

# TANK Collaborative Stakeholder Group

## Meeting Twenty-Eight - Record



**When:** Thursday 27 April 2017, 9:30am – 5:00pm

**Where:** Te Taiwhenua o Heretaunga, 821 Orchard Road, Hastings

- Note: this meeting record is not minutes per se. It is not intended to capture everything that was said; rather it is a summary of the proceedings with key comments noted. *Text in italics indicates a response from HBRC to questions posed during the meeting.*
- *Where additional information has become available subsequent to the meeting (such as answers to questions unable to be answered in the meeting), this is included in red italics*

NAME	ORGANISATION
Aki Paipper	Operation Pātiki ki Kohupātiki Ngāti Hori
Brett Gilmore	Hawke's Bay Forestry Group
Bruce Mackay	Heinz-Watties
Connie Norgate	Department of Conservation
Craig Thew	Hastings District Council
Emma Taylor	Gimblett Gravel Grape Growers' Assoc.
Hugh Ritchie	Federated Farmers
Ivan Knauf	Dairy industry
Jason Strong	Napier City Council
Jenny Mauger	Ngā Kaitiaki o te Awa a Ngaruroro
Jerf van Beek	Twyford Irrigator Group
Joella Brown	Ngā Marae o Heretaunga
John Cheyne	Te Taiao HB Environment Forum
Kim Anstey	Napier City Council
Lesley Wilson	HB Fruitgrowers' Association
Mark Clews	Hastings District Council
Marei Apatu	Te Taiwhenua o Heretaunga
Matt Brady	Department of Conservation
Mike Glazebrook	Ngaruroro Water Users Group
Nathan Burkepille	Fish and Game NZ (Hawke's Bay)
Neil Eagles	Royal Forest and Bird Society (Napier)
Ngaio Tiuka	Ngāti Kahungunu Iwi Inc.
Nick Jones	Hawke's Bay District Health Board
Peter Kay	HDC Rural Community Board/Sheep & Beef Sector
Scott Lawson	HB Vegetable Growers
Te Kaha Hawaikirangi	Ngā Hapū o Tūtaekurī, Maungaharuru-Tangitū
Tim Herman	Pipfruit NZ
Vaughan Cooper	Royal Forest & Bird Inc.

NAME	ORGANISATION
Xan Harding	Hawke's Bay Winegrowers
Desiree Cull	HBRC Programme Leader
Iain Maxwell	HBRC Group Manager Resource Management
James Palmer	HBRC Group Manager Strategic Development
Jeff Smith	HBRC Team Leader/Principal Scientist Hydrology
Judy Buttery	HBRC Committee Secretary
Mary-Anne Baker	HBRC Senior Planner
Pawel Rakowski	HBRC Senior Resource Modeller
Robyn Wynne-Lewis	Facilitator - Core Consulting
Rob Waldron	HBRC Hydrologist
Susan Wylie	HBRC Communications Coordinator
Stephen Swabey	HBRC – Manager Science
Thomas Wilding	HBRC – Senior Scientist
Peter Bevan	HBRC Councillor
Tom Belford	HBRC Councillor
Christine Smith	Wairoa
Allen Smith	Ex RPC Member, Te Tira Whakaemi o Te Wairoa

### Meeting Objectives (slide 5)

1. Agree a management regime for stream depleting groundwater takes for the purpose of further modelling.
2. An understanding of the methodology being used to assess on farm economic impacts.

## AGENDA ITEMS

### 1. Welcome and karakia

Robyn Wynne-Lewis gave the Karakia for the meeting and welcomed everyone.

### 2. Agenda, early discussion and introductions

- Housekeeping matters covered.
- Apologies were confirmed (see attendance table above).
- The meeting agenda and objectives were outlined.
- Ground rules for observers confirmed.
- Engagement etiquette was covered.
- Open floor for TANK members for notices and announcements

Jason Strong apologised for his absence at the last meeting. He explained that NCC had a storm water workshop with Mana Ahuriri and consultants regarding Ahuriri Estuary on the same day. NCC have developed a masterplan for the development of wetlands in the Ahuriri estuary to treat the city's stormwater and will present this to the TANK Group at a later date.

There are to be two new members in the group, Craig Thew from HDC and Kim Anstey from NCC. The onus is on the organisation to decide who is the active observer and who is the member. Each council will retain just one vote.

### 3. Item # 2 – Meeting Record 27 and Action points

The record of Meeting 27 was confirmed as an accurate record with just some minor adjustments. It was noted that a request had been made at the previous TANK Group meeting for further modelling on the cumulative effect of bans and augmentation. This has been added as action item 27.10.

ID	Action item	
27.1	HBRC to bring back the new NOF swimmability tables to the TANK Group for consideration	TBC
27.2	Refer the list of potential guest speakers to the Engagement Working Group (EWG) for consideration in light of the revised work programme.	On EWG list. Suggestions welcome
27.3	HBRC to add another column in the table of naturalised flows for the Ngaruroro Water User Group who are on water takes subject to low flow bans.	Hydrologists to follow up on these three items.
27.4	HBRC to consider default policies to manage flow in tributaries to complement what we find for the main stem.	
27.5	HBRC to plot rain events upstream of Fernhill and identify whether they are responsible for increased river flow after bans were enforced.	
27.6	HBRC to report back to the TANK Group on its current policy on river mouth maintenance (i.e. what triggers opening river mouth using diggers)	HBRC to come back to group
27.7	HBRC to organise an expert to present to the Group on RHYHABSIM and fish habitat levels of protection.	TBC
27.8	HBRC to bring back more information on the sustainability of the current level of abstractions, particularly in light of climate change.	In presentation today
27.9	HBRC to present the findings from a water aging study of the aquifer.	TBC
27.10	HBRC to model both ban and augmentation to see the cumulative effect	TBC

**Discussion and Agreement sought from TANK Group.** Mary-Anne Baker put the breakout question to be answered after lunch to the gathering, for consideration during the presentations.

### Discussion and Agreement sought from TANK Group


**For the purpose of further modelling do you agree/disagree;**

Effects of water takes on spring fed streams are best managed by;

- Reducing effects of takes by flow augmentation (i.e not by restrictions on takes)

because

- Stream depletion zones for individual streams cannot be determined
- Zones of pumping impact for individual takes cannot be established
- Accounting for the cumulative impact of all takes is important



### 4. Item # 3 – Summary of science and Climate Change (Dr Jeff Smith).

Dr Jeff Smith introduced the morning sessions and gave a summary of science to date related to stream depleting modelling. He also presented and answered questions on how climate change has been accounted for in the construction of the GW/SW model.

#### 4.1 Summary of science from March TANK meeting

His presentation recapped the stream depleting modelling results presented at the March TANK meeting as there was a lot to digest. He also explained why there has been such a focus on stream depletion and the interdependency with future decisions to be made by the Group. He explained the difference between artificial recharge and augmentation. Artificial recharge is when water is taken from the river at high flows and injected into the aquifer (for example, via soak pits) to increase groundwater levels. Augmentation is when water is pumped from a source (in this case the aquifer) and put into a stream to increase flows during dry periods.

In particular, he revisited the conclusions that:

- pumping restrictions for irrigation takes were somewhat effective if applied throughout zones 1,2 and 3; and
- that artificial recharge examples were insufficient for mitigating stream depletion.

He also previewed the modelling results that Pawel would present later in the meeting on:

- identifying stream depleting sub-zones for managing individual lowland streams (which proved to be impractical);
- efficacy of augmentation (which proved to be a viable option for some streams); and
- a tool for managing cumulative impacts of pumping on stream depletion.

Matters raised by TANK members (Questions and answers regarding the presentation):

- Why do the artificial recharge conclusions from modelling now show it is insufficient for mitigating stream depletion when previously were told it made a difference. What has changed? *Artificial recharge was effective locally at increasing the ground water levels but dissipated quickly due to the transmissive nature of the aquifer.*
- Are we prioritising maintaining surface water flows? *No there is also the matter of groundwater sustainability.*
- Are we mining the aquifer? *Although there has been concern about lowering of the ground water level every summer, it returns in the winter. When and if the water does not come back during sustained very dry winters has not been modelled yet.*
- What if the modelling was done based on restricting takes based on groundwater levels? *This would not take into consideration in-stream habitat from stream depletion. If bans were imposed according to groundwater levels then bans could be imposed unnecessarily.*
- If the amount of water taken out of the system is sustainable, what does this mean for ground water levels. Can this be managed better? *These questions may be answered by the presentation by Pawel.*
- Why does the modelling, on the one hand show that cease-takes make no material difference to flow but on the other hand, the cumulative effect of takes is significant? *It's all about the timing, once a ban is triggered flow is slow to respond resulting in no benefit from the ban.*

#### 4.1 Climate Change Projections

Dr Smith then moved onto explaining how Climate Change Projections have been incorporated into the model to check that the TANK Group is happy with this approach. He stepped us through the analysis (including information and assumptions) he used to come to the conclusion that there is no statistically significant difference between actual rainfall/evaporation from 1989-2015 in the TANK catchment and climate change projections. As a result he recommends that the model should use the actual and local climate data projected forward for this planning cycle.

Matters raised by TANK members (Questions and answers regarding the presentation):

- With more summer rain does this contribute to a lesser amount of evaporation? *This could be caused by more intense rain. But as all of the models are Northern Hemisphere based there is not a lot of point in further analysis at a temporal scale or for individual events.*
- *It was suggested that a precautionary approach is appropriate as although we don't know what the change will be we do know there will be change so valid to make allowance for it. The very dry 2012/13 season can be used to model extreme dry weather.*
- *It was also suggested that a position statement from the Group on climate change would be appropriate.*

The question was posed to the group: “Do you agree existing climate change projections are not definitive enough for use in modelling in relations to setting limits for this plan change, but climate change risks are addressed?”

It was decided that this question be decided later in the day, as it is imperative to get an answer from the group for ongoing modelling. After further discussion it was suggested that the question be “Do you agree that historic data be used for modelling in setting limits for this plan change?”

#### 5. Item # 4 –Recap of benefit to river from restricting stream depleting ground water takes (Thomas Wilding)

Thomas Wilding’s presentation reinforced some critical points about flow recovery from bans and answered questions. He presented flow recovery graphs of the Ngaruroro and the Raupare to show the rate of flow recovery as a percentage of river flow after 30 days, under total ban compared with a 25% restriction for all zones (i.e. zones 1, 2, 3 + industrial + municipal). A key result is the Raupare (spring-dominated) stream makes a much quicker recovery.

The suggestion was to focus on sorting out the spring fed streams first, before returning to the Ngaruroro, as they are the more sensitive part of the system (in regards to flow and in-stream consequences i.e. oxygen vs habitat) and there is more knowledge from observed measurements and specific investigations recommending shading.

Matters raised by TANK members (Questions and answers regarding the presentation):

- Why bother showing a total ban for all takes when it’s not feasible? *It is useful as a first check point, if a total ban gives insufficient response why bother refining it for even less response.*
- How often does Ngaruroro get below 1000L/S? *In 2012/13 it was 1265L/S and in 1983 it was dry in parts.*
- How much recovery is worthwhile? *20% recovery gives some worthwhile benefit. Most of the focus of concern is about aquatic habitat.*
- Would it be easier to augment oxygen into the stream? *Could only do it in one place, impossible to do over the length of streams.*
- What further modelling is required about maintaining flow in the streams. How significant are the streams in the main systems. Where are the problems experienced first. What are the critical issues for managing how much water we take. *All important questions that need further analysis.*

#### 6. Item # 5 – Raupare flow augmentation scheme (Jerf van Beek)

Jerf van Beek from the Twyford Irrigator Group presented on the Raupare flow augmentation scheme in the Twyford area, and how the group manages the water together.

He explained that the members of the group are levied per hectare to be involved (not by water use) which reflects land values and each member puts their allocation into a Global Consent to manage the water collectively. There are a small number not involved in the scheme as yet, but increasingly landowners are seeing the benefit of belonging to the group and of stream augmentation to avoid going on ban. The scheme is in the semi-confined area.

The group plan to do riparian planting and more augmentation when required in the future.

The prerequisites for putting water into the Raupare are that the water is not to be warmer than the stream and that no damage is done to the stream bed. The group also takes measures to ensure that the water going into the stream is oxygenated.

Mr van Beek told the gathering that if you have a group who has a good understanding of irrigation and access to good information (e.g. 46 wells measured on WaterSense web tool giving daily data) you can get them to turn their pumps down a little at times of low flows and make an immense difference to stream flow. Twyford Irrigators are proving that good management can improve water use and self-management is feasible.

In his experience, bores close to the stream directly affect stream flow. Monitoring needs to be done on specific bores to assess each bore and its effect on the stream.

Matters raised by TANK members:

- What were the costs of augmentation with the Twyford Irrigator Group? *Jerf explained the costs involved. Initial investment is about \$68,000 with operating costs of about \$5.50per hour. Unconfined, do not know.*
- It was noted by one member that the Twyford scheme appears to work because of the threat of ban.

- Is there an opportunity to retire the bores that have a rapid impact on the stream? Yes.
- Don't you worry that HBRC will reduce allocated water to actual use? Current stats show from 1 July 2016- 12 April the groups used just 49.2% of its allocation. However, noted that this is often 100% of instantaneous allocation. *No, customers are driving behaviour change as irrigators "we've got now where to hide", efficiency and improvement are shared principles.*

## 7. Item # 6 – Groundwater modelling results (Pawel Rakowski)

Pawel Rakowski presented the following modelling results:

1. An augmentation scenario to maintain the flows in the Raupare Stream at 300L/S in a dry summer by pumping 150L/S from groundwater. This proved to be an effective way of increasing flows in the Raupare which therefore suggests augmentation is potentially a viable mitigation option for spring-fed streams depending on impact on larger rivers.
2. To identify stream depletion "ban zones" by testing the effects of pumping from individual wells on selected stream flow and therefore identify which streams should trigger restrictions. This didn't work as no pattern could be determined therefore zones could not be delineated.
3. To identify zones of actual impact of pumping and cumulative impact. This didn't work as most takes have a very small individual effect, however the combined effect is significant.

He also presented a possible tool to manage the cumulative impact of pumping on stream depletion that can be applied at the time of consenting. The tool estimates the effect of groundwater abstraction from an individual well (or the combined effect of takes) on an individual stream or river.

Discussions and questions ensued to help those present obtain an understanding of the modelling.

NOTE: The recording was very muffled with some side conversations happening which obscured the main voices even more so some questions have not been recorded.

## 8. Item # 7 – Discussion and direction on groundwater regime

It was decided not to go into "break out groups" as it was preferred to discuss as a plenary group so that questions could be asked of the presenters as part of the discussion.

### Decisions required:

1. Do you agree:
  - I. Existing climate change projections are not of sufficient certainty or difference from historic data at the annual scale for use in GW/SW modelling, and therefore we should use historic data for this plan change.
  - II. That we should include policies in the plan change that address climate change risks.

The group agreed with the above although they would prefer that No II preceded No I.

2. For the purposes of further modelling do you agree/disagree:

Effects of water takes on spring fed streams are best managed by flow augmentation (i.e. not by restrictions on takes) because:

- Stream depletion zones for individual streams cannot be determined.
- Zones of pumping impact for individual takes cannot be established.
- Accounting for the cumulative impact of all takes is important.

Based on the hydrologists recommendation that it may be feasible, the TANK Group agreed to explore rolling out an augmentation scheme across the Heretaunga Plains for widespread takes but noted that a management group (similar to the Twyford scheme) is essential to "lean" on users. The model is not at a scale capable of accounting for observed stream depleting effects from particular takes. One option is to treat these as treated as surface water takes.

### 3. What further modelling is required?

Other options suggested by the Group included:

- Augmentation from a dam to Ngaruroro, Raupare and Karamu, that shows the quantum of augmentation required.
- Using GW allocation limit to protect GW levels long term.
- Using the aquifer as a 'bank' as long as not mining plus possibly artificial recharge
- Flooding Roy's Hill Maraekakaho river flats to use as a recharge; turn into a wetland for co-benefits of increased flows and habitat.
- Methods to make urban (municipal) and industrial more efficient.
- More attention to "Avoid" options especially:
  - A sliding scale of takes not fully used
  - Protecting groundwater levels – risks of contamination (include domestic wells) and bores running dry.
- What would it cost to replicate the Twyford Scheme in terms of management/operational costs?

#### Action Item

- 28.1 HBRC Scientists to consider the list of suggestions from the TANK Group on further modelling and come back with possibilities.
- 28.2 HBRC Scientists to come back with more information on GW levels.

### 9. Item # 8 On-Farm economic assessment methodology (AgFirst)

Jonathan Brookes, Leander Archer & Lochie McGillivray, from AgFirst gave a presentation "An Understanding of the methodology being used to assess on-farm economic impacts".

In summary, the methodology involves building a series of model farms to represent agricultural and horticultural systems in the TANK catchment, then running various mitigation and water allocation scenarios across the base model farms to achieve the desired environmental outcomes. The associated on-farm costs measured by EBIT will be calculated and then scaled up to determine the on-farm financial impact over the catchment. This information will then be used by other consultants to determine the regional economic impact.

Leander presented the Heretaunga Plains methodology, which involved creating model farms to represent the following land uses: pipfruit, summerfruit, kiwifruit, grapes, and vegetables which includes squash, onions, peas, sweetcorn and winter pasture. Lochie presented the methodology and some interim results for the pastoral country which includes five model farms: summer-moist, summer dry, and intensive, scale restricted and dairy.

### 10. Item #9 update from Working Groups

- **Stormwater Working Group:** Rina has a meeting with the TLAs second week in May hopefully to convert talk into action.
- **Wetlands Group:** Held its first meeting a couple of weeks ago. Work in Progress
- **Pastoral Farmers Reference Group:** Next meeting is scheduled for 9 May Puketapu Hall. All welcome.

### 11. Item #10 Agenda for next TANK Group Meeting

Next meeting:

- Rescheduling Clive River Management
- Plan Change Outline
- More future GW modelling results
- Surface water abstractions
- Restructuring – surface water flow management regimes.

Meeting closed with a prayer from Jerf van Beek at 4.13pm.

## Summary of Action Points

ID	Action item
28.1	HBRC Scientists to consider the list of suggestions from the TANK Group on further modelling and come back with possibilities.
28.1	HBRC Scientists to come back with more information on GW levels.