, be remediated to provide for fish passage will assist in achieving the objectives of the pLWRP and NPSFM, particularly to give effect to Te Mana o te Wai. Larger existing dams and weirs, and those with more significant adverse effects, will require resource consent and will be assessed against key policy direction in the pLWRP, including to avoid the loss of values and extent of rivers and natural lakes and to protect significant habitats and sensitive areas. Providing a permitted activity pathway for the continued use of small in-stream dams and weirs may assist with direction in the NPSREG to provide for the operation of small and community-scale distributed renewable electricity generation activities. • While the length of time required to achieve the objectives will, in part, be influenced by the expiry dates of current water permits for existing damming activities, the preferred option outlines clear expectations for managing new and existing activities in comparison with the status quo. Providing a permitted activity pathway for some small existing in-stream damming activities presents a degree of risk for achieving the objectives, particularly with regard to potential cumulative effects. However, given the breadth of the permitted activity conditions, including clear requirements to meet environmental flows and levels, this risk is considered relatively low. • Option 1 responds to direction from the community as expressed in the environmental outcomes and long-term visions[16]. It also addresses concerns from the community and stakeholders by removing duplication of administrative requirements for dams under the Building Act and the

[16] LF-FW – Fresh water Chapter of the pORPS.

	RMA. Impacts of Option 1 will largely be borne by owners of larger in-stream dams and weirs, identified structures requiring remediation to provide for fish passage, or where environmental flows and levels are not being met. This is considered to be equitable given the higher environmental risks associated with these activities.
Option 2	• Option 2 is highly effective at achieving the relevant objectives in the pLWRP (with the exception of IO-O10 as it would be less enabling of the operation of nationally significant infrastructure and regionally significant infrastructure) and to implement the NPSFM. Requiring resource consents for all existing in-stream damming activities enables a broader consideration of adverse effects on the environment and an assessment of activities against the relevant objectives and policies in the pLWRP. This may result in consent conditions being applied, or the decline of resource consent applications, that result in the objectives in the pLWRP being achieved faster. Option 2 would be less effective than Option 1 in implementing the NPSREG, given that it would be less enabling of the continued operation of hydro-electricity generation activities. • Impacts of Option 2 would be more widespread across different communities in the region given the universal requirement for resource consents. This is considered to be less equitable than Option 1 given that very small scale in-stream damming activities may be having less of an impact on water bodies and freshwater ecosystems than larger scale activities.
	Efficiency
Option 1 **(preferred option)**	• Option 1 is an efficient option for achieving the objectives. As shown in Table 6 above, the benefits associated with this option outweigh the costs. For example, the environmental, social and cultural costs as a consequence of freshwater quality and quantity issues within Otago are well documented, including in higher order documents such as the pORPS. • Some additional resource consents may be required and, as a result, increased costs for resource users and ORC through administrative, consenting, compliance and enforcement requirements. Option 1 may restrict the viability of some existing activities. However, it is likely that these costs are justified by the improvement in water bodies and the associated benefits to local communities. • Requirements that in-stream damming activities meet environmental flows and levels will ensure that water is allocated efficiently within the community, particularly for downstream users. • Efficiencies will be gained for consent applicants and ORC staff from clear direction and guidance for applying or and processing activities. Resource users will also have clarity on the types of activities that are anticipated by the Plan and the adverse effects that must be managed

	for each stage of an activity. Removing duplication of requirements for dam owners under the Building Act and RMA will improve the efficiency of their operations.
Option 2	• Option 2 is less efficient than Option 1. It would require significant regulatory costs for ORC and communities due to the requirement for resource consents for more existing damming activities. There are considerable costs associated with obtaining resource consents, complying with consent conditions and undertaking monitoring and enforcement for a large number of anticipated consents required. • Option 2 may unnecessarily constrain activities with potentially less than minor adverse effects on water bodies and freshwater ecosystems, and discourage the continuation of some beneficial activities associated with smaller existing dams, such as those related to environmental protection, restoration or enhancement. • Overall, the costs associated with requiring consent for all activities and the additional constraints on the uses of water and land, which will, in turn, have considerable negative impacts on economic growth and employment, are considered to outweigh the overall net benefits gained.

115. Section 32(2)(c) of the RMA requires ORC to take into account the risk of acting or not acting if there is uncertain or insufficient information.

116. As discussed in section 3.2 of this chapter, there is limited information about the nature and extent of some existing in-stream damming activities that are permitted under the Water Plan, including the volume of water stored and how they influence flow regimes and catchment hydrology. As such, there is a level of uncertainty regarding the full impacts of implementing Option 1. However, there is sufficient information about the current water quality and quantity issues and the associated environmental, social and cultural impacts in Otago. The deficiencies of the Water Plan for managing damming and diversion activities are also well understood. These circumstances warrant the implementation of a more restrictive regime than the status quo. Overall, the information supporting Option 1 is suitably certain and sufficient that there is a minimal risk of acting.

8.7. Conclusion

117. The effectiveness and efficiency assessments have shown that, overall, Option 1 is a more effective and efficient way to implement the national direction and achieve the relevant objectives of the pLWRP than Option 2. Therefore, based on these assessments, Option 1 is considered the most appropriate way to achieve the objectives of the pLWRP.

9. Sub-topic: New in-stream dams and weirs and associated activities

9.1. Introduction

118. The sub-topic addresses the placement and use of new in-stream dams and weirs and the replacement and upgrading of existing in-stream dams and weirs. The status quo approach was not considered to be a reasonably practicable option for these activities as it was not fit for purpose. The reasons for this are outlined in full in section 3.2 of this chapter, including that the provisions allow for limited consideration of environment flows and levels and in-stream values and do not align with national direction and the pORPS.

9.2. Discounted options

119. The status quo is not a reasonably practicable option for the reasons identified above in the 'Issues with the status quo' section.

9.3. Reasonably practicable options

120. Two reasonably practicable options to manage new in-stream damming and associated activities were identified to achieve the objectives:

a. **Option 1**: Permitted activity pathway for temporary new in-stream damming activities and resource consent for all other new in-stream damming activities (preferred option)

b. **Option 2**: Additional restrictions including requiring resource consent for all new in-stream damming activities and stronger policy direction.

121. Both of these options seek to give effect to national direction, and to resolve the issues identified in section 3.2 of this chapter. Aspects of the options were informed by workshops and other discussions with staff from Council, Aukaha and Te Ao Marama, and external stakeholders as part of NOF engagement.

9.3.1. Option 1: Permitted activity pathway for temporary new in-stream damming activities and resource consent for all other new in-stream damming activities (preferred option)

122. Option 1 proposes to provide a permitted activity pathway for temporary new in-stream dams and weirs but require resource consent for new longer term in-stream dams and weirs. Details of these two pathways are outlined below.

9.3.1.1. Temporary in-stream dams and weirs

123. Under Option 1, temporary in-stream dams and weirs are those that are constructed and used for no longer than a total of 30 days in any consecutive 12-month period. These dams may be associated with activities such as temporary works in water bodies to place or repair a structure, excavate gravel, or undertake scientific research.

124. The placement and use of temporary in-stream dams and weirs and any associated damming or diversion of water, use and disturbance of the bed, deposition of bed substrate and

discharge of water or contaminants into water or onto or into land in circumstances where a contaminant may enter water is a permitted activity provided conditions are met. These conditions require the following:

a. The in-stream dam or weir is not a classifiable dam.

b. The activity does not occur within areas where damming is restricted or prohibited by a Water Conservation Order or other legislation (such as the Lake Wānaka Preservation Act 1973), the Waitaki catchment, and other sensitive areas (including the habitat of a threatened freshwater-dependent species, mātaitai or taiāpure, or a drinking water protection zone).

c. The activity does not occur within or adjacent to a nohoaka entitlement from 1 August to 30 April (inclusive).

d. The placement and use of weirs located in, on, over or under the bed of any river complies with regulation 72(2) of the NESF.

e. The activity meets take limits and does not permanently reduce river flows or lake levels below an environmental flow or level.

f. The activity does not impede the passage of a desired fish species or enable the passage of an undesirable fish species where this passage does not already exist.

g. ORC is notified of the timing, location and extent of the activity at least ten working days prior to the placement of the in-stream dam or weir.

h. Any discharge does not contain any hazardous substance, pest, pest agent, unwanted organism or organism of interest unless it is associated with the passive flow of water through or over the in-stream dam or weir, and complies with the standards for visual clarity, turbidity, suspended solids and change in sediment cover set out in the pLWRP, 200 metres downstream of the activity.

i. Other standard conditions are met.[17]

125. Damming, unless for the purpose of stockwater supply, is currently prohibited in several water bodies under the Water Plan, including parts of the Pomahaka River/Poumāhaka, Waipahī River and Lower Clutha River/Mata-Au. These restrictions originate from the Pomahaka River and Tributaries and Lower Clutha River/Mata-au Local Water Conservation Notice 1989, which was repealed when the provisions were incorporated into the Water Plan. The restrictions sought to protect the regionally significant features associated with the identified waters, particularly in relation to recreation and fisheries. Option 1 enables temporary in-stream dams and weirs in these water bodies to provide for small scale activities that, when managed appropriately, are likely to have only transitory or less than minor adverse effects on water bodies and in-stream values.

[17] Including that the activity does not frustrate or prevent the exercise of any lawful take of water, or frustrate the use or integrity of any nationally significant infrastructure, regionally significant infrastructure or other lawfully established structure, or disturb the spawning habitat of desired fish species during their spawning seasons, or disturb the roosting or nesting of indigenous birds and bats, or cause or exacerbate flooding, erosion, land instability, sedimentation or property damage, or if the activity disturbs an archaeological site, the accidental discovery protocol must be applied, and within ten working days after completion of the activity, any plant, equipment or machinery associated with the activity is removed from the bed, the surrounding bed is returned as near as practicable to its original channel shape, area, depth and gradient that existed prior to works and any debris associated with the activity are removed.

126. If the permitted activity conditions cannot be met, resource consent is required as a discretionary activity. Temporary in-stream dams and weirs are non-complying activities in Welcome Creek, and prohibited activities in areas and situations where damming is prohibited in accordance with the Water Conservation (Kawarau) Order 1997 and Water Conservation (Mataura) Order 1997 and Lake Wānaka Preservation Act 1973.

9.3.1.2. Longer-term in-stream dams and weirs

127. Under Option 1, there is no permitted activity pathway for new in-stream dams and weirs and associated activities that are used for longer than a total of 30 days in any consecutive 12-month period. These activities require resource consent as a discretionary activity unless they are located in Welcome Creek (non-complying) or in areas where damming is prohibited by a Water Conservation Order, the Lake Wānaka Preservation Act 1973, and parts of the Pomahaka River/Poumāhaka, Waipahī River, and Lower Clutha River/Mata-Au.

128. Under Option 1, it is noted that activities in the Pomahaka River/Poumāhaka, Waipahī River and Lower Clutha River/Mata-au[18] are subject to more restrictive provisions compared to outstanding water bodies in the pLWRP. For example, no consenting pathway is available for long-term damming activities in the specified parts of the Pomahaka River/Poumāhaka, Waipahī River and Lower Clutha River/Mata-au. In contrast, a consenting pathway exists for the same activities in outstanding water bodies. However, damming has been prohibited in the Pomahaka River/Poumāhaka, Waipahī River and Lower Clutha River/Mata-au for the past 35 years. Option 1 continues to recognise and implement these restrictions under the pLWRP to maintain the existing protection for in-stream values in these areas.

129. Policies direct that new in-stream dams and weirs are managed by:

a. only allowing their placement and use where they:

i. comply with IP-P9 and IP-P10 (which set out policy direction for protecting the natural character and in-stream values of water bodies from inappropriate use and development, including by avoiding the loss of values or extent of rivers and natural lakes), and

ii. are not identified in DAM-P1 (which requires the placement of new in-stream dams and weirs in the areas where they are prohibited as discussed above), and

b. having particular regard to the positive effects of new in-stream dams and weirs that:

i. are temporary in-stream dams or weirs, or

ii. renewable electricity generation facilities that connect with the local distribution network or national grid (but are not facilities designed and operated principally for supplying a single premise or facility), or

iii. for the primary purpose of protecting, restoring or enhancing the ecosystem health, indigenous biodiversity, or hydrological functioning of water bodies.

130. This policy direction provides a clear link with the relevant strategic policies to avoid the loss of values or extent of rivers and natural lakes. It also requires decision-makers to have specific regard to the positive effects of certain activities when considering applications,

[18] The Clutha River/Mata-au (below Roxburgh) and Upper Pomahaka/Poumāhaka River are also identified as outstanding water bodies in SCHED1 of the pLWRP.

including activities which have transitory effects, or are recognised in national direction and the pORPS (e.g. in-stream damming associated with renewable electricity generation activities in the NPSREG and pORPS), or are for the primary purpose of protecting, restoring or enhancing water bodies and ecosystems.

131. Under Option 1, policy direction requires resource consent applicants to demonstrate how any relevant take limits and environmental flows and levels will be met. Applicants must also demonstrate how the activity will achieve a range of other outcomes relating to the introduction and spread of pests, the stranding of fish, public access, water quality and fish passage. As discussed above, new policy direction is included to manage discharges of water from in-stream dams to provide for ecological health and maintain natural variations in flow patterns below in-stream dams.

132. As discussed in above, policy direction relevant to the assessment of damming activities in the Waitaki catchment (including Welcome Creek) is contained in the FMU3 (North Otago FMU) chapter of the pLWRP.

9.3.1.3. Replacement and upgrading of in-stream dams and weirs

133. Providing for the replacement and upgrading of existing in-stream dams was a key issue raised in community consultation, particularly as this activity would likely be considered and processed as a new activity under the RMA and subject to the same policy tests for new in-stream dams. For example, if the replacement structure needed to be constructed outside of the footprint of the existing structure, it would be assessed as a new dam. The age and condition of in-stream dams in Otago varies considerably. Construction of several dam structures in the region dates back to the 19th (e.g., Ross Creek Dam (1867)) and early 20th centuries (e.g. Upper Manorburn Dam (1914) and Falls Dam (1935)). Consequently, some in-stream dams may need to be upgraded or replaced within the life of the pLWRP to maintain acceptable levels of safety or to increase or vary volumes of water released from outlets to meet new flow regimes. Obligations for dam owners under the Building (Dam Safety) Regulations 2022 may also require dams to be replaced.

134. While the total volume of water impounded by a replaced in-stream dam, and any adverse effects on in-stream values, may not increase from an existing activity, the replacement of an in-stream dam structure would still likely be treated as a new activity under the RMA, particularly if it occupied a different part of a water body. Option 1 provides policy support for these scenarios and distinguishes them from entirely new in-stream dams or weir activities. This recognises existing investment and the benefits of improving environmental performance. It provides for the replacement of lawfully established in-stream dams or weirs where the applicant can demonstrate that the new structure will provide for or impede fish passage in accordance with IP-P12 and IP-P13, meet the relevant environmental flows and levels and take limits and have the same or lesser adverse effects on the values and extent of rivers and natural lakes than the existing structure.

9.3.2. Option 2: Additional restrictions including requiring resource consent for all new in-stream damming and stronger policy direction.

135. Option 2 adopts a similar approach and structure to Option 1. However, it contains additional controls and restrictions to further protect the health and well-being of water bodies and freshwater ecosystems and achieve improvements more quickly. Option 2

removes the permitted activity pathway for all new in-stream damming and associated activities regardless of location, scale and duration. As such, all new in-stream damming would require a resource consent as a discretionary activity and be assessed against the policy direction and outcomes in the pLWRP. Option 2 would also make new longer term in-stream dams and weirs non-complying activities in outstanding waterbodies and habitats of threatened freshwater-dependent species.

136. Option 2 would also strengthen the policy direction for new in-stream damming, including by removing policies enabling the replacement of lawfully established in-stream dams and weir structures. It would strongly discourage the placement and use of new in-stream dams and weirs in other locations (such as outstanding waterbodies and habitats of threatened freshwater-dependent species) unless adverse effects are less than minor.

9.4. Clause 3 consultation feedback

137. The key feedback from clause 3 parties on the provisions for new in-stream dams and weirs included:

a. Some parties considered the provisions for new in-stream dams and weirs were too restrictive by only allowing new in-stream dams and weirs in limited circumstances, while others supported this approach.

b. Some parties requested that "for the primary purpose" be removed from the policy direction to recognise other activities that have a different purpose by may also protect, restore or enhance ecosystem health, indigenous biodiversity or hydrological functioning.

c. Some parties sought clarification for other terminology used in the provisions, including "material adverse effects".

d. Other parties considered that the approach was too lenient and sought that it be tightened further, including by providing a narrower pathway for new in-stream damming activities.

e. General support for provisions allowing the replacement of existing in-stream dams and weirs.

138. The following feedback was received from Aukaha with respect to new in-stream dams and weirs:

a. Policy direction is too narrowly focused and needs to refer to the environmental outcomes in the FMU chapters, including outcomes for wāhi tūpuna, taoka species and mahika kai) and to effects on wetlands, characteristics such as braids, flow characteristics, flood and erosion hazard, water quality/ sediment movement.

b. A high bar should be set for granting consent for new in-stream dams and weirs. As well as the values of the water body, considerations should include the availability of alternative methods or locations.

c. The wording of DAM-P2 (formerly DAM-P3) should be tightened (by inserting 'for the primary purpose' before renewable electricity generation facilities) to ensure that the direction is not used to authorise new in-stream dams that have only a small component of renewable electricity generation but are primarily for other purposes.

Reference to 'no material adverse effects' should be amended to provide clarity about the effects of concern.

d. Permitted activity provisions do not include sufficient controls of effects on scale and duration of activity, water quality and effects on indigenous species.

139. In response to clause 3 feedback, changes were made to the provisions including clarifying the policy tests for new longer-term in-stream dams and weirs and the replacement and upgrade of structures. The fundamental approach to managing new in-stream dams and weirs remained unchanged in order to respond and to implement the objectives in the pLWRP and national direction.

140. In response to feedback from Aukaha, several changes were made to the provisions to ensure that they contribute to the achievement of the relevant environmental outcomes and to improve clarity and certainty. Changes included limiting the size of temporary in-stream dams and weirs to smaller than classifiable dams as permitted activities, requiring applicants for new in-stream dams and weirs to demonstrate that there is no practicable alternative method or location available for the activity, reframing DAM-P2 (formerly DAM-P3) to give effect to the NPSFM more clearly, and clarifying permitted activity conditions regarding disturbance of spawning habitats.

9.5. Clause 4A consultation feedback

141. No specific clause 4A feedback was received on the provisions for new in-stream dams and weirs. However, clause 4A feedback was received more broadly on the DAM chapter seeking:

a. Permitted activity conditions are reviewed against environmental outcomes and the attributes in Tables 4 and 5 of the pLWRP to check whether they address the appropriate range of effects on environmental outcomes.

b. Limits are included on permitted activities to ensure that consent will be required in sensitive locations and for large scale activities.

c. Permitted activity provision is removed for activities with potentially significant effects on the benthic environment or the natural form of a water body.

142. In response to the clause 4A feedback, the provisions were reviewed to ensure that they addressed the concerns raised above. No significant changes were made to the provisions for new in-stream dams and weirs as it was considered that they addressed the appropriate range of effects on environmental outcomes. It was also considered that the permitted activity limits and restrictions in sensitive locations are appropriate for the provisions for new temporary in-stream dams and weirs.

143. Minor changes were made to include limits in relevant permitted activities to ensure that consent is required for works adjoining nohoaka entitlements from August to April. One minor amendment was made to DAM-P4 (which provides direction for resource consent applications for in-stream dams or weirs) to address adverse effects on water quality and indigenous species more clearly and to align with changes to the IM chapter.

9.6. Effectiveness and efficiency assessment

144. Table 8 below identifies and assesses the environmental, cultural, social, and economic benefits and costs anticipated from implementing the provisions proposed for each option for the new in-stream dams and weirs and associated activities sub-topic.

Table 8: Benefits and costs for the new in-stream dams and weirs and associated activities sub-topic

	BENEFITS	COSTS
Option 1 (preferred option)	• Implementation of the provisions is expected to improve the health and well-being of water bodies and freshwater ecosystems, particularly through the requirement for all new longer term in-stream dams and weirs to meet environmental flows and levels, avoid the loss of extent and values of rivers and natural lakes, and manage fish passage. • Improved freshwater quality and quantity from implementing the provisions will have benefits for broader social values within communities. • Implementation of the provisions proposed under option 1 is expected to better provide for Kāi Tahu values, create opportunities for Kāi Tahu to engage in social and economic activities, and exercise kaikiakitaka. However, adverse impacts for Kāi Tahu values may still arise by having a more permissive framework for temporary instream damming activities. • Enabling temporary in-stream damming activities will support activities which contribute to the social and economic well-being of people and local and regional	• As the viability of new in-stream damming activities will be restricted by the strong policy direction to avoid 1) new in-stream dams and weirs in many cases and 2) the loss and extent of rivers and natural lakes, it may result in considerable financial costs for some communities to develop and fund alternative off-stream water storage projects. These restrictions may also constrain the uses of water and land, which will, in turn, negatively impact economic growth and employment. These costs may disproportionately impact some individuals or local communities that rely on in-stream storage and use of water and/or have limited options or funding for off-stream storage solutions. For example, as part of an on-farm water storage pre-feasibility assessment for the Cardrona Valley and Wanaka-Cardrona Flats, indicative costs for a generic 150,000 m³ ring dam design were estimated at approximately $800,000 if unlined and $1,200,000 if lined (excluding any associated resource consenting costs) (GeoSolve Limited & David Hamilton & Associates Limited, 2017).

BENEFITS	COSTS
communities, such as in-stream works (e.g. maintaining, altering, replacing, or placing lawfully established structures). • Policy direction to support new in-stream dams which are for the primary purpose of protecting, restoring or enhancing the ecosystem health, indigenous biodiversity, or hydrological functioning of water bodies will incentivise these activities by providing a clear consenting pathway. • Enabling new hydro-electricity generation activities and the ongoing operation and maintenance of existing activities will support New Zealand's integrated response to climate change, including the achievement of any national targets for emissions reductions. • Enabling the replacement and upgrading of lawfully established in-stream dams and weirs will continue to support social and economic opportunities from damming while ensuring improved dam safety, and compliance with environmental flows and levels and fish passage requirements. • Requirements for the provision of information to ORC for some permitted damming activities will improve the information currently held by the council, particularly in respect to the	• More activities are likely to require resource consent (including where they are currently permitted under the Water Plan or NESF), which will create additional financial costs for resource consent applicants to ensure that the effects of their activities are properly managed. Non-notified and limited-notified consent application deposits are $3,000, while publicly notified application deposits are $25,000. These costs do not include the cost to prepare a consent application, nor any processing costs that may be incurred over and above the deposit. A summary of processing costs for previous dam water permit applications is outlined in section 3.1 of this chapter. Annual inspection reports are $145 for small dams and $280 for large dams.

	BENEFITS	COSTS
	location of activities and potential cumulative effects. • Improved plan structure, readability and alignment with other legislation (e.g., the Building Act 2004 and Building (Dam Safety) Regulations will provide greater clarity for plan users and reduce administrative burden and costs for consent applicants and ORC.	
Option 2	• Requiring resource consent for all existing in-stream dams and weirs will enable a more holistic assessment of all relevant adverse effects of these damming activities against the outcomes of the pLWRP. • Implementation of the provisions is expected to improve the health and well-being of water bodies and freshwater ecosystems, particularly through the requirement for all new longer term in-stream dams and weirs to meet environmental flows and levels, avoid the loss of extent and values of rivers and natural lakes, and manage fish passage. • Improved freshwater quality and quantity from implementing the provisions will enhance the mauri of water bodies and benefit broader social values within communities. • Compared to option 1, Option 2 is also expected to provide for better outcomes for Kāi Tahu values, create improved	• More activities than Option 1 are likely to require resource consent (including where they are currently permitted under the Water Plan or NESF), which will create additional financial costs for resource consent applicants to ensure that the effects of their activities are properly managed. • Making new in-stream dams and weirs in outstanding water bodies and habitats of threatened freshwater-dependent species non-complying would have opportunity costs for potential activities in (or reliant on dammed water from) these waterbodies. • Without clear policy support for replacing or upgrading existing in-stream dams and weirs, these activities may be less viable. • Financial costs and time associated with obtaining a resource consent may discourage some beneficial activities, such as those associated with

	BENEFITS	COSTS
	opportunities for Kāi Tahu to engage in social and economic activities, and put Kāi Tahu in a better position to exercise kaikiakitaka. • Same as above in terms of requirements for the provision of information to ORC, and improved plan structure, readability and alignment with other legislation.	environmental protection, restoration or enhancement.

145. Table 9 below assesses the effectiveness and efficiency of the proposed provisions for each option in achieving the objectives.

Table 9: The effectiveness and efficiency of the proposed provisions for each option in achieving the objectives.

	Effectiveness
Option 1 (preferred option)	• Option 1 is an effective option for achieving the relevant objectives in the pLWRP and to implement the NPSFM and NPSREG. Clear direction for activities to provide for the health and well-being of water bodies and freshwater ecosystems, avoid the loss of values and extent of rivers and natural lakes, protect significant habitats and sensitive areas, and meet environmental flows and levels will assist in achieving the objectives of the pLWRP and NPSFM, particularly to give effect to Te Mana o te Wai. Providing for the development, operation, maintenance and upgrading of hydro-electricity generation activities aligns with direction in the NPSREG. • Providing a permitted activity pathway for some temporary damming activities presents a degree of risk for achieving the objectives, particularly with regard to potential cumulative effects. However, given the breadth of the permitted activity conditions, this risk is considered relatively low. • Option 1 responds to direction from the community and mana whenua, as expressed in the environmental outcomes and long-term visions[19] for Otago. It also addresses concerns from the community and stakeholders by removing duplication of administrative requirements for dams under the Building Act and the RMA, reducing plan complexity, and improving the clarity of policies and rules. Impacts of the preferred options will largely be borne by those undertaking larger scale in-stream damming or diversion activities. This is considered to be equitable given the higher environmental risks associated with these activities.

[19] LF-FW – Fresh water Chapter of the pORPS.

Option 2	• Option 2 is highly effective at achieving the relevant objectives in the pLWRP and to implement the NPSFM. Requiring resource consents for all new in-stream damming activities enables a broader consideration of adverse effects on the environment and an assessment of activities against the relevant objectives and policies in the pLWRP. This may result in consent conditions being applied, or the decline of resource consent applications, that result in the objectives in the pLWRP being achieved faster. Option 2 would be less effective than Option 1 in implementing the NPSREG, given that it would be less enabling of the development and upgrading of hydro-electricity generation activities. • Impacts of Option 2 would be more widespread throughout different communities in the region given the universal requirement for resource consents. This is considered to be less equitable than Option 1 given that temporary in-stream damming activities may be having less of an impact on water bodies and freshwater ecosystems than larger scale activities.
	Efficiency
Option 1 (preferred option)	• Option 1 is an efficient option for achieving the objectives. As shown in Table 8 above, the benefits associated with this option outweigh the costs. For example, the environmental, social and cultural costs as a consequence of freshwater quality and quantity issues within Otago are well documented, including in higher order documents such as the pORPS. • Some additional resource consents may be required and, as a result, increased costs for resource users and ORC through administrative, consenting, compliance and enforcement requirements. Option 1 may restrict the viability of some new activities. However, it is likely that these costs are justified by the improvement in water bodies and the associated benefits to local communities. • Requirements that in-stream dams and weirs meet environmental flows and levels and take limits will ensure that water is allocated efficiently within the community, particularly for downstream users. • Efficiencies will be gained for consent applicants and ORC staff from clear direction and guidance for applying or and processing activities. Resource users will also have clarity on the types of activities that are anticipated by the Plan and the adverse effects that must be managed for each stage of an activity. Removing duplication of requirements for dam owners under the Building Act and RMA will improve the efficiency of their operations.
Option 2	• Option 2 is less efficient than Option 1. It would require significant regulatory costs for ORC and communities due to the requirement for resource consents for all new damming activities. There are considerable costs associated with obtaining consents, complying with consent conditions and undertaking monitoring and enforcement for a large number of anticipated consents required.

	• Option 2 may unnecessarily constrain activities with potentially less than minor adverse effects on water bodies and freshwater ecosystems, and discourage some beneficial activities, such as those associated with environmental protection, restoration or enhancement. • Overall, the costs associated with requiring consent for all activities and the additional constraints on the uses of water and land which will, in turn, have considerable impacts on negative economic growth and employment, are considered to outweigh the overall net benefits gained.

146. Section 32(2)(c) of the RMA requires ORC to take into account the risk of acting or not acting if there is uncertain or insufficient information.

147. As discussed in section 3.2 of this chapter, there is limited information about the nature and extent of some damming activities in the region. As such, there is a level of uncertainty regarding the full impacts of implementing Option 1. However, there is sufficient information about the current water quality and quantity issues and the associated environmental, social and cultural impacts in Otago. The deficiencies of the Water Plan for managing damming and diversion activities are also well understood. These circumstances warrant the implementation of a more restrictive regime. Overall, the information supporting Option 1 is suitably certain and sufficient that there is a minimal risk of acting.

9.7. Conclusion

148. The effectiveness and efficiency assessments have shown that, overall, Option 1 is a more effective and efficient way to implement the national direction and achieve the relevant objectives of the pLWRP than Option 2. Therefore, based on these assessments, Option 1 is considered the most appropriate way to achieve the objectives of the pLWRP.

10. Sub-topic: Maintenance, demolition and removal of in-stream dams and weirs

10.1. Introduction

149. This sub-topic addresses the maintenance, demolition and removal of in-stream dams and weirs. The status quo approach was not considered to be a reasonably practicable option for these activities as it was not fit for purpose. The reasons for this are outlined in full in section 3.2 of this chapter, including that there was no clear consenting pathway for maintenance of in-stream dams and weirs, and the existing rule conditions and policy direction did not appropriately address all relevant adverse effects for maintenance, demolition and removal activities.

10.2. Discounted options

150. The status quo is not a reasonably practicable option for the reasons identified above in the 'Issues with the status quo' section.

10.3. Reasonably practicable options

151. Two reasonably practicable options to manage the maintenance, demolition and removal of in-stream dams and weirs were identified to achieve the objectives:

a. **Option 1**: Permitted activity pathway for some maintenance, demolition and removal activities (preferred option)

b. **Option 2**: Additional restrictions including requiring resource consent for maintenance, demolition and removal activities and stronger policy direction.

152. Both of these options seek to give effect to national direction, and to resolve the issues identified in section 3.2 above. Aspects of the options were informed by workshops and other discussions with staff from Council, Aukaha and Te Ao Marama, and external stakeholders as part of NOF engagement.

10.3.1. Option 1: Permitted activity pathway for some maintenance, demolition and removal activities (preferred option)

153. Regular maintenance of dams and weirs is important to ensure their safe operation. Option 1 therefore permits the maintenance of in-stream dams and weirs and associated activities provided conditions are met. These conditions require:

a. The in-stream dam or weir is lawfully established.

b. The activity does not reduce river flows or lake levels below an environmental flow or level.

c. The maintenance works do not increase the volume of water impounded by the in-stream dam or weir.

d. The maintenance works do not impede the passage of a desired fish species or enable the passage of an undesirable fish species where this passage does not already exist.

e. Any build-up of sediment or debris against the in-stream dam or weir which may adversely affect flood risk, drainage capacity or bed or bank stability is removed as soon as practicable.

f. Any discharge does not contain any hazardous substance, pest, pest agent, unwanted organism or organism of interest unless it is associated with the passive flow of water through or over the in-stream dam or weir, and the receiving water standards in the pLWRP are met.

g. Other standard conditions are met.[20]

154. Any discharge of water or contaminants into water must comply with all relevant receiving water standards set out in APP14. This condition is broader than those for other damming

[20] Including that the activity does not frustrate or prevent the exercise of any lawful take of water, or disturb the spawning habitat of desired fish species during their spawning seasons, or disturb the roosting or nesting of indigenous birds and bats, or cause or exacerbate flooding, erosion, land instability, sedimentation or property damage, or if the activity disturbs an archaeological site, the accidental discovery protocol must be applied, within ten working days after completion of the activity, any plant, equipment or machinery associated with the activity is removed from the bed, the surrounding bed is returned as near as practicable to its original channel shape, area, depth and gradient that existed prior to works and any debris associated with the activity are removed.

activities (which only require that specific standards in APP14 are met) to recognise the increased risks to water quality posed by maintenance activities, including when there is drawdown or emptying of reservoirs.

155. If the permitted activity conditions cannot be met, the activity requires resource consent as a discretionary activity. Policy direction requires that any potential adverse effects of maintenance activities, including the creation or exacerbation of natural hazard risks or flooding, are managed.

156. Policy direction under Option 1 encourages the demolition or removal of dams and weirs where the structure was not lawfully established, or ceases to be maintained, operated or used.

157. Option 1 permits the demolition or removal of in-stream dams or weirs including any associated disturbance of the bed of a lake or river, deposition of bed substrate, discharge of water or contaminants into water or onto or into land in circumstances where a contaminant may enter water, and damming or diversion of water, provided conditions are met. These conditions require:

a. The in-stream dam is not a classifiable dam.

b. The in-stream dam or weir is not removed without the prior written permission of the person or agency responsible for operating or maintaining that structure.

c. If the in-stream dam or weir prevents the passage of undesirable fish species, the removal of the in-stream dam or weir does not provide for the passage of undesirable fish species.

d. The activity does not occur within a habitat of a threatened species freshwater-dependent species (unless the removal of the dam or weir will provide for the passage of a desired fish species), a mātaitai or taiāpure, or a drinking water protection zone.

e. The activity does not occur within or adjacent to a nohoaka entitlement from 1 August to 30 April (inclusive).

f. Any remaining parts of the dam or weir does not present a risk to navigation or safety.

g. No explosives are used.

h. Any discharge does not contain any hazardous substance, pest, pest agent, unwanted organism or organism of interest unless it is associated with the passive flow of water through or over the in-stream dam or weir, and meets the standards for visual clarity, turbidity, suspended solids and change in sediment cover set out in the pLWRP, 200 metres downstream of the activity.

i. Other standard conditions are met.[21]

158. If the permitted activity conditions cannot be met, the activity requires resource consent as a discretionary activity.

[21] Including that the activity does not frustrate or prevent the exercise of any lawful take of water, or disturb the spawning habitat of desired fish species during their spawning seasons, or disturb the roosting or nesting of indigenous birds and bats, or cause or exacerbate flooding, erosion, land instability, sedimentation or property damage, or if the activity disturbs an archaeological site, the accidental discovery protocol must be applied, within ten working days after completion of the activity, any plant, equipment or machinery associated with the activity is removed from the bed, and any debris associated with the activity are removed.

10.3.2. Option 2: Additional restrictions including requiring resource consent for maintenance, demolition and removal activities and stronger policy direction

159. Option 2 adopts a similar approach and structure to Option 1. However, it contains additional controls and restrictions. Option 2 removes the permitted activity pathway for all maintenance, demolition and removal activities regardless of location, scale and duration. As such, all of these activities would require a resource consent as a discretionary activity and be assessed against the policy direction and outcomes in the pLWRP.

10.4. Clause 3 consultation feedback

160. The key feedback from clause 3 parties on the provisions for maintenance, demolition and removal of in-stream dams and weirs included:

a. Support for a permitted activity pathway for the maintenance of in-stream dams and weirs.

b. Concern that the maintenance rules unnecessarily restrict the ability to undertake activities related to renewable electricity generation infrastructure.

c. Requests for the maintenance of in-stream dams and weirs to be permitted without any associated rule conditions.

d. Requests that the maintenance rules also need to avoid effects on fish passage and spawning.

161. The following feedback was received from Aukaha with respect to the maintenance, demolition and removal of in-stream dams and weirs:

a. Policy direction is too narrowly focused and needs to refer to the environmental outcomes in the FMU chapters, including outcomes for wāhi tūpuna, taoka species and mahika kai) and to effects on wetlands, characteristics such as braids, flow characteristics, flood and erosion hazard, water quality/ sediment movement.

b. The permitted activity provisions do not include sufficient controls of effects on scale and duration of activity, water quality and effects on indigenous species.

c. Suggest a separate rule for the discharge component of the maintenance rule, noting that the condition only relates to visual clarity. If the dam is emptied to allow for maintenance and repair, and the water contains nutrients or other contaminants, there is nothing to manage the effects of those contaminants in the receiving environment into which they are discharged.

162. In response to clause 3 feedback, changes were made to the provisions to clarify how key adverse effects are to be managed, including those related to the passage of fish and spawning habitats. In response to Aukaha concerns, the permitted activity condition for discharges of contaminants was broadened to refer to all of the receiving water standards in APP14, recognising the additional risks that maintenance activities pose to water quality. It is considered that the other permitted activity conditions include appropriate controls of effects on the scale and duration of the activities. To recognise the national significance of the Clutha Hydroelectricity Scheme, a controlled activity rule is provided for maintenance works associated with the Scheme (FMU1-R1-CON1). The damming of water associated with

maintenance of the Scheme is not provided for by FMU1-R1-CON1, and would instead be captured by the relevant maintenance provisions in the DAM chapter.

10.5. Clause 4A consultation feedback

163. No specific clause 4A feedback was received on the provisions for the maintenance, demolition and removal of in-stream dams and weirs. However, clause 4A feedback was received more broadly on the DAM chapter seeking:

a. Permitted activity conditions are reviewed against environmental outcomes and the attributes in Tables 4 and 5 of the pLWRP to check whether they address the appropriate range of effects on environmental outcomes.

b. Limits are included on permitted activities to ensure that consent will be required in sensitive locations and for large scale activities.

c. Permitted activity provision is removed for activities with potentially significant effects on the benthic environment or the natural form of a water body.

164. In response to the clause 4A feedback, the provisions were reviewed to ensure that they addressed the concerns raised above. No significant changes were made to the provisions for the maintenance, demolition and removal of in-stream dams and weirs as it was considered that they addressed the appropriate range of effects on environmental outcomes. It was also considered that the permitted activity limits and restrictions in sensitive locations are appropriate for the provisions for these activities. As per other sub-topics, one minor amendment was made to DAM-P4 (which provides direction for resource consent applications for in-stream dams or weirs) to address adverse effects on water quality and indigenous species more clearly and to align with changes to the IM chapter.

10.6. Effectiveness and efficiency assessment

165. Table 10 below identifies and assesses the environmental, cultural, social, and economic benefits and costs anticipated from implementing the provisions proposed for the maintenance, demolition and removal of in-stream dams and weirs sub-topic.

Table 10: Benefits and costs for the maintenance, demolition and removal of in-stream dams and weirs sub-topic

	BENEFITS	COSTS
Option 1 (preferred option)	• Implementation of the provisions is expected to improve the health and well-being of water bodies and freshwater ecosystems, including through clearer management of adverse effects of maintenance, demolition and removal activities. • Clear provisions, including a permitted activity pathway, for removing some in-stream	• Some maintenance activities will be permitted by the new rules which may contribute to cumulative adverse effects on in-stream values. Permitting these activities could potentially also adversely impact Kāi Tahu values and the Kāi Tahu economy (For example, through the impacts these maintenance activities may have on mahika kai species and practices).

dams and weirs is likely to improve the health and well-being of water bodies or freshwater ecosystems, or reduce the risk of these structures to the health and safety of communities.

- Providing a permitted activity pathway for removing some in-stream dams and weirs is also likely to have positive impact on Kāi Tahu values and the Kāi Tahu economy. Allowing for the removal of these dams and weirs will eliminate impacts on mahika kai species from existing structures and will provide better opportunities for Kāi Tahu to connect with the environment, engage in social and economic activities (i.e. harvest of mahika kai species) and exercise kaikiakitaka.
- Clear provisions, including a permitted activity pathway, for the maintenance of in-stream dams and weirs will encourage these activities to occur and improve environmental performance.
- Requirements for the provision of information to ORC for some permitted damming activities will improve the information currently held by the council, particularly in respect to the location of activities and potential adverse effects.
- Improved plan structure, readability and alignment with other legislation (e.g., the Building Act 2004 and Building (Dam Safety) Regulations will provide greater clarity for plan users and reduce

- More activities are likely to require resource consent (including where they are currently permitted under the Water Plan or NESF), which will create additional financial costs for resource consent applicants to ensure that the effects of their activities are properly managed. Non-notified and limited-notified consent application deposits are $3,000, while publicly notified application deposits are $25,000. These costs do not include the cost to prepare a consent application, nor any processing costs that may be incurred over and above the deposit. A summary of processing costs for previous dam water permit applications is outlined in section 3.1 of this chapter. Additional resource consents will also increase the administrative burden and financial costs for ORC in terms of processing, monitoring and enforcing these resource consents.

	administrative burden and costs for consent applicants and ORC.	
Option 2	• Requiring resource consent for all maintenance, demolition and removal activities will enable a more holistic assessment of all relevant adverse effects against the outcomes of the pLWRP. • Option 2 is likely to reduce the risk of adverse impacts on Kāi Tahu values and the Kāi Tahu economy by requiring consent for maintenance activities and ensuring that any maintenance removal and demolition is carried out in a manners that avoids or mitigates the impacts on Kāi Tahu values and interests. • As above in terms of requirements for the provision of information to ORC, and improved plan structure, readability and alignment with other legislation.	• More activities than Option 1 are likely to require resource consent which will create additional financial costs for resource consent applicants to ensure that the effects of their activities are properly managed. Additional resource consents will also increase the administrative burden and financial costs for ORC in terms of processing, monitoring and enforcing these resource consents. • Financial costs and time associated with obtaining a resource consent may discourage some beneficial activities, such as those associated with environmental protection, restoration or enhancement and the removal of in-stream dams and weirs. • Removing a permitted activity pathway for dam or weir removal or demolition may in some cases discourage initiatives that have a positive long term impact on Kāi Tahu values and the Kāi Tahu economy.

166. Table 11 below assesses the effectiveness and efficiency of the proposed provisions in achieving the objectives.

Table 11: Effectiveness and efficiency of the proposed provisions in achieving the objectives

	Effectiveness
Option 1 (preferred option)	• Option 1 is an effective option for achieving the relevant objectives in the pLWRP and to implement the NPSFM and NPSREG. Specific and clear direction for managing the adverse effects of maintenance, demolition and removal of in-stream dams and weirs

	will assist in achieving the objectives of the pLWRP and NPSFM, particularly to give effect to Te Mana o te Wai. Providing for the maintenance of hydro-electricity generation activities aligns with direction in the NPSREG. • Providing a permitted activity pathway for some maintenance, demolition and removal activities presents a degree of risk for achieving the objectives, particularly with regard to potential cumulative effects. However, given the breadth of the permitted activity conditions, this risk is considered relatively low.
Option 2	• Option 2 is highly effective at achieving the relevant objectives in the pLWRP and to implement the NPSFM, and more effective than Option 1. Requiring resource consents for all maintenance, demolition and removal activities enables a broader consideration of adverse effects on the environment and an assessment of activities against the relevant objectives and policies in the pLWRP. This may result in consent conditions being applied, or the decline of resource consent applications, that result in the objectives in the pLWRP being achieved faster. Option 2 would be less effective than Option 1 in implementing the NPSREG, given that it would be less enabling of the maintenance of hydro-electricity generation activities.
	Efficiency
Option 1 (preferred option)	• Option 1 is an efficient option for achieving the objectives. As shown in Table 10 above, the benefits associated with this option outweigh the costs. Some additional resource consents may be required and, as a result, increased costs for resource users and ORC through administrative, consenting, compliance and enforcement requirements. However, it is likely that these costs are justified by the improvement in water bodies and the associated benefits to local communities. • Efficiencies will be gained for consent applicants and ORC staff from clear direction and guidance for applying or and processing activities. Resource users will also have clarity on the types of activities that are anticipated by the Plan and the adverse effects that must be managed for each stage of an activity. Removing duplication of requirements for dam owners under the Building Act and RMA will improve the efficiency of their operations.
Option 2	• Option 2 may unnecessarily constrain activities with potentially less than minor adverse effects on water bodies and freshwater ecosystems, and discourage some beneficial activities, such as those associated with environmental protection, restoration or enhancement. This includes the removal of structures and their maintenance to improve health and safety and environmental

performance (i.e. releasing more water to enhance downstream environments and provide for flow variability).

- Option 2 would require significant regulatory costs for ORC and communities due to the requirement for resource consents for all maintenance, demolition and removal activities. There are considerable costs associated with obtaining consents, complying with consent conditions and undertaking monitoring and enforcement for a large number of anticipated consents required.
- Overall, the costs associated with requiring consent for all activities and the additional constraints on the uses of water and land which will, in turn, have considerable negative impacts on economic growth and employment, are considered to outweigh the overall net benefits gained.

167. Section 32(2)(c) of the RMA requires ORC to take into account the risk of acting or not acting if there is uncertain or insufficient information.

168. As discussed in section 3.2 of this chapter, there is limited information about the nature and extent of some damming activities in the region. As such, there is a level of uncertainty regarding the full impacts of implementing Option 1. However, there is sufficient information about the current water quality and quantity issues and the associated environmental, social and cultural impacts in Otago. The deficiencies of the Water Plan for managing damming and diversion activities are also well understood. These circumstances warrant the implementation of a more restrictive regime. Overall, the information supporting Option 1 is suitably certain and sufficient that there is a minimal risk of acting.

10.7. Conclusion

169. The effectiveness and efficiency assessments have shown that, overall, Option 1 is a more effective and efficient way to implement the national direction and achieve the relevant objectives of the pLWRP than Option 2. Therefore, based on these assessments, Option 1 is considered the most appropriate way to achieve the objectives of the pLWRP.

11. Sub-topic: Diversions

11.1. Introduction

170. This sub-topic addresses diversions of water. The status quo approach was not considered to be a reasonably practicable option for these activities as it was not fit for purpose. The reasons for this are outlined in full in section 3.2 of this chapter, including that the relevant policy direction and rules did consider all relevant adverse effects of the activities and did not give effect to Te Mana o te Wai.

11.2. Discounted options

171. The status quo is not a reasonably practicable option for the reasons identified above in the 'Issues with the status quo' section.

11.3. Reasonably practicable options

172. Two reasonably practicable options to manage the diversion of water were identified to achieve the objectives:

a. **Option 1**: Permitted activity pathway for temporary diversion activities (preferred option)

b. **Option 2:** Additional restrictions including requiring resource consent for all diversions and stronger policy direction.

173. Both of these options seek to give effect to national direction, and to resolve the issues identified in section 3.2 above. Aspects of the options were informed by workshops and other discussions with staff from Council, Aukaha and Te Ao Marama, and external stakeholders as part of NOF engagement.

11.3.1. Option 1: Permitted activity pathway for temporary diversion activities (preferred option)

174. Option 1 introduces a new definition for diversion which reads:

'…means the redirecting of water flow from its natural or existing direction of flow. For the purposes of this Plan, taking water from the bed of any water body is considered a take or a take and discharge.'

175. This definition requires any deflection of water from within the bed of a water body to outside of that water body to be managed as a take under the EFL chapter of the pLWRP. If water is deflected from the bed of the water body, but then returned, it is considered a take and discharge. This approach recognises that, even if the activity is temporary and/or non-consumptive (e.g. the same amount of water is returned to the water body), these activities are still removing water from the source water body either temporarily or permanently, and can have adverse effects on the health and well-being of water bodies and freshwater ecosystems.

176. Option 1 seeks to manage two types of diversions; the diversion of water outside of the bed of a lake or river (i.e. no part of the activity occurs within a waterbody); and the temporary diversion within the bed of a lake or river.

177. The diversion of floodwaters outside of the bed of a lake or river to alleviate surface flooding and any associated discharge of water or contaminants in floodwaters into water or onto or into land is a permitted activity provided that the activity does not cause or increase erosion, land instability or property damage, and any discharge is within or from the same catchment in which the water would normally flow. If the permitted activity conditions cannot be met, the activity requires a consent as a discretionary activity.

178. Temporary diversions of water within the bed of a lake or river are a permitted activity only where they are for the purpose of facilitating temporary works associated with a lawfully established structure or protecting, restoring or enhancing the ecosystem health, indigenous biodiversity or hydrological functioning of water bodies and conditions are met. These conditions require that:

a. The activity occurs for no longer than 14 days in any consecutive 12-month period and the course of the water is returned as near as practicable to the original course that existed immediately prior to the activity.

b. The total volume of water is returned within 100 metres of the diversion point.

c. The activity does not occur within an area where the diversion of water is restricted or prohibited by a Water Conservation Order, the Waitaki catchment, the habitat of a threatened freshwater-dependent species, a mātaitai or taiāpure, or a drinking water protection zone.

d. The activity does not occur within or adjacent to a nohoaka entitlement from 1 August to 30 April (inclusive).

e. The activity does not impede the passage of a desired fish species or enable the passage of an undesirable fish species where this passage does not already exist.

f. Any discharge complies with the standards for visual clarity, turbidity, suspended solids and change in sediment cover set out in the pLWRP, 200 metres downstream of the activity.

g. The activity does not reduce the level of any lake or the downstream flow in any river below an environmental level or flow.

h. ORC is notified of the timing, location and extent of the activity at least ten working days prior to the activity.

i. Other standard conditions are met.[22]

179. Duration and distance limits are included to control the scale and potential adverse effects of temporary diversions. The 100-metre distance limit, in particular, aligns with restrictions applied to non-consumptive takes or minor diversions in other regional plans in New Zealand, such as those in Southland and Hawkes Bay. Within the context of the pLWRP, this limit is intended to restrict the potential adverse effects of drying out previously wetted sections of water bodies to a specified maximum distance. The significance of this distance will vary based on the type and size of the water body and the in-stream values present. However, additional permitted activity conditions are also likely to implicitly limit the duration and distance of these activities, including requirements to meet environmental flows and levels and manage impacts on fish passage, infrastructure and structures, and lawful water takes.

180. If the permitted activity conditions cannot be met, the activity requires a resource consent as a discretionary activity, unless the diversion is in Welcome Creek (non-complying), or in an area where the diversion of water is prohibited by a Water Conservation Order. Long-term diversions (i.e. where the activity occurs for longer than 14 days in any consecutive 12-month period) within the bed of a lake or river require a resource consent as a discretionary

[22] Including that the activity does not frustrate or prevent the exercise of any lawful take of water, or frustrate the use or integrity of any nationally significant infrastructure, regionally significant infrastructure or other lawfully established structure, or disturb the spawning habitat of desired fish species during their spawning seasons, or disturb the roosting or nesting of indigenous birds and bats, or cause or exacerbate flooding or erosion, or if the activity disturbs an archaeological site, the accidental discovery protocol must be applied, and within ten working days after completion of the activity, any plant, equipment or machinery associated with the activity is removed from the bed, the surrounding bed is returned as near as practicable to its original channel shape, area, depth and gradient that existed prior to works and any debris associated with the activity are removed.

activity due to the higher risk of these activities resulting in the permanent loss of river extent and river values and disrupting the natural behaviour and hydrology of water bodies. Requiring a resource consent enables the activity to be assessed against key policy direction in the pLWRP, including direction to protect the natural character and instream values of water bodies from inappropriate use and development (IP-P9).

181. Policy direction seeks to enable the temporary diversion of water where it occurs outside of sensitive areas, does not impede fish passage, minimises the volume and rate of water diverted to the smallest extent practicable, and has no material adverse effects on water bodies and freshwater ecosystems. Resource consent applicants seeking to undertake longer term diversions must demonstrate how the activity will manage various effects, including those related to the introduction or spread of pests, legal public access, habitats of indigenous freshwater fish and threatened species, fish passage and stranding of fish and the extent to which the activity contributes to achieving mana whenua aspirations.

182. As discussed in section 8.4 of this chapter, policy direction relevant to the assessment of diversions within the beds of lakes and rivers in the Waitaki catchment (including Welcome Creek) is also contained in the FMU3 (North Otago FMU) chapter of the pLWRP.

11.3.2. Option 2: Additional restrictions including requiring resource consent for all diversions and stronger policy direction

183. Option 2 adopts a similar approach and structure to Option 1. However, it contains additional controls and restrictions for diversions within the beds of lakes and rivers. Option 2 removes the permitted activity pathway for all diversion activities within the beds of lakes and rivers regardless of location, scale and duration. As such, these diversions would require a resource consent as a discretionary (unless they are in Welcome Creek or prohibited by a Water Conservation Order as discussed above) and be assessed against the policy direction and outcomes in the pLWRP.

184. Diversions within the beds of lakes and rivers would be non-complying activities in outstanding water bodies and in habitats of threatened freshwater-dependent species. Policy direction for diversions within the beds of lakes and rivers would be amended so that these activities are avoided unless there are less than minor adverse effects on in-stream values of waterbodies.

11.4. Clause 3 consultation feedback

185. The key feedback from clause 3 parties on the provisions for diversions included:

a. Support for enabling temporary diversions within the beds of lakes and rivers.

b. Requests for permitted diversions for temporary works to include conditions ensuring dewatering is limited to the immediate area of the work, and stranded fish are salvaged.

c. Requests for clearer management of undesirable fish species with regard to diversions within the beds of lakes and rivers.

d. Requests for limits on the duration and distance of permitted diversions in the beds of lakes and rivers.

e. Feedback that the range of effects required to be considered for diversions does not clearly include the full range of effects that diversions may have on freshwater outcomes.

f. Concern that the provisions for floodwater diversions are impractical and would penalise farmers to taking steps to mitigate floodwaters.

g. Concern that the provisions for floodwater diversions may result in the drainage of wetlands, and do not appropriately manage the effects of associated discharges.

186. The following feedback was received from Aukaha with respect to diversions:

a. The range of effects required to be considered does not clearly include the full range of effects that diversions may have on freshwater outcomes.

b. The permitted activity provisions do not include sufficient controls of effects on scale and duration of activity, water quality and effects on indigenous species. Provision for permitted diversions for temporary works does not include a condition ensuring dewatering is limited to the immediate area of the work.

c. Reference to the purposes for which diversions will be enabled is needed in the policy to align with the permitted activity conditions in DAM-R8-PER1.

d. Clause 3 of DAM-P9 should also refer to minimising the duration of the diversion and more explanation is needed for what constitutes 'no material adverse effects'.

187. In response to clause 3 feedback (including Aukaha feedback), changes were made to the relevant policies to clarify how key adverse effects of diversions within the beds of lakes and rivers are to be managed, including those related to the passage of undesirable fish species, the duration and distance of diversions, the stranding of fish, and the extent to which activities contribute to mana whenua aspirations. Duration and distance limits were inserted into the conditions of the permitted activity rule for diversions within the beds of lakes and rivers to clarify the intended scope of the activity. Changes were also made to the diversion of floodwaters rule to ensure that associated discharges of floodwaters are within or from the same catchments, and removing the condition regarding the activity causing or exacerbating flooding given this will be difficult and impractical to determine compliance with.

11.5. Clause 4A consultation feedback

188. No specific clause 4A feedback was received on the diversion provisions. However, clause 4A feedback was received more broadly on the DAM chapter seeking:

a. Permitted activity conditions are reviewed against environmental outcomes and the attributes in Tables 4 and 5 of the pLWRP to check whether they address the appropriate range of effects on environmental outcomes.

b. Limits are included on permitted activities to ensure that consent will be required in sensitive locations and for large scale activities.

c. Permitted activity provision is removed for activities with potentially significant effects on the benthic environment or the natural form of a water body.

189. In response to the clause 4A feedback, the provisions were reviewed to ensure that they addressed the concerns raised above. No significant changes were made to the provisions

for diversions as it was considered that they addressed the appropriate range of effects on environmental outcomes. It was also considered that the permitted activity limits and restrictions in sensitive locations are appropriate for the provisions for these activities. As per other sub-topics, one minor amendment was made to DAM-P4 (which provides direction for resource consent applications for diversions) to address adverse effects on water quality and indigenous species more clearly and to align with changes to the IM chapter.

11.6. Effectiveness and efficiency assessment

190. Table 12 below identifies and assesses the environmental, cultural, social, and economic benefits and costs anticipated from implementing the provisions proposed for each option for the diversions sub-topic.

Table 12: Benefits and costs for the diversions sub-topic

	BENEFITS	COSTS
Option 1 (preferred option)	• Implementation of the provisions is expected to improve the health and well-being of water bodies and freshwater ecosystems and better provide for broader social values within communities. This is a social and environmental benefit. • Overall, Kāi Tahu values and the Kāi Tahu economy are likely to benefit by reducing the impacts of diversions on mahika kai species and providing better opportunities for Kāi Tahu to connect with the environment, engage in social and economic activities (i.e. harvest of mahika kai species) and exercise kaitiakitaka. • Providing a permitted activity pathway for some temporary diversions within the beds of lakes and rivers will enable activities that provide for the social, economic and cultural well-being such as in-stream works and customary uses. • Providing a permitted activity pathway for diverting	• Some temporary diversions will be permitted by the new rules which may contribute to cumulative adverse effects on in-stream values. • These temporary diversions can also have impacts on Kai Tāhu values and the Kai Tāhu economy. • More activities are likely to require resource consent which will create additional financial costs for resource consent applicants to ensure that the effects of their activities are properly managed. Non-notified and limited-notified consent application deposits are $3,000, while publicly notified application deposits are $25,000. These costs do not include the cost to prepare a consent application, nor any processing costs that may be incurred over and above the deposit. A summary of processing costs for previous divert water permit applications is outlined in section 3.1 of this chapter. Additional resource consents

	floodwaters will enable people and communities to safeguard their health and safety. • Improved plan structure, readability and alignment with other legislation (e.g., the Building Act 2004 and Building (Dam Safety) Regulations will provide greater clarity for plan users and reduce administrative burden and costs for consent applicants and ORC.	will also increase the administrative burden and financial costs for ORC in terms of processing, monitoring and enforcing these resource consents.
Option 2	• Option 2 is expected to improve the health and well-being of water bodies and freshwater ecosystems, better provide for broader social values within communities. • When compared to option 1, Kāi Tahu cultural values and the Kāi Tahu economy are likely to benefit under this option by further reducing the risk of adverse impacts of diversions on Mahika kai species and providing better opportunities for Kāi Tahu to connect with the environment, engage in social and economic activities (i.e. harvest of mahika kai species) and exercise kaitiakitaka. • Requiring resource consent for all diversions will enable a more holistic assessment of all relevant adverse effects against the outcomes of the pLWRP. • As above in terms of requirements for the provision of information to ORC, and improved plan structure, readability and alignment with other legislation.	• More activities than Option 1 are likely to require resource consent which will create additional financial costs for resource consent applicants to ensure that the effects of their activities are properly managed. Additional resource consents will also increase the administrative burden and financial costs for ORC in terms of processing, monitoring and enforcing these resource consents. • Financial costs and time associated with obtaining a resource consent may discourage some beneficial activities, such as those associated with establishing, maintaining and repairing infrastructure, habitat restoration and enhancement and customary uses.

191. Table 13 below assesses the effectiveness and efficiency of the proposed provisions in achieving the objectives.

Table 13: Effectiveness and efficiency of the proposed provisions in achieving the objectives.

	Effectiveness
Option 1 (preferred option)	• Option 1 is an effective option for achieving the relevant objectives in the pLWRP and to implement the NPSFM. Specific and clear direction for managing the adverse effects of diversions will assist in achieving the objectives of the pLWRP and NPSFM, particularly to give effect to Te Mana o te Wai. • Providing a permitted activity pathway for some diversion activities presents a degree of risk for achieving the objectives, particularly with regard to potential cumulative effects. However, given the breadth of the permitted activity conditions, including the restrictions on duration and distance of diversions within the beds of lakes and rivers, this risk is considered relatively low.
Option 2	• Option 2 is highly effective at achieving the relevant objectives in the pLWRP and to implement the NPSFM. Requiring resource consents for all diversions within the beds of lakes and rivers enables a broader consideration of adverse effects on the environment and an assessment of activities against the relevant objectives and policies in the pLWRP. This may result in consent conditions being applied, or the decline of resource consent applications, that result in the objectives in the pLWRP being achieved faster.
	Efficiency
Option 1 (preferred option)	• Option 1 is an efficient option for achieving the objectives. As shown in Table 12 above, the benefits associated with this option outweigh the costs. Additional resource consents will be required and, as a result, there will be increased costs for resource users and ORC through administrative, consenting, compliance and enforcement requirements. However, it is likely that these costs are justified by the improvement in water bodies and the associated benefits to local communities. • Efficiencies will be gained for consent applicants and ORC staff from clear direction and guidance for applying or and processing activities. Resource users will also have clarity on the types of activities that are anticipated by the Plan and the adverse effects that must be managed for each stage of an activity.
Option 2	• Option 2 would require significant regulatory costs for ORC and communities due to the requirement for resource consents for all new diversion activities. There are considerable costs associated with obtaining consents, complying with consent conditions and

	undertaking monitoring and enforcement for a large number of anticipated consents required. • Option 2 may also unnecessarily constrain activities with potentially less than minor adverse effects on water bodies and freshwater ecosystems, and discourage some beneficial activities, such as those associated with in-stream works, customary uses, environmental protection, restoration or enhancement. • Overall, the costs associated with requiring consent for all activities and the additional constraints on the uses of water and land which will, in turn, have considerable negative impacts on economic growth and employment, are considered to outweigh the overall net benefits gained.

192. Section 32(2)(c) of the RMA requires ORC to take into account the risk of acting or not acting if there is uncertain or insufficient information.

193. As discussed in section 3.2 of this chapter, there is limited information about the nature and extent of some diversion activities in the region. As such, there is a level of uncertainty regarding the full impacts of implementing Option 1. However, there is sufficient information about the current water quality and quantity issues and the associated environmental, social and cultural impacts in Otago. The deficiencies of the Water Plan for managing damming and diversion activities are also well understood. These circumstances warrant the implementation of a more restrictive regime. Overall, the information supporting Option 1 is suitably certain and sufficient that there is a minimal risk of acting.

11.7. Conclusion

194. The effectiveness and efficiency assessments have shown that, overall, Option 1 is a more effective and efficient way to implement the national direction and achieve the relevant objectives of the pLWRP than Option 2. Therefore, based on these assessments, Option 1 is considered the most appropriate way to achieve the objectives of the pLWRP.