Summary of feedback received

Community Consultation 2 – Options

Development of Proposed Plan Change

Water quantity: Arrow catchment and Wakatipu Basin aquifers

April 2018

1. Introduction

The Regional Plan: Water for Otago (the Water Plan) sets the framework for managing the amount of water in catchments and aquifers in Otago. The Otago Regional Council is assessing the amount of water that is to remain in the Arrow catchment, its connected groundwater and in the Wakatipu Basin aquifers.

Consultation with the community on this assessment began in June 2017 and initially sought to understand what is important about water to the community. In December 2017, we presented several water management options to the community and invited their feedback. This report summarises the feedback we received on those water management options.

1.1 Purpose of consultation

In this second stage of consultation, we sought community feedback on a range of options for managing the amount of water in the Arrow catchment and Wakatipu Basin aquifers.

We invited comment on management options as shown in Appendix A:

Surface water

- A primary minimum flow for the Arrow catchment;
- A primary allocation limit for the Arrow catchment, and
- A supplementary allocation minimum flow for the Arrow catchment.

Groundwater

- How groundwater in ribbon aquifers could be identified as surface water; and
- For non-ribbon aquifers, setting maximum allocation limits.

1.2 Consultation process

Community drop-in sessions enabled people to view and discuss the options. We held sessions at each of the following locations in December 2017:

- Arrowtown (2 meetings on 7 December)
- Frankton (1 meeting on 8 December)

Each session provided a range of information such as:

- Posters illustrating the plan change development process, including results of previous consultation exercises, such as “dotmocracy”
- General background information
- Maps of the Arrow catchment and Wakatipu Basin showing fish species, hydrology, and the location of water takes and land use
- Options for surface water primary and supplementary minimum flow and allocation limits
- Options for groundwater management
- Science report update on Arrow catchment hydrology
- Wakatipu Basin groundwater report and updates
- Feedback form
- Answers to Frequently Asked Questions (FAQ) on the Water Plan.

Thirty-nine people attended the drop-in sessions over these days, most taking feedback forms to complete before the consultation period closed on Friday 26 January 2018.

We accepted feedback via the feedback forms at the drop-in sessions, online, via email, by letter, verbally at the consultation sessions and at other times, on maps and through other resources. We received 24 written feedback forms alongside what people told us in person at the drop-in sessions.

1.3 What happens with the feedback received?

We will analyse the feedback and consider the options in light of it and the science, economic, social and cultural assessments, effects on the environment and any other relevant information. The next stage is to develop the preferred option for the draft of the plan change.

1.4 Feedback summary - what we heard

Several key messages from the feedback came through consistently or clearly. These are set out below and provide background to the selection of options that were made:

1 Periphyton growth risk must be avoided in a river so highly appreciated for its natural state by the community and visitors.

2 Periphyton risk assessment should consider nutrient status, low flow duration and time for recovery, not just low flow occurrence.

3 Concerns were raised over the short data set used in developing the options.

4 A lower minimum flow than those identified in the options would allow for security of current demand and projected development.

5 Whilst water storage is desirable to improve surety, opportunities are limited, as were options for alternative supply sources i.e. Lake Wakatipu, or the Kawarau River.

6 Water users such as golf courses are particularly susceptible to adverse effects if security of supply was to drop.

7 Given the development growth in the Wakatipu Basin and changing water demand and use, district planning and water planning need to have regard to one another.

8 A reduction in water surety will have an economic impact on tourism. This needs to be addressed in detail in the assessment.

9 Concern about water quality issues in the catchment and Wakatipu Basin, including groundwater and Lake Hayes recharge.

2. Looking closer at the feedback

We asked a series of questions relating to the options for primary minimum flow Here's a summary of what we heard:

2.1 Surface water management: Primary minimum flow options

What we asked:

Select your preferred option for the minimum flow, that will apply to all those in primary allocation, and be measured at the flow recorder at Cornwall St:

- Option 1 = 800 l/s (0.8 cumecs)
- Option 2 = 900 l/s (0.9 cumecs)
- Option 3 = 1,000 l/s (1 cumec)

Do you have any comments to make on the options?

What we heard:

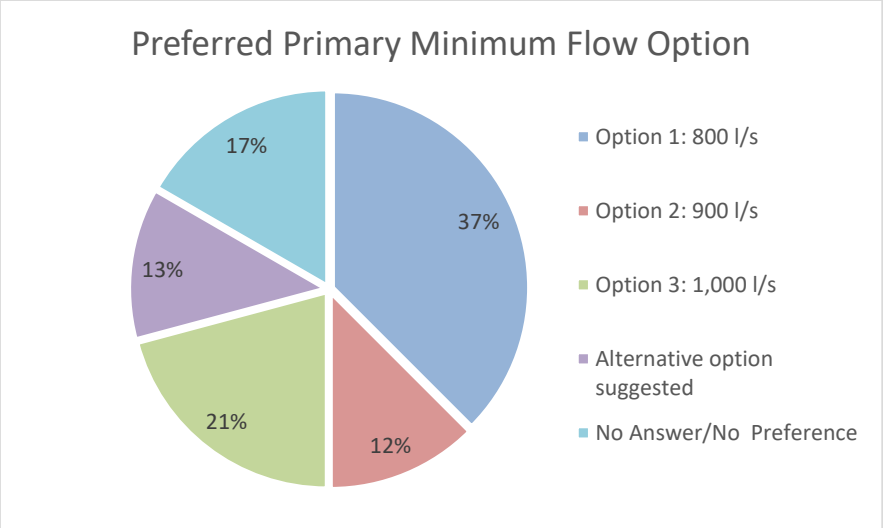


Figure 1: Preference for primary minimum flow options

37% of respondents identified 800 l/s (Option 1) as most appropriate. Reasons given were:

- The minimum flow of 800 l/s is supported as it provides good reliability of supply to existing users.
- A lower minimum flow can provide summer and shoulder-season flushing water from the Arrow to address any degradation of Lake Hayes.
- The lower the minimum flow, the better it will provide for good supply security. There was concern that the options potentially underestimate demand for water, as deemed permits are replaced, and a diversity of use occurs.

12% of respondents identified 900 l/s (Option 2) as most appropriate. Reasons given were:

- This will ensure a suitable balance is struck between water quality/flow for recreational river users while also enabling water use.
- 900l/s is appropriate to manage the potential for the proliferation of nuisance algae.

21% of respondents identified 1,000 l/s (Option 3) as most appropriate. Reasons given were:

- This option will safeguard the river's health, best support the management of nuisance algae and support fish habitat (brown and rainbow trout, and native species including macroinvertebrates).
- Land-based recreation activities, which have a passive economic value, will be supported by this minimum flow. Arrowtown benefits from the aesthetics of a natural river so close.
- This minimum flow will retain as natural a hydrology as practical and represents 72% of naturalised MALF.

17% of respondents expressed no answer or preference. Reasons given were:

- There is not enough information easily accessible to make useful comment.

- Those taking for domestic water supply are not concerned as the minimum flow would not affect them.

13% of respondents identified a minimum flow less than 800 l/s as most appropriate.

Although not provided as options, alternative minimum flows as low as 650 l/s were suggested. The reasoning includes:

- Doubt over the strength of scientific, cultural, or social evidence for a minimum flow above 750 l/s.
- The data record shows unstable flows, and hence long filamentous algae is unlikely to be a significant nuisance. There needs to be an assessment of risk at low flows modelled on duration of outbreak relative to reduction in risk when flow increases.
- Adverse impacts on introduced fish species seem to occur below 600l/s.
- The three minimum flow options presented are overly cautious and will increase the number of days when full rate of take cannot be accessed.
- There will be significant financial risk to a number of Arrow Irrigation Company shareholders if a minimum flow is set at 700 l/s or higher.
- Should the Arrow Irrigation Company race run dry it takes days to recharge, which extends the effects of a minimum flow restriction.
- Golf courses are a significant economic contributor and would be impacted by any restriction of water delivery.
- Opportunities for alternative supply and storage is limited.

Other comments that were raised:

- Consider a minimum flow option higher than 1,000 l/s for the rainbow trout spawning period, May to October.

2.2 Surface water management: Supplementary minimum flow options

What we asked:

Select the corresponding supplementary option associated with your preferred option for the primary minimum flow, which will apply to the first block of supplementary allocation and will indicate a preference in allocation block size.

- Option 1A (allocation block of 250 l/s) SMF = 1,050 l/s (1.05 cumecs)
- Option 1B (allocation block of 500 l/s) SMF = 1,200 l/s (1.2 cumecs)
- Option 2A (allocation block of 250 l/s) SMF = 1,150 l/s (1.15 cumecs)
- Option 2B (allocation block of 500 l/s) SMF = 1,200 l/s (1.2 cumecs)
- Option 3A (allocation block of 250 l/s) SMF = 1,250 l/s (1.25 cumecs)
- Option 3B (allocation block of 500 l/s) SMF = 1,200 l/s (1.2 cumecs)

The A options represent a figure obtained by adding the smaller allocation block to the associated primary minimum flow; B represents the Water Plan default of the larger allocation block added to an assessment of the actual take.

What we heard:

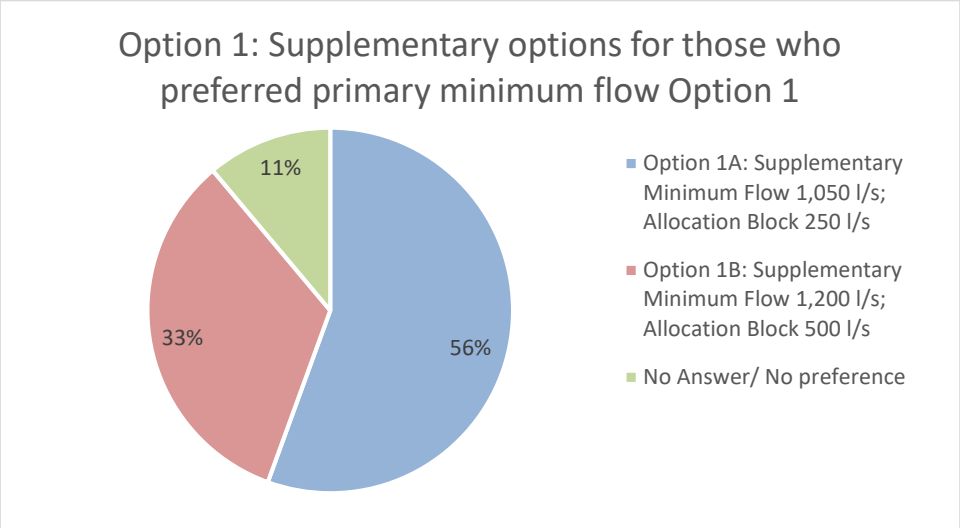


Figure 2: Preference for supplementary minimum flow options among those identifying Option 1

56% of respondents who preferred Option 1 for primary minimum flow identified Option 1A as most appropriate. Reasons given were:

- It will provide good reliability of supply to existing users.

33% of respondents who preferred Option 1 for primary minimum flow identified Option 1B as most appropriate. Reasons given were:

- More information is needed on how these options were decided.
- Security for irrigation is important in the Wakatipu Basin from the Arrow.

11% of respondents who preferred Option 1 for primary minimum flow expressed no answer or preference

- *No comments were made specific to this option.*

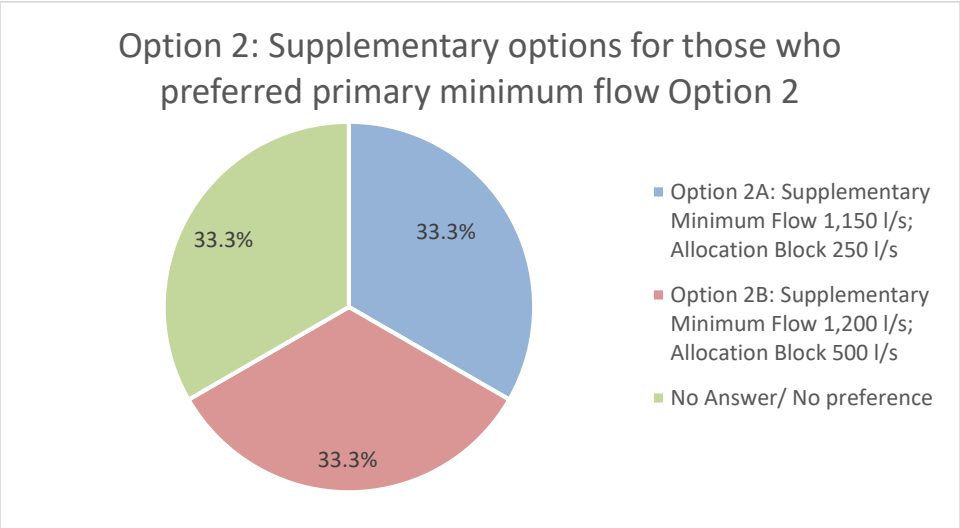


Figure 3: Preference for supplementary minimum flow options among those identifying Option 2

33.3% of respondents who preferred Option 2 for primary minimum flow identified Option 2A as most appropriate. Reasons given were:

- Surety of supply is needed.
- A smaller supplementary block added to the appropriate primary minimum flow will promote efficient allocation of the water resource.

33.3% of respondents who preferred Option 2 for primary minimum flow identified Option 2B as most appropriate. Reasons given were:

- It is difficult for the layperson to answer this.

33.3% of respondents who preferred Option 2 for primary minimum flow expressed no answer or preference.

- *No comments were made specific to this option.*

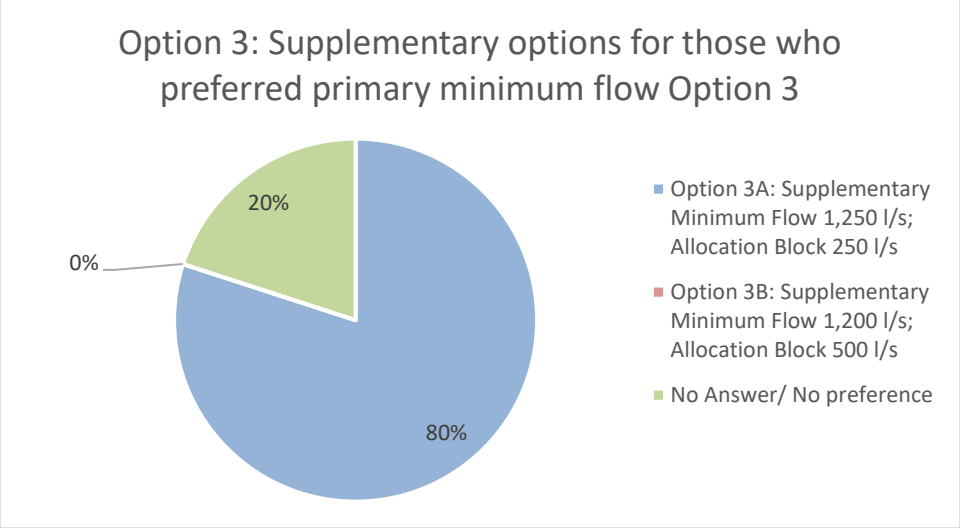


Figure 4: Preference for supplementary minimum flow options among those identifying Option 3

80% of respondents who preferred Option 3 for primary minimum flow identified Option 3A as most appropriate. Reasons given were:

- It will promote efficient allocation of water use and provide good reliability of supply to existing users.
- The smaller supplementary block gives finer resolution and maintenance of natural flow variability.
- The higher supplementary minimum flow would not impact current users.
- It would support the existing high level of flow variability.

20% of respondents who preferred Option 3 for primary minimum flow expressed no answer or preference. Reasons given were:

- Without more hydrological modelling, there is no convincing rationale for the larger block size.

No respondents identified Option 3B as most appropriate.

A number of responses didn't identify a preferred option from the three options set out. These additional responses are set out below:

13% of respondents sought a primary minimum flow of 650l/s and identified a supplementary block size of 500 l/s as most appropriate. Reasons given were:

- Supports a high level of surety.
- Risks associated with a minimum flow are to economics rather than scientific, social, or cultural impacts on the river.
- The following method was suggested by those who would like to see a lower minimum flow associated with a larger supplementary block size - min flow 650 l/s + 500 l/s = 1,150 l/s.

12% of respondents expressed no answer or preference about primary or supplementary minimum flow. Reasons given were:

- Options are not well enough understood to comment.

4% of respondents expressed no preference about primary minimum flow but identified a supplementary block size of 250 l/s. Reasons given were:

- The smaller supplementary allocation block will avoid minimum flows being reached earlier by reducing competition among all users.

2.3 Surface water management: Setting a primary allocation limit

What we asked:

Select the preferred option between these two:

- Option 1: A primary allocation limit of 700 l/s is set in Water Plan Schedule 2A
- Option 2: The status quo, where the primary allocation limit is determined as 50% of 7-day MALF (currently this would be about 720 l/s)

What we heard:

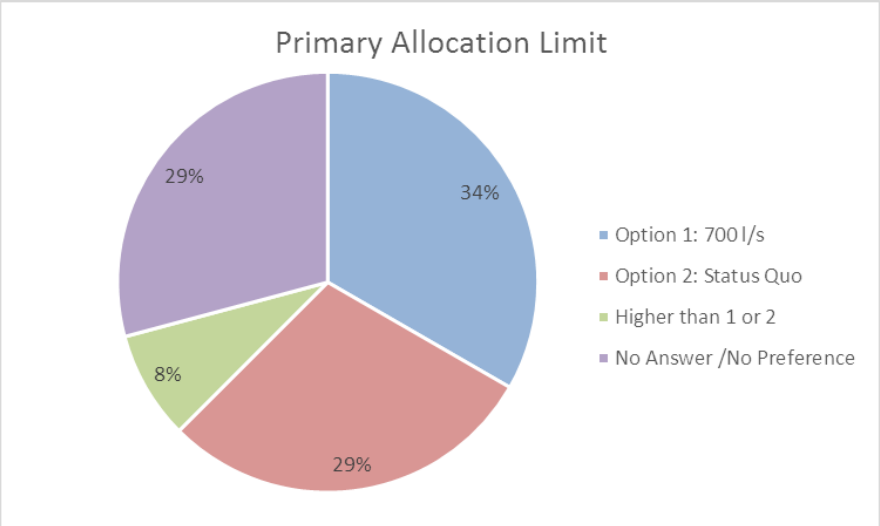


Figure 5: Preference for primary allocation limit options

34% of respondents identified a scheduled primary allocation limit of 700 l/s (Option 1) as most appropriate. Reasons given were:

- Sufficient allocation needs to be provided for the replacement of deemed permit existing rights.
- Primary allocation status must be retained by existing users. 700 l/s reflects the actual take history.

29% of respondents identified the status quo (Option 2) as most appropriate. Reasons given were:

- The existing default policy in the Water Plan is well understood and is supported.
- There is little material difference between using the default policy and setting the allocation in the Plan.
- The status quo allows for a flexible limit, to reflect any arising data trends and climate change influences.

29% of respondents expressed no answer or preference. Reasons given were:

- Primary takers can ration available water in a regime or through a group, so no strong views are expressed on the primary allocation limit options.

8% of respondents preferred an allocation limit that is higher than the default, set in the Plan's schedule or calculated on a case-by-case basis. Reasons given were:

- The primary allocation limit is both too low and overly simplistic.
- It was suggested that the primary allocation limit should be different at different river flows.
- Concern was expressed that the proposals for primary allocation limit would only provide for existing primary users, not further primary takes.

2.4 Groundwater management– ribbon aquifer water management approach.

What we asked:

Select the preferred option between these two:

- Option 1: Treat all water in the mapped aquifer as surface water.
- Option 2: The status quo arrangement in the Water Plan.

What we heard:

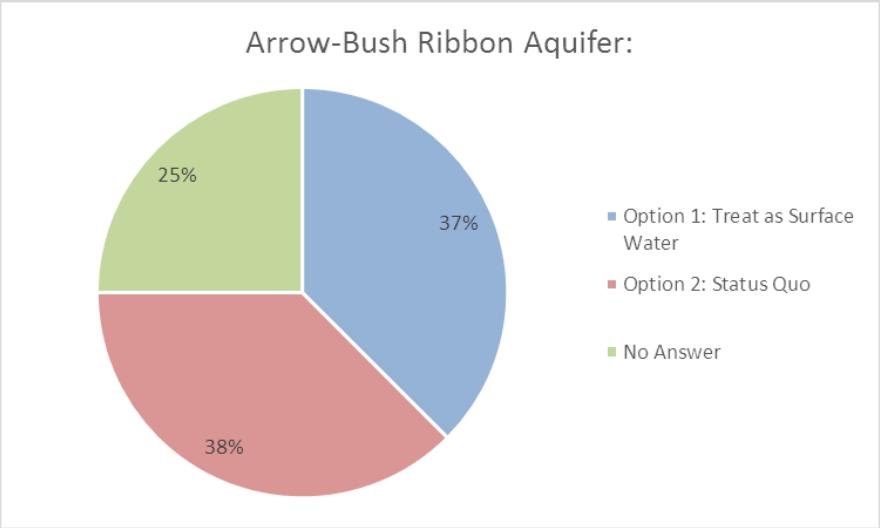


Figure 6: Groundwater management options Arrow-Bush Ribbon Aquifer

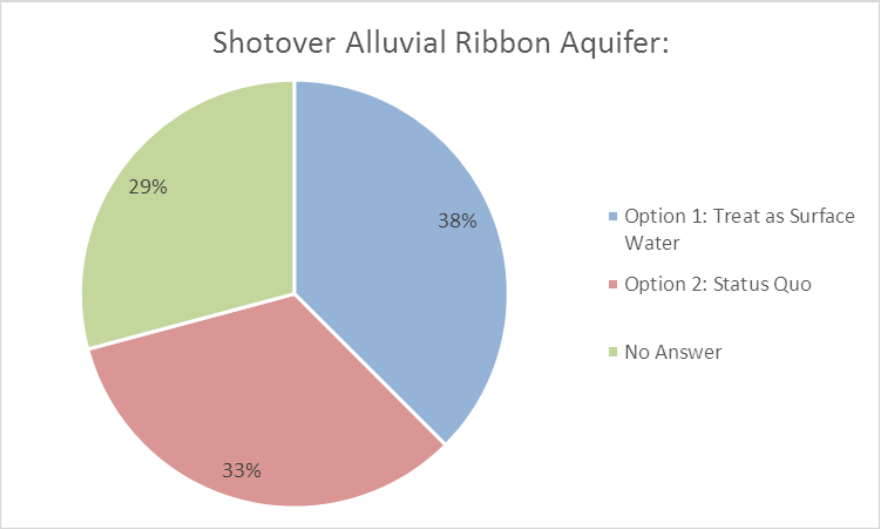


Figure 7: Groundwater management options Shotover Ribbon Aquifer

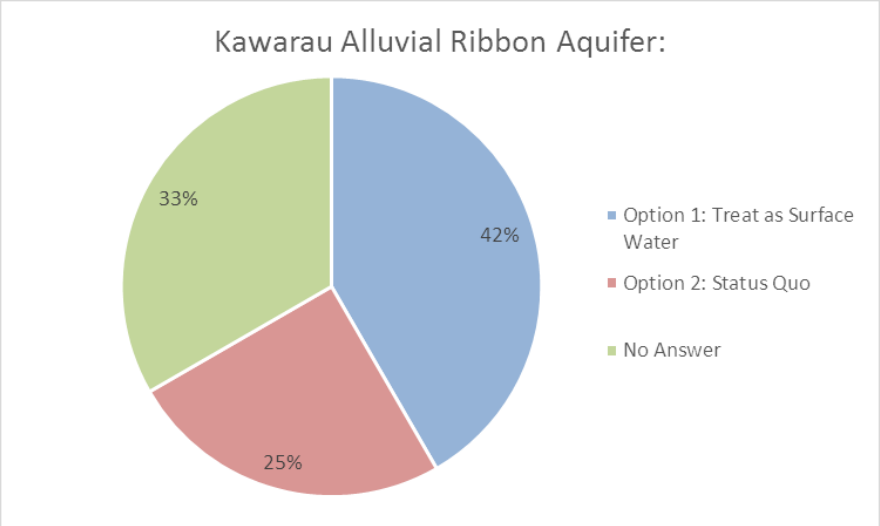


Figure 8: Groundwater management options Kawarau Ribbon Aquifer

39% of respondents identified Option 1 as most appropriate over all three aquifers. Reasons given were:

- This option considers the need for surety.
- Water sources should be carefully monitored for quantity.
- There is support for minimum flow restrictions to apply on hydraulically connected stream-depleting groundwater.
- Acknowledgement that this process will set up the plan for when Kawarau and Shotover plan changes are undertaken, until then no minimum flow will apply.

32% of respondents identified Option 2 as most appropriate over all three aquifers. Reasons given were:

- The status quo for managing the alluvium river aquifers has been demonstrated to be effective to date.

28% of respondents expressed no answer or preference.

- *No specific comments.*

2.5 Groundwater management - A fixed maximum allocation level or status quo (default).

What we asked:

Select the preferred option between these two:

- Option 1: Establish a fixed maximum allocation limit in Schedule 4A.
- Option 2: The status quo arrangement in the Water Plan. This is where calculations of recharge occur with each groundwater take consent application on a case-by-case basis.

What we heard:

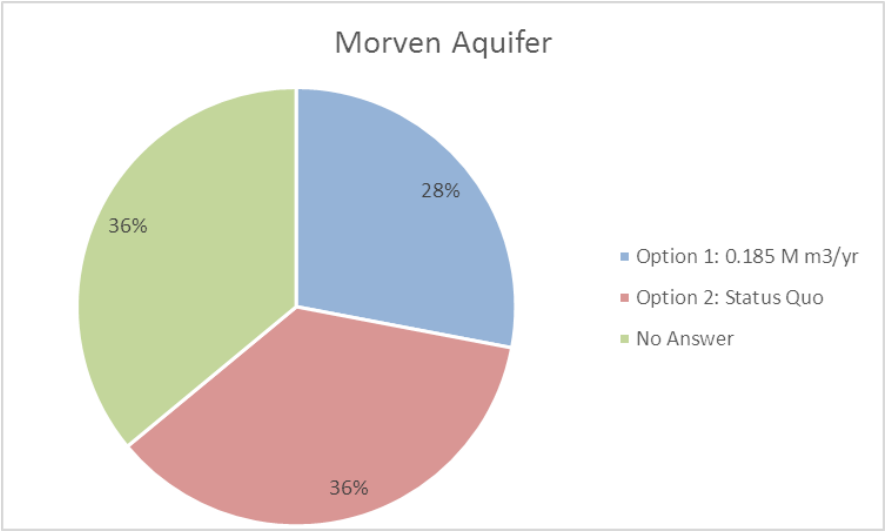


Figure 9: Setting maximum allocation limit, Morven Aquifer

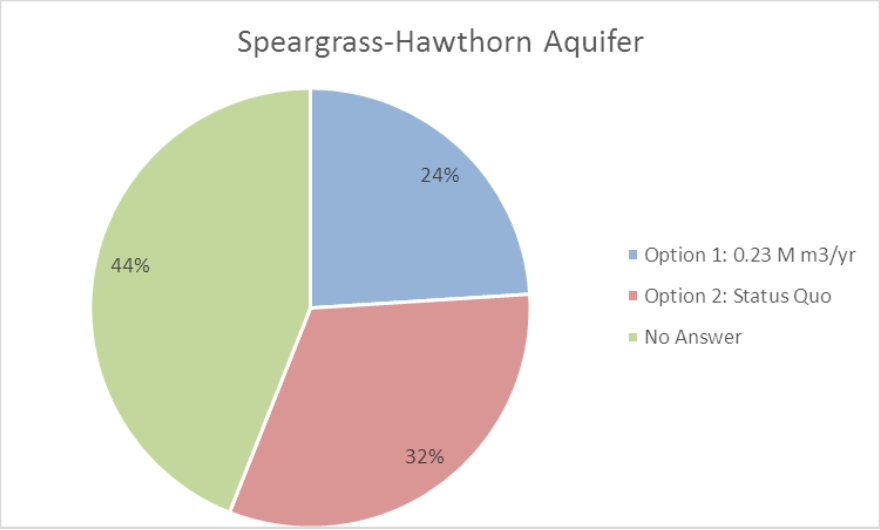


Figure 10: Setting maximum allocation limit, Speargrass-Hawthorn Aquifer

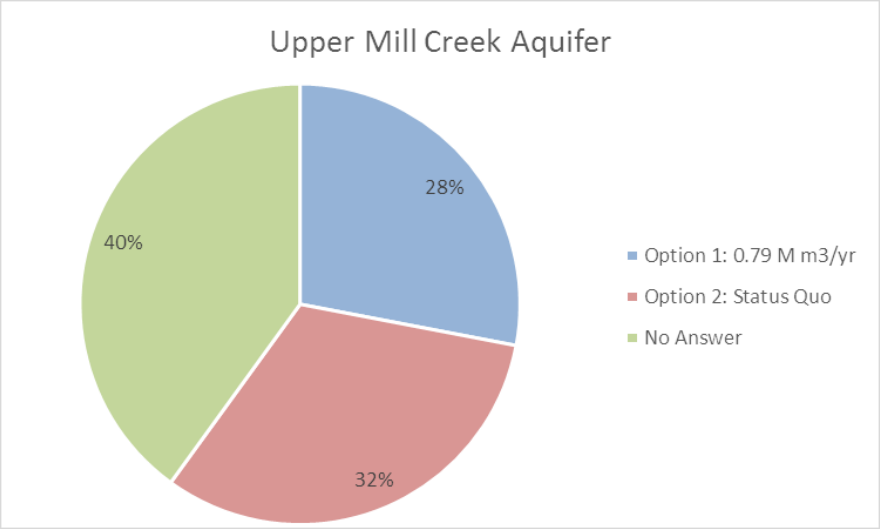


Figure 11: Setting maximum allocation limit, Upper Mill Creek Aquifer

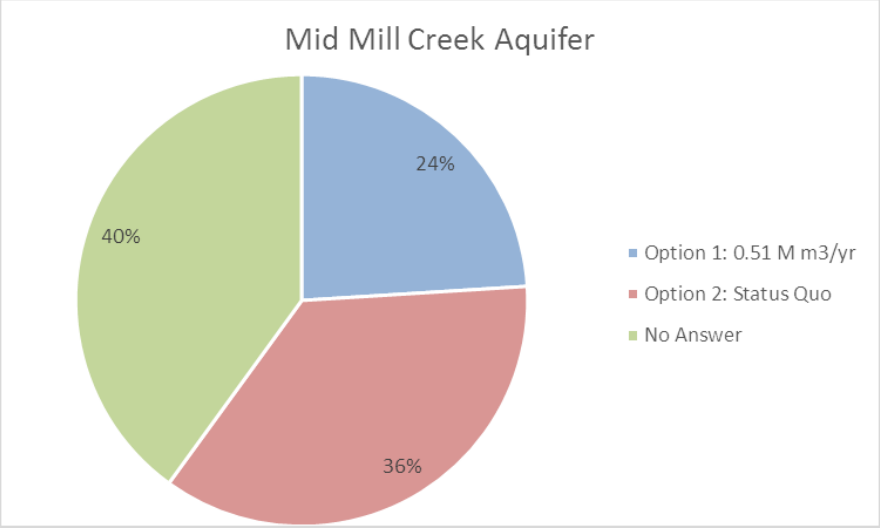


Figure 12: Setting maximum allocation limit, Mid-Mill Creek Aquifer

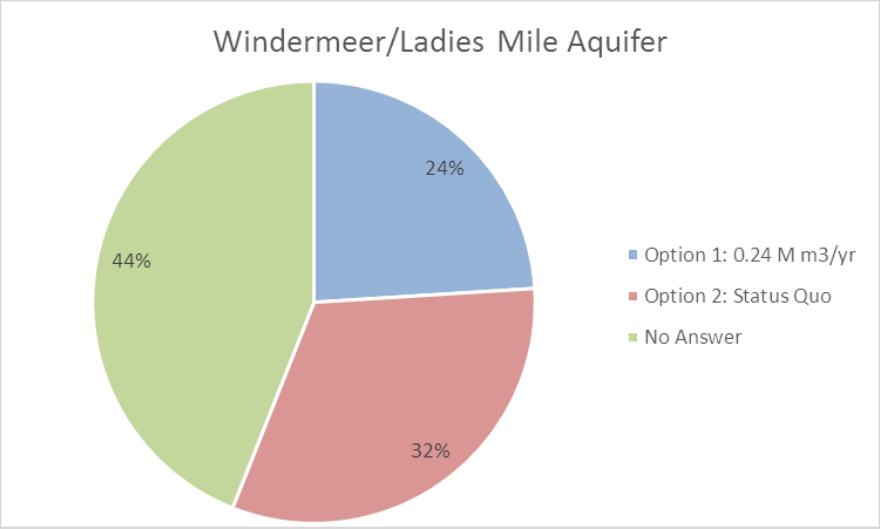


Figure 13: Setting maximum allocation limit, Windemeer/Ladies Mile Aquifer

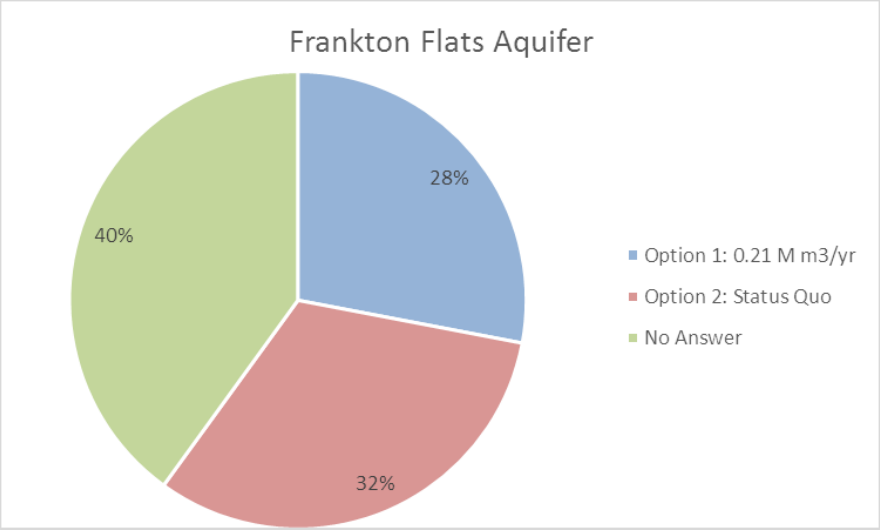


Figure 14: Setting maximum allocation limit, Frankton Flats Aquifer

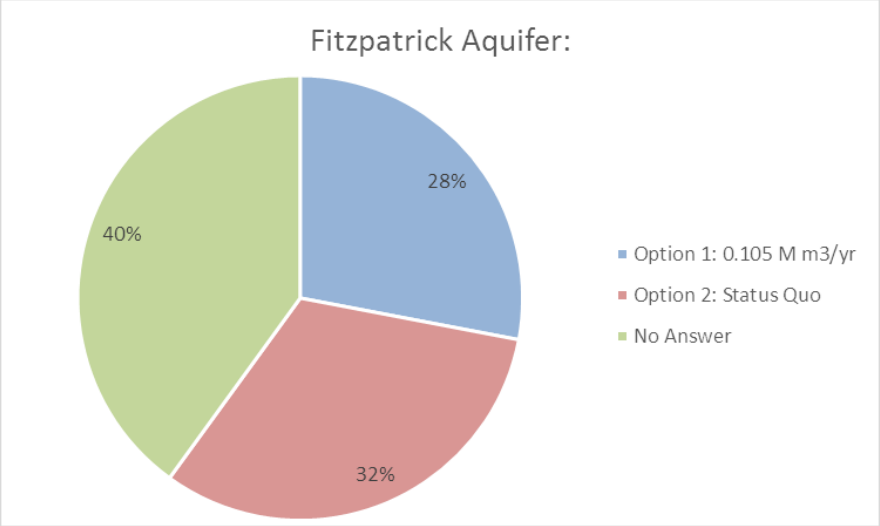


Figure 15: Setting maximum allocation limit, Fitzpatrick Aquifer

40% of respondents overall expressed no answer or preference.

- *No specific comments.*

33% of respondents identified Option 2 (status quo) as most appropriate, over all aquifers. Reasons given were:

- The flexibility of case-by-case basis calculation, until an aquifer's properties are rigorously determined and potential climate change impacts are better understood is desirable.

26% of respondents identified Option 1 (a figure set in Schedule 4A) as most appropriate, over all aquifers. Reasons given were:

- A fixed number avoids frequent reviews of limits where recharge rates in the future fall and will avoid levels compromising the aquifer.
- It is clearer and more accountable.

3. Tell us about anything you think we have missed?

A number of respondents provided additional feedback to that requested as part of management options. This feedback has been grouped in the following headings.

More work suggested:

- Take into account the potential long-term impacts of the additional dwelling capacity and accelerated population growth across the Arrow catchment and Wakatipu Basin. Consider relevant growth strategies and work more closely with QLDC.
- Recognise and account for the trend away from rural production within the Basin, whilst acknowledging much of the economic activity relies on the rural nature of the Basin.
- Potential economic effects should consider a forecast in tourism growth, and a review of the value spent by the visiting population should be undertaken to avoid underestimating the effect.
- Carefully re-evaluate consented takes after permits expire, ensure compliance of water metering data in times of restriction, and improve monitoring of river quality / flows / usage.
- Assess the cumulative effects of low-flow restrictions on golf courses, particularly in light of the expansions currently planned and the limitations on storage.
- Quantify feasible alternative options to increase surety of water supply, including availability of water in the Basin aquifers.
- Recharge from irrigation and races is contributing to aquifers and should be considered in their management.

Arrow flow monitoring, observations, and data records:

- Review the flow and take recording and its sufficiency for this plan change as a concern was expressed that the data set is short.
- Consider a better recorder location as the recorder is upstream of significant takes, losses, and gains to flows.
- No evidence of high water temperatures could be a lack of data.

- Photos taken at various flows recently show that the river appears healthy. It runs clear (apart from disturbance by swimmers) and there has been no sign of algal bloom despite recent heat.

Development in the Wakatipu Basin – water user aspirations:

- In order to enable diversification and resilience, the Arrow catchment has the potential to support allocations of further water to new, efficient users, without adverse effects.
- Allocation should be fair, take into account efficiency of use and uses that are non-consumptive.
- Some aquifer areas are proposed to be more intensively developed as rural lifestyle zoning through the district plan, and hence further pressure on water supply will be experienced.

Miscellaneous:

- The Arrow is one of the few catchments in Central Otago where historical pressure on water resources has not been pushed to extreme levels. It is hoped that the plan change process will be efficient and beneficial for all parties.
- Ensure the Arrow-Bush Ribbon Aquifer is adequately managed in regard to quality, consider fencing recharge zone off.
- Piping water from the Kawarau will never be an economically viable option for big users.

Anything important ORC may have missed:

- Pastoral farming makes an indirect contribution particularly towards maintaining highly valued amenity and landscape values.
- Arrow Irrigation Company advised they are considering options to manage their customer base and water demand needs. They highlighted the following practical problems / restrictions: the length of time to recharge a dry race, the dependence on race water for stockwater and firefighting, and the inability of the infrastructure to supply water to some users whilst restricting others.
- Loss of greens, due to insufficient water availability puts golf revenue streams at risk, in the short term and also in the longer term due to reputational damage. Consideration of financial loss must be addressed in the economic study.
- A benefit of using irrigation water for golf course amenity gardens and ponds was that it takes pressure off the public potable scheme in summer.
- Lower bore levels this year coincided with fields being irrigated all day long. Irrigation should be limited to the hours of night, this would be more efficient.
- The analysis associated with this plan change should consider the impact of residual flows.
- Nutrients need to be managed at the same time as flows.

Appendix A
The diagrams from the feedback forms

Managing surface water in the Arrow catchment:

Setting the primary and supplementary minimum flows for the Arrow catchment:

Option 1

800 l/s + **Sub option 1A**: Supplementary minimum flow **1050 l/s**; Allocation block **250 l/s** or **Sub option 1B**: Supplementary minimum flow: **1200 l/s**; Allocation block **500 l/s**

Option 2

900 l/s + **Sub option 2A**: Supplementary minimum flow **1150 l/s**; Allocation block **250 l/s** or **Sub option 2B**: Supplementary minimum flow: **1200 l/s**; Allocation block **500 l/s**

Option 3

1000 l/s + **Sub option 3A**: Supplementary minimum flow **1250 l/s**; Allocation block **250 l/s** or **Sub option 3B**: Supplementary minimum flow: **1200 l/s**; Allocation block **500 l/s**

Setting the primary allocation limit for the Arrow catchment:

Option 1

700 l/s — This Primary allocation limit would be set in Schedule 2A of the Water Plan.

Option 2

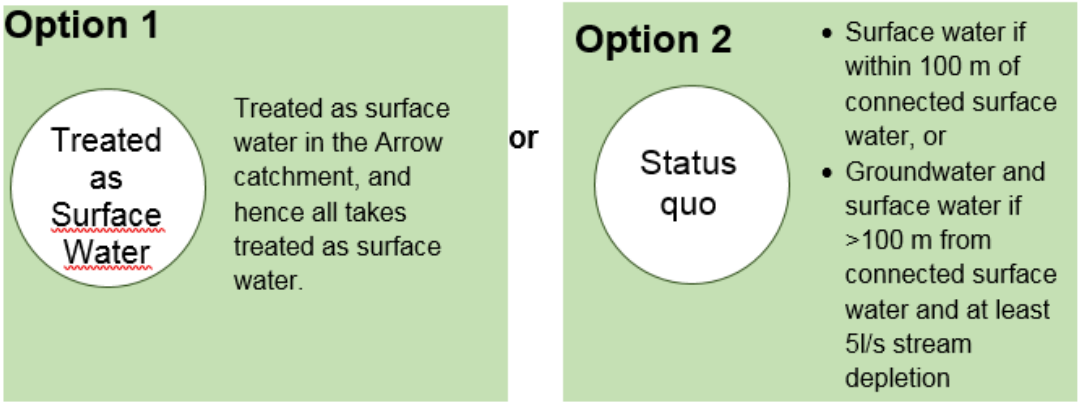
Status Quo — Existing Policy 6.4.2 - 50% of the 7 day Mean Annual Low Flow.

*Currently this would result in an allocation of **720l/s.***

Managing groundwater in the Wakatipu Basin Aquifers:

For each of the following three aquifers:

- Arrow-Bush Ribbon Aquifer
- Kawarau Alluvial Ribbon Aquifer
- Shotover Alluvial Ribbon Aquifer



For non-ribbon aquifers, setting the maximum allocation limit:

(note that these quantities are in Million cubic metres (xM m^3) per year, not cubic megametres (x Mm^3) per year. A cubic million-metres is a thousand kilometres cubed. Marc Ettema pointed out the error.)

	Option 1 Schedule 4A aquifer Sets the Maximum Allocation Limit	**Option 2** Maximum allocation limit is calculated by 50% of Mean Annual Recharge. Existing policy 6.4.10.A2
Morven Aquifer	0.185 Mm^3/yr	Status quo
	☐ Or	☐
Speargrass - Hawthorn Aquifer	0.23 Mm^3/yr	Status quo
	☐ Or	☐
Upper Mill Creek Aquifer	0.79 Mm^3/yr	Status quo
	☐ Or	☐
Mid-Mill Creek Aquifer	0.51 Mm^3/yr	Status quo
	☐ Or	☐
Windemeer / Ladies Mile Aquifer	0.24 Mm^3/yr	Status quo
	☐ Or	☐
Frankton Flats Aquifer	0.21 Mm^3/yr	Status quo
	☐ Or	☐
Fitzpatrick Aquifer	0.105 Mm^3/yr	Status quo
	☐ Or	☐