

**Proposed Plan Change 4C
(Groundwater management:
Cromwell Terrace Aquifer)**

**to the
Regional Plan: Water for Otago**

**Officers' Report on
Decisions Requested**

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Abbreviations

MAL	Maximum Allocation Limit (previously Maximum Allocation Volume (MAV))
MAR	Mean annual recharge
NPSFM	National Policy Statement for Freshwater Management 2014
ORC	Otago Regional Council
Proposed plan change / plan change	Proposed Plan Change 4B (Groundwater management: Cromwell Terrace Aquifer) to the Regional Plan: Water for Otago
RMA	Resource Management Act 1991
Section 32 Evaluation Report	The evaluation report assessing alternatives, benefits and costs for proposed plan change 4C to the Water Plan as required by Section 32 of the RMA
SOE	State of the Environment (monitoring undertaken in accordance with Section 35(2) RMA)
Water Plan	Regional Plan: Water for Otago (operative at 1 May 2014)

Note: use of section/Section:

section	A reference to another section in this report. A reference to a section of the Water Plan.
Section	A Section of the RMA.

Note: text marking

Operative word / <u>notified word</u>	Notified change, showing change proposed from the Water Plan
Notified word / <u>amended word</u>	Amendment recommended in Officers' report

1. BACKGROUND

The National Policy Statement for Freshwater Management 2014 (NPSFM) requires the Otago Regional Council (ORC) to avoid over-allocation of freshwater, including groundwater resources, by setting allocation limits and making sure the freshwater objectives within the Water Plan give effect to the NPSFM objectives.

The Water Plan Objectives give effect to the NPSFM by recognising the need to provide for the water needs of Otago's communities and industries, while maintaining long term groundwater levels and water storage in the region's aquifers. The Water Plan achieves this through Policy 6.4.10, which establishes maximum allocation limits for aquifers and allows, where considered appropriate, for the setting of aquifer restriction levels.

Current groundwater management regime for the Cromwell Terrace Aquifer

The maximum allocation limit defines the volume of water that can be taken annually from an aquifer by consents. The maximum allocation limit for specified aquifers is set in Schedule 4A of the Water Plan. For aquifers not listed in Schedule 4A, such as the Cromwell Terrace Aquifer, the maximum allocation limit is currently determined by default as 50% of mean annual recharge.

Fifty percent of the Cromwell Terrace Aquifer's mean annual recharge is calculated as 1.2 Mm³/yr. The combined annual volume of groundwater allocated in existing resource consents is estimated to be around 1.7 Mm³/yr. Therefore, no further groundwater can be allocated from the aquifer.

In 2012 ORC carried out a review of the aquifer's hydrology and monitoring data. The study report concludes that the aquifer is in dynamic equilibrium with Lake Dunstan and compensates for increased groundwater extraction with increased infiltration of lake water. The report recommends setting a maximum allocation limit of 4 Mm³/yr in Schedule 4A.

Key aspects of the proposed plan change

Proposed Plan Change 4C (Groundwater management: Cromwell Terrace Aquifer) proposes to set a maximum allocation limit of 4 Mm³/yr for the Cromwell Terrace Aquifer in Schedule 4A of the Water Plan. This aquifer is currently shown in Map C3 of the Water Plan Maps.

The maximum allocation limit will apply to new groundwater takes that are not permitted under the provisions of the Water Plan.

Notification process

The proposed plan change was publicly notified in the Otago Daily Times on Saturday 16 August 2014 and submissions closed on Friday 12 September 2014. A total of 8 submissions were received within the formal submission period.

The *Summary of Decisions Requested*, which requested further submissions, was notified on Saturday 27 September 2014, with further submissions closing on Friday 10 October 2014. There were 3 further submissions received.

The *Summary of Decisions Requested - Submitters and Further Submitters*, which is attached as Appendix 1, shows decisions requested in all submissions and further submissions.

The purpose of this report

This report considers decisions requested by submitters and further submitters. Provisions with amendments that did not receive submissions are not discussed, so these changes should be approved as proposed, subject to any minor changes for consistency purposes.

Documents referred to in this report

This report should be read in conjunction with the following documents:

- *Proposed Plan Change 4C (Groundwater management: Cromwell Terrace Aquifer) to the Regional Plan: Water for Otago (16 August 2014).*
- *Proposed Plan Change 4C (Groundwater management: Cromwell Terrace Aquifer) - Section 32 Evaluation Report (16 August 2014)*
- *Proposed Plan Change 4C (Groundwater management: Cromwell Terrace Aquifer) - Summary of Decisions Requested - Submitters and Further Submitters (25 October 2014) (Appendix 1).*

2. A NEW MANAGEMENT REGIME

This section provides recommendations regarding specific requests about the proposal to setting a tailored maximum allocation limit for the Cromwell Terrace Aquifer.

2.1 Proposed Maximum Allocation Limit

The maximum allocation limit proposed for the Cromwell Terrace Aquifer is 4 Mm³/yr.

For detail of the submissions received relating to this matter, refer to:

<i>Provision code</i>	<i>Provision</i>	<i>Page(s) of Proposed Plan Change 4B</i>
1	Whole of plan change	-
2	Schedule 4A	16

2.1.1 Main Issues

Most submissions were in support of the proposal to set a MAL of 4.0 Mm³/yr for the Cromwell Terrace Aquifer in Plan Schedule 4A. However, one submission raised the following issue:

- Ensure the proposal does not compromise the levels of Lake Dunstan.

2.1.2 Recommendation

Make no amendment to Schedule 4A, as notified.

2.1.3 Reasons

- **Meeting the purpose of the Act and the NPSFM and Water Plan Objectives**

The plan change proposal allows the community to provide for their well-being and provides scope for further economic growth, while avoiding permanent aquifer damage or adverse effects on any existing value or use supported by the aquifer.

- **Reflecting community aspirations and sound science**

The plan change proposal to set a MAL of 4.0 Mm³/yr for the Cromwell Terrace Aquifer in Schedule 4A was developed following scientific investigation and in accordance with the RMA Schedule 1 consultation requirements.

A wide range of matters were taken into consideration when developing a proposed maximum allocation limit, including the physical characteristics of the aquifer and the various environmental, social and economic values that are supported by the aquifer. The proposed maximum allocation limit was discussed with members of the local and wider community during a workshop in Cromwell in March 2014 and was included in a Consultation Draft for the proposed Plan Change released in June 2014. In both instances consulted parties generally expressed support for the proposal.

- **Effect on the lake levels of Lake Dunstan**

If 4.0 Mm³/yr were to be allocated from the Cromwell Terrace Aquifer, the estimated mean rate of water infiltration from Lake Dunstan into the aquifer caused by consented groundwater takes would be around 127 l/s, or 0.025% of Lake Dunstan's mean flow rate of 510,000 l/s. Therefore, the proposed maximum allocation limit is not expected to have a significant effect on the lake levels of Lake Dunstan.

2.2 Evaluating the need of aquifer restriction levels

Policy 6.4.10AB allows for the setting of restriction levels in Plan Schedule 4B for the purpose of maintaining groundwater levels and protecting water quality and interaction with other water bodies. Restriction levels also protect the aquifer from over-depletion by restricting the taking of groundwater during extended periods of low recharge, and by sustainably managing groundwater taking in localised areas of high demand.

The plan change as notified does not propose to set restriction levels for the Cromwell Terrace Aquifer.

<i>Provision code</i>	<i>Provision</i>	<i>Page(s) of Proposed Plan Change 4B</i>
3	<i>Alternative approaches</i>	-

2.2.1 Main issue

The proposal not to include aquifer restriction levels for the Cromwell Terrace Aquifer was supported in most submissions. However, one submission raised the following issue:

- Provide protection for existing hydro-electric operations.

2.2.2 Recommendation

Make no amendment to the plan change, as notified.

2.2.3 Reasons

- **No known drawdown issues**

Recent investigations by ORC scientists have indicated that the risk of water table decline and permanent aquifer damage is negligible due to the aquifer's high transmissivity and permeability and its strong hydrological connection to Lake Dunstan.¹ There are currently no known issues with generalised or localised water table decline despite the presence of a large number of bores located across the aquifer.

¹ The operating level of Lake Dunstan must be maintained by Contact Energy Ltd between 193.5 m above datum and 194.5 m above datum under the conditions of Resource Consent 2001.385.V2 – Water permit to dam the Clutha River approximately 1.5 kilometres upstream from Clyde.

The potential for bore interference is considered through the consent decision process.

- **Limited effect on existing hydro-electricity generation**

The magnitude and timing of stream depletion effects on Lake Dunstan resulting from groundwater abstraction on the Cromwell Terrace depends on a wide range of factors which include the hydraulic properties of the aquifer as well as the location and rate of pumping. This may limit the effectiveness of using restriction levels under Policy 6.4.10AB to protect hydro-electric operations on the main stem of the Clutha.

Concerns around impacts of new groundwater takes from the Cromwell Terrace Aquifer on water levels in the main stem of the Clutha can be more effectively dealt with through the resource consent decision-making process. Under the operative Water Plan, ORC has the ability to consider hydro-power companies as an affected party in consent decision-making processes.

Resource consent conditions can be imposed if the groundwater take has a high degree of hydraulic connection to the Clutha or Kawarau Rivers, restricting the taking of water during periods of low surface flows in the Upper Clutha catchment.²

- **Linking aquifer restrictions to another water body**

Schedule 4B links the restrictions to take water from an aquifer to specified groundwater levels within that aquifer. The current setup of Schedule 4B does not allow for restrictions on groundwater takes from the Cromwell Terrace Aquifer to be linked to the lake levels and/or flow levels of surface water bodies.

Setting aquifer restrictions for groundwater takes from the Cromwell Terrace Aquifer based on specified lake and/or flow levels in other water bodies in order to protect hydro-electricity generation operations on the Clutha would require amending Schedule 4B and the policy framework in Chapter 6, which is beyond the scope of the current Plan Change.

² Groundwater takes that are considered to have a high degree of hydraulic connection to the Clutha or Kawarau Rivers are those located within 100 m of these surface water bodies and those that have a stream depletion effect of 5 litres per second or more.

3. MATTERS NOT ADDRESSED IN THIS PLAN CHANGE

3.1 Matter beyond the scope of the plan change

Three submissions requested decisions on various matters beyond the scope of the Plan Change.

<i>Provision code</i>	<i>Provision</i>	<i>Page(s) of Proposed Plan Change 4B</i>
4	<i>Beyond the scope of the plan change</i>	-

3.1.1 Main issues

The following issues were raised:

- Allow for surface water takes
- Monitor the effects of a maximum allocation limit of 4.0 Mm³/yr for the Cromwell Terrace Aquifer

3.1.1 Recommendation

Make no amendment to address matters beyond the scope of this plan change.

3.1.2 Reasons

- **Allocating surface water**

This plan change does not address surface water takes. Any issues around allocating surface water would need to be managed through a separate plan change.

- **Monitoring the effects of the proposed change**

Currently, the ORC monitors one bore (F41/0300) on the Cromwell Terrace as part of its State of the Environment (SOE) monitoring program. This bore is located on private land at the corner of Sandflat Road and SH6 (Highland Park) and has been monitored since 2011, with water quality samples taken and groundwater levels measured every 3 months.

The ORC is in the process of upgrading the SOE network and eventually a new monitoring bore with a continuous water level data logger will be installed on public land on the Cromwell Terrace. This new bore will further assist with monitoring groundwater level fluctuations and will assist with targeting any issues in regards to any effects groundwater abstraction may have on the aquifer.