



# Tairāwhiti Regional Freshwater Planning Advisory Group – Hui 9

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Title of report: Water quantity management – managing to limits

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## Purpose of this report

This report provides information on planning approaches to manage the taking and use of water to achieve environmental flow and take limits.

## Outcomes sought

- Members provide feedback on options for phasing out over-allocation and meeting water demand.

## Getting ready for the hui

Please consider the questions in this report ahead of the next hui. This will aid the discussion at the hui.

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# 1. Background

## 1.1. Summary of previous meeting and scope

At the previous two hui we have discussed:

- the importance of water quantity to Tairāwhiti
- anticipated changes in future water supply and demand
- options for setting limits and managing water allocation

From the Advisory Group discussions at Hui 8, the main messages we received were:

- the need for mātauranga Māori to be given more weight in developing the new Regional Freshwater Plan.
- the legality of any alternative allocation framework must be considered carefully.
- the lack of access to water by mana whenua continues to constrain the development of their land.
- there are differing views on transferring water with some concerns that they “lock up” the resource.
- moving towards a values-based allocation framework would enable greater consideration of how water use aligns with Te Mana o te Wai and achieves environmental and community outcomes.
- before determining how water is allocated, we need a greater understanding of how much water is available, including from non-traditional sources and using innovative solutions such as managed aquifer recharge.

The third hui in this water quantity series is focused on how to manage water quantity within limits.

## 2. Addressing over-allocation

Implementing the National Policy Statement for Freshwater Management 2020 (NPS-FM) requires the environmental flow and take limits<sup>1</sup> set in the Tairāwhiti Resource Management Plan (TRMP) to be reviewed and revised (where necessary) to ensure they give effect to Te Mana o te Wai.

Based on our understanding of the current limits, it is considered likely that there will be changes to the existing environmental flow and take limits to ensure that the health and wellbeing of fresh waterbodies and freshwater ecosystems is prioritised. In setting these new limits, over-allocation may increase in some catchments, or some water bodies may become over-allocated.

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<sup>1</sup> Including the default methodology

Over-allocation is defined in the NPS-FM 2020 as:

*“means the situation where:*

- (a) Resource use exceeds a limit; or*
- (b) If limits have not been set, an FMU or part of an FMU is degrading;  
or*
- (c) An FMU or part of an FMU is not achieving an environmental flow  
or level set for it under clause 3.16.”*

The NPS-FM 2020 requires the new regional freshwater plan to ensure freshwater is allocated and used efficiently, all existing over-allocation is phased out, and future over-allocation is avoided.<sup>2</sup> As the majority of water use in Tairāwhiti occurs in the Waipaoa catchment, this is where the implications of over-allocation will be focused but there may be some impacts across the region.

When considering how to manage water takes within the new limits there are two broad options:

- reduce water use/demand, or
- increase water availability.

Within each of these categories there are several “tools” or approaches that could be adopted.

The issue of addressing over-allocation is extremely challenging with potentially significant impacts on water users. There is no single, simple solution to this complex problem, and it is likely that a number of “tools” from the “toolbox” will need to be implemented over a period of time to achieve the new limits.

Some solutions can involve investment in infrastructure or adapting land uses or land use practices. Many options are not driven by the planning framework however, the framework can be supportive or enabling of these options.

Some of the available options are described further in this paper and the views of the Advisory Group are sought on these methods to shape the draft plan. Additional methods are likely to be possible and feedback on how the TRMP should recognise any other solutions is also sought.

## **2.1. Options to reduce water abstraction**

The options set out below are based on reducing the amount of water consented and preventing further allocation of water until such time as the flow and take limits are achieved, as well as maximising water use efficiency.

One, some, or all of these options may need to be implemented over time in different areas of Tairāwhiti.

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<sup>2</sup> Policy 11

### **Reducing consented allocations to actual use or demand**

A common first step to reduce the amount of water allocated is limiting existing water takes (upon renewal or earlier by review) to actual use rather than previously consented volumes/rates. This generally requires establishing a method for determining actual use and assessing replacement consents against the methodology to reduce 'paper allocation'. In Tairāwhiti, this step has been undertaken and has successfully reduced consented allocations significantly.

In considering actual use, it is still necessary to demonstrate that water use is efficient. Generally, guidelines/methodologies are required for determining efficiency and replacement consents are assessed against them. This has also occurred in Tairāwhiti under the TRMP. During the renewal of existing consents, and for all new water permits, proposed water use has been tested against the reasonable use test meaning that the allocated water meets the demand.

As described in the Hui 7 report "Water quantity management – issues", for irrigation takes, demand is based on a 1 in 10 year drought. In years when there is no drought, actual use can be significantly lower than consented allocations. Therefore, reducing to actual use can be of benefit but may lead to insufficient water during drought years. This approach can also have unintended consequences by incentivising water users to use more water than they require in order to demonstrate higher actual use at the time of consent renewal.

The guidelines for assessing reasonable use are being reviewed, along with considering options of aligning consented volumes with some determination of actual use. For example, instead of allocating water based on demand in a 1 in 10 year drought, average water demand could be an alternative.

### **Reductions in actual use**

Where water bodies remain over-allocated following the removal of paper allocation, then reductions in actual water use may be required. Some common methods to achieve reductions include:

- stepped increases in minimum flows over time.
- reducing rates of take.
- reviewing consents, particularly those locking in allocation for long periods of time and/or those which might impede the achievement of vision timeframes.
- adopting common catchment expiry dates.
- requiring water use to be reasonable and efficient.
- requiring robust water metering to ensure data collection is accurate.
- limiting consent terms and/or requiring stepped reductions in the volume of water used over the life of a consent.
- swapping surface water takes for groundwater takes or vice versa.

In Tairāwhiti:

- renewals of water permits are already required to demonstrate that water use is reasonable and efficient.
- water takes are metered in accordance with national regulations.

- common catchment consent expiry dates or short-term durations are applied to allow more frequent reviews of consents to reduce over-allocation.

Within the Waipaoa Catchment there is limited potential for swapping any surface water takes from over-allocated waterbodies for groundwater (and vice versa) as the majority of all water sources are fully or over-allocated.

To address over-allocation in the future, it is likely that the only realistic option to reduce consented water are cuts in actual use. Cutting consented allocations could be applied universally meaning that all water users receive the same level of reduction, or reductions could differ based on the use of water, which would mean some water use receive proportionately larger cuts than others. This could reflect sector priorities or values which were discussed at Hui 8.

A staged approach to reductions can be adopted to allow for consent holders to plan for, and adopt new allocation limits. Adaptation for water users may mean:

- investing in infrastructure such as new irrigation equipment or water storage facilities.
- changing land uses to activities that require less water.
- finding alternative sources of water

### **Avoiding further allocation of water**

When addressing over-allocation, an important step is preventing any further allocation of water which would exacerbate the over-allocation. This would likely be achieved by ensuring the regional plan sends a clear message that no further allocation of water may occur until the limits are achieved and “headroom” is created<sup>3</sup>.

The TRMP currently has policy that states no water is to be allocated unless there is water available within the allocation cap (take limit). There is an opportunity to strengthen this direction in the new regional freshwater plan, for example by including a prohibited activity rule that would prevent anyone applying for a consent to take water if a take limit is exceeded.

### **Transfers of water**

Under the Resource Management Act 1991, there are two types of water transfers than can occur for water permits to take water. The first transfer is transferring a water permit to “any owner or occupier of the site in respect of which the permit is granted”<sup>4</sup>. This water transfer is what is relied upon when a water permit is transferred to a new owner or lessee of a site. For the transfer to occur, the water permit holder simply needs to provide the Council written notice. There is no process or mechanism for the Council to decline or influence the transfer. The consent is simply then issued in the new parties name.

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<sup>3</sup> Headroom would be created where there is sufficient reductions in consented allocations so that the total rate or volume of water allocated is less than the take limit.

<sup>4</sup> Section 136(2)(a) of the RMA

The second type of water transfer is where a water permit (the whole permit, or part of it) is transferred to another person on another site, or to another site. In this case, a water permit held by a party could be transferred to another property they own, or the entire allocation or part of the allocation held could be transferred to another landowner on another property. This type of transfer must be approved by way of a consent and the regional plan must set out the criteria for when this is allowed. Importantly, a transfer can only occur within the same catchment or aquifer.

The TRMP provides for site-to-site water transfers to help improve and maximise the efficient allocation and use of water, either on a permanent or temporary basis. Transferring water permits means that unused water does not remain 'tied up' by a consent and allows for that water to be allocated to another party if it is not required. This means that the allocation of water is more efficient, enabling take limits to be fully exercised.

As all site-to-site water transfers require a resource consent, the consent process can provide an opportunity to address over-allocation. Currently, the TRMP states that any transfer of a water permit in an over-allocated area cannot increase the amount of water allocated. This policy direction could be extended to require a surrender of a portion of the water sought to be transferred. This would mean that any transfer of water would assist in reducing over-allocation. This option on its own may not be highly effective since consents have recently been reviewed and any surplus water should be very limited and only arise if there is a change in land use. Regardless, it could be adopted to aid in supporting reducing consented allocations.

### **Maximising efficiency**

Maximising the efficient allocation and use of water means that consented rates or volumes of water could be reduced if efficiency gains can be made. These gains could be in addition to reductions achieved by limiting permits to actual use, if that actual use is demonstrated to be higher than what is considered necessary. Options to maximise efficiency include:

- setting limits on the efficiency of irrigation conveyance and application infrastructure.
- providing direction on reasonable rates or volumes of water for different uses and generally not consenting more than this unless a need can be demonstrated (as described above).

The TRMP currently requires water permits to be assessed for efficiency, specifically in over-allocated catchments in order to assist in reducing over-allocation.

Water permits are also already assessed in terms of "reasonable use". Currently there is only guidance, or a tool developed to assess reasonable needs for irrigation. As described above, this tool and its application to the consent is being reviewed.

The new regional freshwater plan could set out additional guidance on reasonable volumes of water use for other activities, for example:

- animal drinking water
- domestic supply
- dairy shed supply
- other commercial uses plus non consumptive uses for example gravel washing, and site dewatering.

#### **Questions for the Advisory Group**

- ❖ Do you have any views on how or what principles should be used when determining reductions consented allocations?
- ❖ Do you support a phased approach to reducing individual consented allocations where it is necessary? What should be considered in setting the timeframes for phases?
- ❖ What are your views on managing water transfers to reduce over-allocation?
- ❖ Do you have any comments on how water allocation and use could be more efficient?

## **2.2. Options to increase water availability**

The second set of options look at ways to increase the amount of water available either by providing a new “source” or by changing the way allocated water is made available.

### **Promotion of water storage and high flow abstraction**

Storing water taken from waterbodies in periods of high flows is one method which can be used to provide water for consumptive uses during periods when direct abstraction from a river is not possible, for example due to an increased environmental flow limit.

The TRMP currently sets a higher flow take limit for the Waipaoa River (B Block) and the Lower Te Arai (B Block) specifically to provide for water storage and irrigation needs subject to not impacting freshes and flushing flows.

The current plan recognises the level of investment required for this infrastructure by providing for consent durations greater than 5 years and includes storage as an assessment matter for assessing consents. Overall, the TRMP is neutral on storage by not promoting or discouraging its use.

In light of the possible changes to limits to give effect to Te Mana o te Wai, water storage is more likely to be required to support current land uses. Currently the Waipaoa B Block allocation limit is not exceeded, with approximately 60% of the available water allocated. The Lower Te Arai B Block allocation limit is fully allocated.

However, these allocation limits may be revised and demand for higher flow takes may be substantially greater than it is now. This means that further high flow allocation limits, for example a C Block on the Waipaoa River may need to be considered, accompanied by new



plan provisions that support and enable water storage.

### **Managed aquifer recharge**

Managed aquifer recharge (MAR) is the purposeful recharge of water to aquifers, generally involving abstracting water from a source and discharging it into one or more groundwater recharge structures. MAR is generally undertaken during the off peak/winter season when water is not otherwise required for irrigation or other consumptive uses.

The TRMP provides for the opportunity for a MAR scheme to be developed by:

- Enabling the consideration of a consent application to exceed take limits for MAR where it can be demonstrated there will be significant positive social, cultural and environmental effects, alongside an enduring reduction in over-allocation.
- Including a method for Council to encourage the development of water storage and MAR options as solutions for over-allocation and increase security of supply.

Council in partnership with other stakeholders<sup>5</sup> have investigated the feasibility of MAR in the Makauri aquifer. Recharge trials were consented and then conducted in 2017, 2019 and 2020. Water was abstracted from the Waipaoa River and injected into the aquifer via a well and filtering system (see Figure 1).



**Figure 1: Photo of a MAR trial injection well (source: van Nieuwker and Cudmore 2021)<sup>6</sup>**

MAR can pose a risk to groundwater quality if source water is, or becomes contaminated. There has also been a number of concerns about the use of MAR from mana whenua.

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<sup>5</sup> Including Horticulture NZ, Wi Pere Trust and other community members

<sup>6</sup> Van Nieuwker, E and Cudmore, R. (2021). *Gisborne MAR Project: 2017 – 2020 Injection Trials*. Golder Associates (NZ) Limited.

The trial results indicated that MAR could be successfully used in the Makauri aquifer to compensate for over-abstraction and mitigate the deterioration of groundwater quality. The initial review however does recommend a number of other investigations are carried out, including to determine an optimal MAR scheme, how to manage high turbidity of river water, and monitor the potential effects of injection plumes.

The TRMP could provide greater direction and support for a MAR scheme as a way of ensuring the reliability of groundwater sources.

### **Short-term transfers**

As outlined above, the TRMP already provides for transfers of water permits to other sites but rather than using the process for reducing the consented take limits, this approach could encourage transfers, on short-term (i.e. less than 6 months) basis to enable a form of water sharing amongst water users. While temporary, even partial transfers are currently provided, many water users have found the process onerous for what could be a very short term transfer (days).

While individual consents are assessed to ensure that requested rates and volumes of water to be used are reasonable, allocated water is not used 24/7, 365 days per year by all water users.

Enabling this unused water to be temporarily accessed by another person will get the most "value" from the take limits set. There are risks of both parties taking the allocation at the same time (taking beyond the take limits) therefore the transfer process will need to ensure this is prevented. Additionally, this means that allocated water is likely to be used more often and therefore the actual amount of water abstracted may increase overall. Care needs to be taken around the setting of limits and approval of transfers to ensure that the ecosystem health and water body needs are prioritised.

### **Water user groups**

A water user group is a group of consent holders that choose to work together in a particular area, such as a catchment or zone. The purpose of this group may vary, from an advocacy role, establishing relationships and joining forces to manage individual water abstractions more effectively within set limits.

Establishing water user groups provides a similar option to short-term transfers which allows water permit holders to share their consented water allocations. Particularly when water demand is high and river flows are lower, sharing water amongst water users is one method of increasing the reliability of water for use when managing minimum flows may see their individual take limits drop.

Water user groups also have other benefits which can include:

- Providing an opportunity for co-ordination on consenting and plan-making processes
- An ability to pool resources and create buying power or optimisation of infrastructure

Even in times of high water demand, many water abstractors do not require their allocated water on a constant basis. Irrigation equipment often needs a minimum operational flow rate (depending on the type of equipment), and irrigators often operate an irrigation schedule for example a few hours per day or every other day. This means there is the opportunity for water

users to share water when they do not require it.

The TRMP currently provides for water sharing amongst groups of users in the same water quantity zone but this has not been taken up in any significant manner. More clarity regarding water user groups could be provided in the new regional freshwater plan that sets out requirements for managing water user groups.

#### **Questions for the Advisory Group**

- ❖ What are your views on water storage and increasing the amount of water stored in the region? Is increased storage a positive outcome?
- ❖ In setting the outcomes for a MAR scheme, what should be achieved?
- ❖ How do you think short-term consent transfers could assist in sharing water between users? What constraints could there be?
- ❖ Do you have any comments on how water user groups could operate to manage individual water permits together?