THINK TANK NEWSLETTER

Think TANK 12 – Meeting 31 Thursday 17 August 2017

The Allocation Conversation

The TANK Group's work from previous meetings - grappling with hydro-dynamics of the Heretaunga Plains system - resulted in some of the clearest guidance being given by the Group at this meeting.

Groundwater takes in the Heretaunga Plains have a cumulative stream-depleting effect on lowland streams and on the Ngaruroro River. Interconnection and transmissivity mean groundwater takes effect surface flows across all takes in the plains. The Group heard how the current pattern of water take has resulted in groundwater levels that are at equilibrium and recover every year. However if usage was to increase, stream-depleting effects would worsen and groundwater levels would reduce further in some areas, i.e. for a 10% increase in abstraction, groundwater levels would fall a further 0.35m.

The combination of these effects led to the Group agreeing that water use should be capped at current levels. The Group is also investigating the opportunity to mitigate current adverse effects on lowland stream flows using flow augmentation. This is a scheme where groundwater is pumped into a stream to maintain flows at a specific level.

The Group has not yet resolved whether these measures will be enough to protect both ground and surface waters in the Heretaunga Plains. Some Group members also seek to test the effects of reducing water allocation, so that re-allocation will be below existing use levels. There is more economic modelling and testing the effect of allocation reductions on river flows to come.

All TANK members support a continuing focus on innovative ways to improve freshwater management.

Augmentation Update

Why has the TANK Group given so much time talking about augmenting water?

The modelling shows that augmentation (from groundwater to surface water) may be the most cost-effective way of maintaining flows in at least some lowland streams. This conversation has been time-consuming because of the intricacies involved.

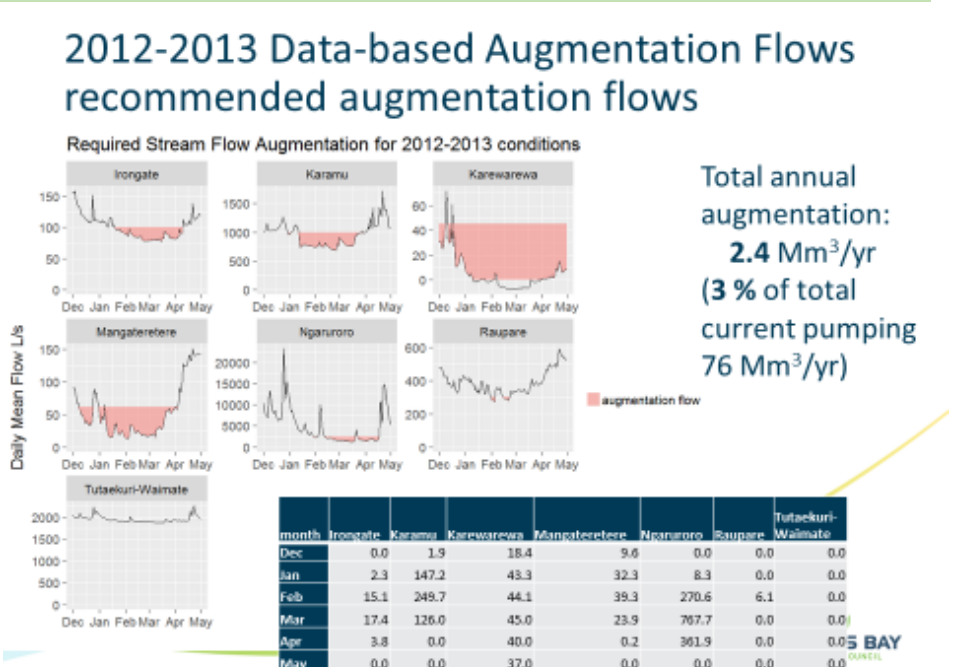
Augmenting the Mangateretere, Irongate and Raupare Streams is feasible without a large effect on groundwater levels. Karamū Stream could also be augmented but the large volumes necessary could make this unfeasible. For the same reason, Ngaruroro River is unfeasible, and Karewarewa Stream appears unsuitable for augmentation because of the naturally high rate of water loss from the stream to groundwater. The relationship between flow and oxygen and temperature is important in deciding on appropriate flows. The Group is looking to better understand the benefits of better riparian land management – and more shading – on both oxygen and temperature and how much this can also improve the state of lowland rivers.

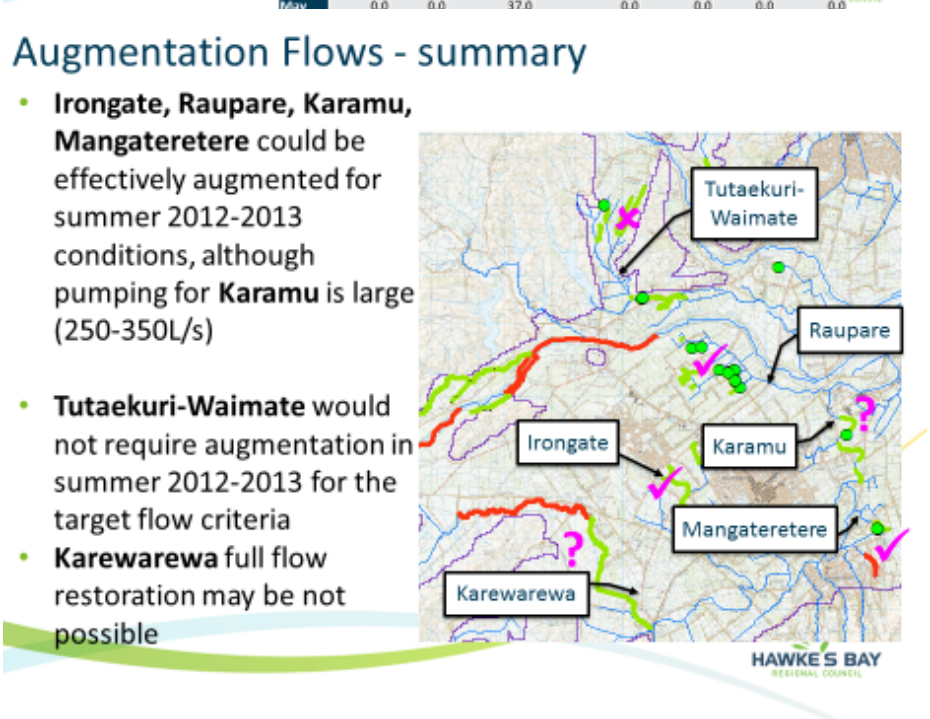
Water Augmentation Working Group

The newly formed Water Augmentation Working Group will further explore options for a ground-water flow augmentation scheme to improve the state of lowland rivers. Questions we have include: what flows should be maintained in the streams, how much water is available to support such a scheme before the scheme itself causes unacceptable effects on stream flow, what is the cost of such a scheme and how could such a scheme be implemented?

Water Storage

The establishment of an allocation limit for water abstraction has prompted requests for revisiting options for storage to meet future irrigation demand. There is some buy-in to the concept that water can be utilised more than once on its journey from mountains to sea. For example, water captured in the middle reaches of a river could be directed to augment or increase a portion of river flow, then further directed to 'downstream' irrigation. This would rely on minimum flows being sufficient for the health of aquatic life, including fish and bugs. This sort of scheme might also help to mitigate the effects of groundwater abstraction on the Ngaruroro River.





Impact on allocation limits

As a result of the work being done by TANK, Regional Council CEO James Palmer stated the Council needs to act on the new information about Heretaunga Plains groundwater being fully allocated. He noted that resource consents for groundwater takes, particularly around Ngaruroro River, cannot bear an increase in water allocation – a decrease in allocation levels over time is more likely.

Relevant Media Releases:

Heretaunga Aquifer at its limit

HBRC opposes WCO for Ngaruroro and Clive Rivers

Decision Time

Members of the TANK Group considered some specific, inter-related management questions. They then identified preferred options. There was limited overall consensus on some of the options, although all members agreed that the allocation limit should not result in increased water use.

MANAGEMENT CHALLENGE	SUMMARY	PROPOSAL	RESPONSE
1. Lowland stream flows	GW takes have a cumulative impact on lowland stream flows. Need to better understand flow requirements to manage effects using a flow augmentation scheme	Develop the preferred stream flows (levels) for triggering flow augmentation and assess the impact of this	Water Augmentation Group (WAG) to consider options further and report back
2. Lowland stream flows	There is a cumulative impact on lowland stream flows from stream-depleting GW	No more allocation than current. (i) Further assess impact of reducing total allocation limit (ii) Assess feasibility and costs of GW flow augmentation options	Additional modelling to assess economic impact of reducing water use WAG to consider options & report back
3a. SurfaceWater - direct takes	A number of direct SW takes from lowland streams in HP model boundary also impact stream flows. Some streams are subject to a GW flow augmentation option.	Cap allocation to existing use	
3b. SurfaceWater - managing adverse effects of takes	The effects of these takes are normally managed by restricting use based on minimum flow triggers. Could also be managed by increasing the scope of the groundwater flow augmentation scheme	Manage through conventional flow restriction regime	
4. Ngaruroro River - flow depleting effects from GW takes	The cumulative effect of stream-depleting GW takes is up to 1200 l/s on Ngaruroro flow (incl a groundwater flow augmentation scheme)	No more allocation than current. (i) Further assess impact of reducing total allocation limit. (ii) Assess feasibility and costs of a mitigation option Some support for 'living with' effects, as in the past.	More modelling to assess economic impact of reducing water use WAG to consider options for further pumping and flow augmentation & report back
5. GroundWater levels - effect of pumping	GW level is at dynamic equilibrium at current abstraction	No more allocation than current. (i) Further assess impact of reducing total allocation limit (ii) Assess feasibility and costs of increasing pumping and continue to maintain flows by augmentation scheme	WAG to consider options for further pumping and flow augmentation & report back Further assessment of economic effects of reducing allocations (below existing use)

Please share this newsletter-panui
Mary-Anne.Baker@hbrc.govt.nz

TANK