

## TANK Collaborative Stakeholder Group

### Meeting Twenty-Seven - Record

**When:** Wednesday 22 March 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	Present	Absent
Aki Paipper	Operation Pātiki ki Kohupātiki Ngāti Hori	Present	
Brett Gilmore	Hawke's Bay Forestry Group	Present	
Bruce Mackay	Heinz-Watties	Present	
Connie Norgate	Department of Conservation	Present	
Emma Taylor	Gimblett Gravel Grape Growers' Assoc.	Present	
Hugh Ritchie	Federated Farmers		Absent
Ivan Knauf	Dairy industry	Present	
Jason Strong	Napier City Council		Apology
Jenny Mauger	Ngā Kaitiaki o te Awa a Ngaruroro	Present	
Jerf van Beek	Twyford Irrigators Group	Present	
Joella Brown	Ngā Marae o Heretaunga	Present	
John Cheyne	Te Taiao HB Environment Forum	Present	
Lesley Wilson	HB Fruitgrowers' Association	Present	
Mark Clews	Hastings District Council	Present	
Marei Apatu	Te Taiwhenua o Heretaunga	Present	
Mike Glazebrook	Ngaruroro Water Users Group	Present	
Nathan Burkepile	Fish and Game NZ (Hawke's Bay)	Present	
Neil Eagles	Royal Forest and Bird Society (Napier)	Present	
Ngaio Tiuka	Ngāti Kahungunu Iwi Inc.	Present	
Nick Jones	Hawke's Bay District Health Board	Present	
Peter Kay	HDC Rural Community Board/Sheep & Beef Sector	Present	
Peter Paku	Ruahapia Marae	Present	
Scott Lawson	HB Vegetable Growers		Absent
Te Kaha Hawaikirangi	Ngā Hapū o Tūtaekurī, Maungaharuru-Tangitū	Present	
Tim Herman	Pipfruit NZ	Present	
Vaughan Cooper	Royal Forest & Bird Inc. <sup>1</sup>	Present	

<sup>1</sup> Use to represent Royal Forest & Bird Soc. (Hastings/Havelock)

Xan Harding	Hawke's Bay Winegrowers	Present	
<b>HBRC Staff &amp; VMO research team</b>			
Anna Madarasz-Smith	HBRC - Scientist Coastal Quality	Present	
Desiree Cull	HBRC Programme Leader	Present	
Drew Broadley	HBRC Community Engagement & Communications Manager	Present	
Iain Maxwell	HBRC Group Manager Resource Management	Present	
James Palmer	HBRC Group Manager Strategic Development	Present	
Jeff Smith	HBRC Team Leader/Principal Scientist Hydrology	Present	
Jim Sinner	VMO team, Cawthron Institute		Apology
Mary-Anne Baker	HBRC Senior Planner	Present	
Pawel Rakowski	HBRC Senior Resource Modeller	Present	
Rina Douglas	HBRC – Senior Planner	Present	
Robyn Wynne-Lewis	Facilitator - Core Consulting	Present	
Sandy Haidekker	HBRC Environmental Scientist	Present	
Stephen Swabey	HBRC – Manager Science	Present	
Thomas Wilding	HBRC – Senior Scientist	Present	
<b>Regional Planning Committee members</b>			
Rex Graham	HBRC Councillor	Present	
Peter Bevan	HBRC Councillor	Present	
Tom Belford	HBRC Councillor	Present	
Allen Smith	RPC Member, Te Tira Whakaemi o Te Wairoa	Present	
<b>Observers</b>			
Christine Smith	Wairoa	Present	

\* Te Kaha Hawaikirangi is now representing Maungaharuru-Tangitū so Shane Walker will no longer be attending.

### Meeting Objectives (slide 5)

1. Decide on preferred management strategy for Ahuriri (e.g. get direction for drafting provisions)
2. Consider GW modelling outputs and need for further scenario refinement and testing
3. Decide on the preferred level of habitat protection for the Ngaruroro and Tutaekuri (to assess scenarios against)

## AGENDA ITEMS

### 1. Welcome and karakia

Marei Apatu led the group in a waiata, gave a Karakia and acknowledged the special guests Riverseeds Collective, who gave a performance entitled “Edge of a Rain Drop”, which was well received by the group.

### 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 –
  - Anna Madarasz-Smith gave a short update on the Government’s “Clean Waters” package particularly the new swimmability tables. HBRC is in the process of looking at what this means for the region. This has changed the national bottom line from wadeability to swimmability. Anna will bring the new NOF tables back to the Group at a later date.
  - Xan Harding made mention of an article in BayBuzz regarding TANK, and congratulated Tom Belford on an article very well done.
  - Jenny Mauger commented that 22 March is World Water day, and the following day at 1.00-1.45pm there will be a world-wide prayer.

### 3. Item # 2 – Meeting Record 26 and Action points

The meeting minutes were confirmed. No matters raised regarding the minutes or action points. A list of potential guest speakers, first discussed at TANK meeting 14 in November 2014, was re-visited. It was agreed that the criteria and suggested speakers be referred to the Engagement Working Group to be considered in light of the revised work programme. The Engagement WG were tasked with deciding whether the speakers should still be inserted into appropriate meetings. If anyone has a guest speaker in mind please send those requests to Drew Broadley. The Mana Whenua Group proposed appointing a member into the Engagement Working Group to be directly involved in scheduling guest speakers and to improve its influence on wider communication/engagement initiatives. A member was agreed and appointed by the Mana Whenua Group before the end of the meeting.

#### Action Item

- 27.1 HBRC to bring back the new NOF swimmability tables to the TANK Group for consideration
- 27.2 Refer the list of potential guest speakers to the Engagement Working Group for consideration in light of the revised work programme.

### 4. Item # 3 – Ahuriri state and trends plus management options.

Anna Madarasz-Smith, HBRC Scientist Coastal Quality, presented a slideshow on Ahuriri.

Ahuriri is the smallest of the four catchments, with the largest urban area, a large area of grassland and a large portion in pine forest. In answer to a question the remainder is cropping, peri-urban and rural residential.

The area beyond the rail bridge is a wild life refuge. Attention was drawn to the number of pumping stations that pump into the estuary. Anna commented that a lot of Napier is actually below sea level and those pumping stations allow the population to remain. There is a balance to be made.

Estuaries are temporary geological features, that will infill over time, but if that process is accelerated habitat will be lost. Anna noted that we need to know more about the hydrology of the estuary, i.e. where the water comes from and goes in the estuary system.

The Marine tubeworm (*Ficopomatus enigmaticus*) was first identified in 1990s but has exploded in the last two years. It is a filter feeder so likes nutrient enriched and disturbed systems. HBRC has some theories but no conclusions, it could be a climatic thing. The tubeworm has also been seen in the Clive River, and in a waterway near Prebensen Drive adjacent to the Expressway.

The upper Ahuriri estuary problems are a recent occurrence, the fine mud/sediment is causing problems. It was noted that Raupo dying off are an indication that all is not well with the system. Suspicions point at the pump station and the recent upgrade of stormwater systems in Bay View.

#### Matters raised by TANK members

- Is there a national monitoring system, i.e. a numerical 1-10, to give an idea of the health of the estuary? *Anna is involved in developing an Envirolink tool which is an estuarine trophic index to rank*

*how healthy or disturbed an estuary is from sediments and nutrients. Ahuriri is up there with the likes of New River Estuary which is an estuary under severe stress in Southland. This is a nationwide tool.*

- *Whose pump station is draining into the upper estuary? Napier City Council's. This is within the scope of the Stormwater Working Group which includes NCC.*
- *It was noted that Anna's 135 page report, "Ahuriri and Waitangi Estuaries Values, State and Trends" is very impressive and has a lot of useful information (not all of which was covered in today's presentation). Everyone was encouraged to read to the full report.*

### **Sediment**

- *Could we achieve a 30% reduction in sediment? SedNet has provided some sediment loss information. A reduction of 30% could be achieved with fencing, riparian planting, pole planting and those sorts of soil conservation management options. The focus should be on human induced soil loss including from urban areas.*
- *There was discussion about reasonable timeframes for achieving this sort of target and what 'best practice' could deliver. The pastoral farming sector have been tasked with defining 'best practice' and developing solutions. It was pointed out that the Landcorp Farm is not the only farm in the catchment and there are a range of land uses contributing to the problems in the Estuary not just farming.*
- *SedNet has modelled some critical sources but is keenly influenced by slope. We need to confirm and calibrate the model with actual observation. The Taipo puts out a lot of the sediment, a lot of streams have high quantities of sediment.*
- *The same analysis needs to be done with phosphorous.*
- *Can you differentiate between natural or man-made phosphorus? The ability to get accurate load calculations, because of the way that water sometimes flows backwards and the marine waters coming through, can be tricky.*
- *Will a 30% reduction in sediment allow us to achieve our values of collecting shellfish from the estuary? Removing rotting material and sediment could help in the short term. It was noted that a lot of questions cannot be answered at the present time.*

### **Life in the estuary**

- *Has there been a study on shellfish? There was a study done in 2008 and from a trace metal point of view, you would need to eat a lot of shellfish to be unsafe, but E.coli wise the past studies say that you should not collect shellfish. There is a lot more that needs to be done in that space. The shellfish are not thriving because of the Thames/Tyne Street discharge.*
- *A lot of work has been done in recent years in relation to anti-fouling<sup>2</sup> from boat maintenance/repair facilities in the inner harbour of Ahuriri. In the last 5 – 6 years, the compliance team have been successful at keeping on top of those industries. Copper (which plants don't like) is a major problem. It is also found in residential areas because of copper pipes.*
- *Napier City Council's LTP proposal to dredge the Pandora Pond for recreational purposes was brought to the group's attention. This differs from the dredging that HBRC proposes in the upper end of the estuary, which has been dredged before.*
- *What fish species are there in the Estuary and how has it changed over time? The number of species that use the estuary at different times is very difficult to study (due to spatial and temporal complexities). There was a presence/absence study done in 1967. Estuaries are the spawning and nursery ground for most of the fish that we catch in the bay.*
- *There are 26 species of trans-equatorial birds that reside in the Estuary. Human disturbance is a major factor, people, dogs disturbing birds in their habitat. Particularly the godwit which needs to gain condition to get back up to Alaska to breed.*

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<sup>2</sup> Anti-fouling in this context refers to the process of removing or preventing organisms attaching and accumulating to vessels. Fouling on a ship's hull significantly increases [drag](#), reducing the overall [hydrodynamic](#) performance of the vessel, and increases the fuel consumption. When a ship's hull is cleaned heavy metals used for anti-fouling can make it into the waterway.

Anna then presented her vision of what a healthy estuary looks like, and some recommended management options for sediment management, nutrient management, invasive marine pest management, storm water discharges and habitat integrity.

The group then moved into a break-out sessions to ask the following questions.

1. What does a healthy estuary look like to you?
2. Do you agree with the management options recommended?
3. Is there anything missing?
4. What is achievable in the next 10 years?

Question	Group 1 John Cheyne et al.	Group 2 Xan Harding, Tom Belford, Te Kaha, Christine Smith, Peter Beaven, Neil Eagles	Group 3 Iain Maxwell, Nathan B, Jenny Mauger	Group 4 Vaughan Cooper, Mark Clews, Brett Gilmore, Bruce McKay, Joella Brown, Mary-Anne
<b>What does a healthy estuary look like to you?</b>	<ul style="list-style-type: none"> <li>- People swimming</li> <li>- people sustainability gathering abundant kaimoana</li> <li>- abundant appropriate fish life and bird life and plant life</li> <li>- a spiritual place support people's wellbeing</li> <li>- obvious its working well</li> <li>- water is clear and suitable for shellfish</li> <li>- a balanced natural ecosystem and natural flows</li> <li>- respected by its users</li> </ul>	<ul style="list-style-type: none"> <li>- Harvest and eat mahinga kia</li> <li>Guidelines for safety</li> <li>- Is mahinga kai most sensitive indicator for ecosystem health?</li> <li>- multiple values - multiple indicators - sediments healthy - oxygen - sands to mud ratio - address other values e.g. Birds</li> <li>- diverse range of healthy species</li> <li>- cover range of habitats /area of estuary to indicate health</li> <li>- fish breeding - migrating</li> </ul>	<ul style="list-style-type: none"> <li>- Full Immersion ~%</li> <li>- A plan to restore</li> <li>- Abundant fish/birds/bugs (good ones) start with plants</li> <li>- Holistic / Integrated approach to identifying then dealing with issues i.e. the whole catchment</li> <li>- deal with invasive species</li> </ul>	<ul style="list-style-type: none"> <li>- Swim in it 9....% time</li> <li>- Look the part - not a 1930s solution to urban development</li> <li>- Mahinga Kai (catch/collect)</li> <li>- Natural vegetation sequencing</li> <li>- Productive fisheries</li> </ul> <p>+ Anna's list is good</p>
<b>Do you agree with the management options recommended?</b>	<ul style="list-style-type: none"> <li>- Lots of potential for treatment wetlands</li> <li>- NCC land within Lagoon Farm</li> <li>- Ahuriri Farm Settlement</li> <li>- Need to understand contribution made from urban stormwater drains to overall issues</li> <li>- Reversion to meandering and natural forms in all reaches of drains and estuary</li> <li>- Sediment removal and oxygenation of SW flows e.g. revegetation over streams</li> </ul> <p>QUESTION: What position does TANK have on reclamation in Ahuriri Estuary?</p>	<ul style="list-style-type: none"> <li>- Coordination &amp; integrating projects of NCC, HBRC, DOC and F &amp; G</li> <li>- Identify source of sediment / nutrients</li> <li>- Urban stormwater and contaminants - manage identify and control</li> </ul> <p>→Stormwater Working Group</p> <p>→Where and when is it okay to discharge water to land?</p>	<ul style="list-style-type: none"> <li>- Sediment trapping wetland</li> <li>- Focus on the right way to manage stormwater</li> <li>- Increase awareness and promote estuary values</li> </ul> <p>Show those who are contributing to the problems how and what to change</p>	<ul style="list-style-type: none"> <li>- Will be adaptive</li> <li>- Need aspirational goals</li> <li>- Retrofitting urban development and working with life style block owners</li> <li>- 30% is the start with timeframe</li> <li>- 60% reduction .....</li> <li>- Fence actual/potential inanga spawning marine sites</li> </ul>
<b>Is there anything missing?</b>	<ul style="list-style-type: none"> <li>- Analysis of effect of limestone soils on P levels</li> <li>- Analysis of effect of changing salinity in estuary</li> <li>- Management of human use of sensitive biodiverse areas</li> <li>- HBRC to be more involved in TA consents that affect water quality in estuary</li> <li>- Mana Ahuriri and other stakeholders</li> <li>- Update of species distributions (fish/birds) in estuary</li> <li>- Need to involve airport in wetland</li> <li>- Wetland projects to be encouraged where feasible</li> <li>- Historical information on what was there before</li> </ul>	<ul style="list-style-type: none"> <li>- Identifying best way to address the multiple problem</li> <li>- Stormwater management - from source (e.g. industry on site control)</li> <li>- Treatment e.g. Wetlands</li> <li>↳ discharge meets objective</li> <li>- Understanding relative impact of stressors!</li> <li>- Gain confidence in what are the problems</li> <li>- better data</li> </ul>		<ul style="list-style-type: none"> <li>- More information on %s required to meet the objectives</li> <li>What costs are involved (to keep sediment in the landscape)</li> </ul>
<b>What is achievable in the next 10 years</b>	<ul style="list-style-type: none"> <li>- Continuation of riparian fencing programme</li> <li>- NCC wetland area</li> <li>- Better management of human use of area</li> <li>- Wetland projects to be encouraged where feasible</li> </ul>	<ul style="list-style-type: none"> <li>- Plan: progressive implementation for sediment management</li> <li>- 30% reduction as objective/goal, but uncertainty in terms of timeframe</li> <li>- have to build level of confidence for achievable/measurable outcomes</li> <li>- Plan with flexibility to adapt to results</li> </ul>	<ul style="list-style-type: none"> <li>- Define the problem</li> <li>Develop carrots and sticks</li> <li>Educate and promote behaviour change -and How they contribute to change.</li> <li>- Maximum sediment reduction with best practice</li> <li>- Integrated Catchment Mgt Plan (Adaptive Mgt) Community developed</li> <li>- Social inclusion - get the community involved in restoration and create resources.</li> </ul>	<ul style="list-style-type: none"> <li>- Fencing all significant streams</li> <li>- Reduction in sediment +30% .....</li> <li>- Better urban new development</li> <li>- Improve the water quality ex stormwater drains</li> <li>- Remove those invasive Fan worms</li> <li>- Bring TLAs along with.....</li> </ul>
<b>More Info</b>			<ul style="list-style-type: none"> <li>- Where do the problems occur?</li> <li>Who do we need to move?</li> <li>What motivates them?</li> <li>- What are the peri-urban values?</li> <li>- What are the priorities? Bang for bucks</li> <li>- Health stats for illness from contact rec</li> <li>- Can we get P removal from SW at Pump Stations</li> <li>- Fish passage (esp at SW Pumps)</li> </ul>	

The groups reported back to the meeting and the following are additional to their written comments.

#### **Group 4**

*What does a healthy Estuary look like?*

Want to swim in it. Group could not come up with a figure. Looks the part of an estuary. Not 1930s idea of urban development this is a challenge for HBRC and NCC make the place look the part. Collect and catch shellfish and fish. Natural vegetation sequencing. Productive fisheries. Anna's list good.

*Management Suggestions:*

Have to be adaptive in our plans, with aspirational goals, 30% only step one. 30% just a start, achievable but need more 60% year 6, and 80% year 8.

Retro-fit urban development work with lifestyle block owners.

Fence actual spawning marine site. More information on consents to meet the objective. No specific information. What costs are involved. Keep sediment in landscape.

*Achievable in next 10 years.*

Fencing all significant streams. Reduction in sediment of 30% and growing. Better urban new development and improve water quality in the drains. Remove invasive worms. Very important to bring TLAs along.

#### **Group 2 – Xan Harding**

*What does a healthy Estuary look like?*

Mahinga Kai being available in the estuary, but not the most sensitive value. Food is a good public talking point. Focus on healthy sediments related to oxygen and sands to mud ratios. Address other values i.e. birds, an indicator of health. Range of habitats. To measure only at one point on the estuary would not be accurate, and different food basket items.

*Management Suggestions:*

Coordinated and integrated projects, among the TLAs. Address sediment input and identify source of sediments and nutrients. Do we have enough information to target management options? Stormwater and urban contaminants. Stormwater Group need to consider where and when is it okay to discharge water to land. Identify the best way to address multiple problems. How far can the plan go, with NCC and can we talk about different kind of roofing materials. How detailed and how prescriptive can we be. Not the level of confidence as in Ngaruroro. Better information required on where the contaminants loads are coming from.

*Achievable in next 10 years.*

What is the lead time for some of these things. For example sediment reduction. The SedNet issues of fencing of streams and pole planting. All these things take time. Need an idea of times before formulating short and long term goals. Collecting better information. The importance of building into the plan the flexibility. Change developments and controls during the plan.

#### **Group 3 – Nathan Burkepile**

*What does a healthy Estuary look like?*

Discussion about swimming. The area is used year round for swimming. Starts with the bugs and the plants and the rest comes in behind. Bugs and plants behind that are the soils and things. Need an integrated approach that deals with the whole catchment.

*Management Suggestions:*

Holistic approach. Some issues with invasive species which need to be dealt with. Best practices need to be discussed. Dealing with sediment in the drains. Awareness and promotion is very important. Farmers need to fence off the water, understanding creates more "buy-in". Adaptive management to incorporate new science.

*Achievable in next 10 years.*

Carrots and sticks, maybe not using right carrots or the right sticks. The group really thought that education, promotion and behaviour changes would help to create change if people had a real understanding of the issues they are more likely to make changes and accept practices. Integrated catchment management plan. Plan needs to be community developed. Social inclusion. Getting kids involved and affect behaviour change at a young age.

*More Information*

What are the peri-urban values, some issues that need to be dealt with. Need to get more bang for buck. Question is how do we best manage the land instead of aiming for numbers. Interested in health stats from DHB, contact illnesses. Questions about phosphorous removal at pumps? Fish passage issues around the pumps.

### **Group 1 - John Cheyne**

*What does a healthy Estuary look like?*

Swimming, gathering abundant kai moana. Abundant fish life, bird life and plant life. A spiritual place supporting people's wellbeing. Water is clear and suitable for shellfish. A balanced natural ecosystem and natural flow, respected by all its users.

*Achievable in next 10 years.*

Lots of potential for treatment wetlands. NCC land with Lagoon Farm and Ahuriri Farm settlement identified at the point as potential sites and hopefully other land use decisions are not made that compromise the potential wetland treatment options further down the track. Need to understand the contribution made from urban stormwater drains to overall issues. A reversion to a meandering natural form, for streams and drains, as in Taipo already done. Sediment and oxygenation of SW flow and revegetation. Good suggestion from last group of trying to strip out the phosphorous at the pumping level. What position does TANK on further reclamation, (not historic) the digging and deepening to make a bigger recreation pond at Pandora and that fill being used to create areas for storage sheds etc. Proposal in LTP of NCC.

*Is anything Missing*

Analysis of the effect of limestone soils on P levels. Analysis of changing salinity in the estuary. Management of human use of sensitive biodiversity areas. HBRC be more involved in the consents that affect water quality in the estuary. Need to work alongside Mana Ahuriri, all those stakeholder groups really important in the creation of a new management plan. Update of species distribution across the estuary. With fish and birds. Need to involve the airport authorities in wetlands to minimise bird risk.

*Achievable in next 10 years.*

Continuation of riparian fencing. Splendid work done in the upper estuary. Funded by DOC, Regional Council and Matua Wines. Recovery of estuarine vegetation once stock removed is excellent. Well worth a visit. Good work being done, use as a template and carry it forward. Better Management of human use. It is justified but some sensitive areas need to exclude humans and dogs. More historical information of what was there previously.

**Robyn Wynne-Lewis** spoke of the steps along the way towards the Plan Change and the agreements that need to be worked through together. The more people we can carry each step along the way the better. She was heartened by what has been said today, because it appears that we are all speaking the same language.



## 5. Item # 4 –New Mean annual 7-day low flow (MALF-7d)

Jeff Smith – Team Leader Principle Scientist Hydrology, Hydrogeology presented the first of three items related to groundwater and surface water quantity modelling. (Power Point slides were handed out). Jeff Smith told the group that the presenters would like a steer on what further modelling is required.

Jeff’s presentation of the new MALF-7d was a recap of the briefing presented at HBRC on 17 March.

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

- In the naturalised low flow are you taking into account the ground water in the naturalising? *Yes we are.*
- In considering stream depletion, have your figures factored in everything? *The modelling is the combined effect of actual pumping from groundwater for every consented take on the plains. The groundwater takes further away from the river are having more of an effect that we thought, and those ones aren’t on minimum flow restrictions. Groundwater appears to have quite a significant effect when you are naturalising.*
- Can we get another column in that table that accounts for Ngaruroro users with water takes subject to low flow bans. *That is the difference between the recorded flow with or without those consents.*
- What is the difference between the consented abstractions and the actual abstractions? *Today’s figures are the actual take not the consented allocation.*
- Where are the tributaries coming into this? Interested in a much wider view further up the rivers. *To do the same study in the tributaries would require another habitat study which is not a quick process. The flows are gauged in some tributaries but habitat assessments would be required. We might be able to develop some default policies to manage those tributaries to complement what we find for the main stem.*
- Is it possible to overlay the irrigation on the graph with rainfall in the catchment? *Yes that is possible. The rain events were between the bans. The rain events are clearly seen.*
- There are rain gauges all over the catchments. Can we link minor rain events to see if there is any effect on the river?
- As part of your plan have you allowed for climate change in the future? Yes. The longer answer is that climate change has been looked at up to 2040 and various IPCC models have been plotted. There is not a lot of variance between forecasts for the next 26 years and the past 26 years. There is negligible climate change effect forecast for the operative period of this plan change and the next one as well.

### Action Item

- 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.
- 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.

## 6. Item # 5 – Why a change to MALF changes the ~~minimum~~ restriction flow

Thomas Wilding, HBRC Senior Scientist – Hydrology. Thomas’ presentation reminded the Group of its interim agreement to use RHYHABSIM to inform water use decisions. RHYHABSIM predicts the change in suitable flow depth and velocity for each type of fish. The actual % level of habitat protection and the fish species is still to be decided. In summary, Thomas concluded that RHYHABSIM is the right method for setting limits on water use, considering the effects on habitat available to use.

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

- Tangata Whenua would be interested in flow required for koura.

**Post meeting update:** *Thomas tracked down some research on koura, which shows Koura don’t like high velocities. They are sometimes found at velocities over 0.3 m/s if there is rock or log to hide under. Otherwise they seek slow or still water. Cover is the big thing for koura (roots, logs, etc.) so are similar to common bully, in terms of velocity and depth requirements. Generally enough flow to maintain water in pools along the*

*margins of the river. Hence flow requirements would be less than torrentfish and common smelt. The 2006 research paper entitled "Habitat characteristics of crayfish (Paraneohpops planifrons) in New Zealand streams using generalised additive models (GAMs)" by I. G. Jowett, S. M. Parkyn, J. Richardson is available on the TANK portal or by request.*

- What eats torrent fish? *We do not know what the major predators are. We are focussing on river flow as the constraint we can manage. River mouth maintenance is for flood control, not for fish maintenance.*
- What is the current HBRC policy for river mouth maintenance? *HBRC to follow-up and bring back to the TANK Group.*
- Would channelling of water create better habitat for species (than a braided river)? *During summer the river is often in 1 or 2 channels anyway. The river becomes less braided. Hence, during droughts, the flow rate is a more important constraint for torrent fish.*
- Is there a correlation between habitat protection and fish abundance? *It correlates with fish abundance where there is not something else that is constraining the system, for example a situation where the fish cannot obtain access to the river or there are toxins going into the river.*
- Did this group select torrent fish to study habitat for the braided rivers? *It was thought that torrent fish was selected for braided rivers, inanga for estuaries, and koura for tributaries. Not sure if agreement was reached. Some research in past minutes required to clarify.*

**Post meeting note:** *In meeting 17 it appears that different fish and bird species were considered as 'indicator species' for the success or otherwise of different policy 'settings'. This is not the same as looking at habitat needs of different fish species and selecting flows based on particular flow requirements of different species. However, they can be used to guide selection of and weight given to flow requirements of fish.*

*The meeting records agreement was as follows:*

- *Ngaruroro upland tributary indicator species: longfin elvas/tuna*
- *Ngaruroro lowland tributary indicator species: inanga*
- *Ngaruroro mainstem indicator species: Further discussions were required regarding indicator species in mainstem of Ngaruroro*
- *Lakes and wetlands: still under consideration*
- *Estuary indicator species: still under consideration.*

- When talking about 90% or 80%, we don't put a time element into this. Is it a constantly moving variable? What effect will it have from 90% down to 50% for a 5 days period versus a 14 day period. Would it have a huge impact? Would it stress the fish and would they recover? *The duration of the impact is extremely important. If it dropped to 50% for one day it would not be a problem. A drought scenario is where protection level is more likely to translate to an effect on fish numbers in part because the duration of low flows is long during a drought. The relation between drought and duration of low flows is reliable given the absence of large dams upstream.*
- Are we using models that don't apply to this river. *The habitat study was done on this river.*
- It was noted that the impact on fish from irrigation extractions is what the solution for the Ngaruroro swings on. What are the fish faced with when an event happens? TANK Group members are looking for information on whether or not there is a difference in the gaining and losing reaches that might offset the impact on the losing reach (i.e. are there characteristics peculiar to the Ngaruroro River that need consideration).
- In the technical paper on the naturalised MALF we talked about RHYHABSIM being superseded by SEFA. Does that mean that this group might need to, with a 99% correlation between the two models? *Essentially SEFA is RHYHABIM 2 with some tweaks. The big change with SEFA is in the addition of other models (oxygen, etc.). So the software change has little effect on the predictions for this plan change.*
- At the current low flow of 2.4 what is the Council's position on the quality of the habitat and stability of the system as impacted by flow? Can we have a view from the Council as to what it means in terms of the state of the system, and then from that can we have information that can objectively measure changes in the system through leaving more water in the system? *At the moment we don't have any objective measures of what the different protection levels mean.*
- What change would be predicted to see? Can we clearly measure the benefits? *Not at this stage. No information on abundance of fish in the Ngaruroro. Data collection has started but is going to be a 5 – 10 year process. In five or ten years we may have more information on fish population. HBRC will try to give a view on what is likely to happen based on international research.*

- What is the importance of the MCI-Macro Invertebrate community index? *Invertebrates are important but we do not use the MCI for limits on water use, because it is not related to flow. Instead MCI is an indicator of organic pollution.*
- Tangata whenua are interested in what the fishery was. This is important and needs to be injected into the process.
- Are there any other regional councils or the likes of NIWA who use MALF/RHYHABSIM that we could hear from? *Yes, we can look at bringing John Hayes from Cawthron Institute to an upcoming TANK meeting.*

#### Action Item

- 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?)
- 27.7 HBRC to organise an expert to present to the Group on RHYHABSIM.

### 7. Item # 6 – Effectiveness of different restriction regimes and effectiveness of Artificial Recharge

**Pawel Rakowski – Senior Resource Modeller** with further comments by Thomas Wilding. Pawel presented background information on groundwater abstraction including a map showing the location and size of GW takes; and bar graphs showing the total annual abstraction from 1979 to 2015 by use (irrigation, industrial and public water supply) and monthly during 2012-13. He then presented modelled results of various pumping ban scenarios for the Karamu, Ngaruroro and Raupare. A major conclusion from the modelling was the response from banning irrigation takes was small, particularly for the Ngaruroro. Pawel then presented modelling results from a range of artificial recharge schemes. These showed a relatively small effect, even for very large schemes due to the highly transmissive nature of the aquifer. Stream augmentation was proposed as a possible solution for further modelling.

#### Matters raised by TANK members (Questions and answers arising from the presentation):

- It was noted that the results show the water conservation order's proposal for an irrigation ban kicking in at 4200L/s would provide negligible benefit in terms of protecting the habitat. This is also true for the HBRC's current approach (i.e. minimum flow ban at 2400 for surface water and groundwater takes within 400m).
- Are there continuing losses in this scenario? TANK member observation suggests no benefit seen from stopping pumping but ongoing losses from the river, unless it rains in the ranges.
- When you talk about the past artificial recharge scheme are you talking about 1998-2008, when 500L/s was consented or pre 1998 when it was 2000L/s? *We used the 1998 to 2008 figures.*
- Why would artificial recharge be so much less effective than out of stream storage? *Because when the water is pumped back into the aquifer it seems to disappear, it merges into springs.*
- How does the aquifer recharge every year? *Ultimately, from rainfall, though approximately 75% is from Ngaruroro River losses.*
- It was noted that flow is only one thing that we should be thinking about. We cannot control the weather, and climate is a bigger driver of our hydrology than anything else. Therefore we need to think about the overall resilience of the system. Our focus should be building capacity to cope when flow is reduced through habitat (e.g. wetlands, shading, riparian planting). The modelling shows controlling irrigation takes has limited effect.
- When will the model be able to tell us the overall allocation status of the system? Is the system sustainable at the moment? *It is sustainable for the current levels of abstraction. This is not taking water age into account. The models can show what could happen, but in terms of sustainable management that is up to TANK to decide.*
- What the public sees is some evidence of declining water levels. Does this model tell us if there is a declining trend from actual abstraction? Are we replacing the levels of water being taken? *Summer lows are getting lower. Pawel has run a simulation into the future and there doesn't seem to be a downward trend. Climate change will have an effect. We will bring back further information.*

- There was some discussion on water aging. The biggest most concentrated use of water is in the municipal areas. More information will be coming in next couple of meetings.
- There was a request to keep the ball rolling now we have started seeing results from the model. *Yes, we will need extra time to discuss this topic and further meetings may be required, perhaps after April or May.*

When the group broke into sub-groups to discuss the break out questions, a recurring theme was it was a lot of information to absorb and very complex. More time was needed to digest the science before answering the breakout questions.

*Group four's response summed up the discussion well:*

*"The last breakout question was do we know enough to know what level of protection we need. If we don't know that answer to that question than the rest is a moot issue. Do we have any evidence that 2,400 restriction is necessary. We hear anecdotally that we used to catch flounder here or eels there. But we don't have that documented in a systematic way. So what is the basis for establishing that we need more protection? Let's assume that we answer that question and it should be 4,400 or whatever then we need to work backward from there and determine what are the strategies that would enable that volume to be met on a sustained basis and we weren't anywhere near close to knowing what the answer to that is, we are being told that bans would have a de minimus effect and augmentation or recharge would also have negligible effect. So I guess, if the problem with recharge is that you put it in and it leaves before it supports the flows that you want it to support then water storage is the proper thing. What amount of water would need to be stored that would support a flow that was determined to be a justified flow on the basis of environmental evidence that it was needed? So we just went around in a circle basically and we felt that we should get on with the task of saying okay well if we are going to hypothesize some higher flow is required a. we need to come with the evidence that it's indeed needed b. what is the storage capability that would be required so that the thinking about that can get underway and cost can be weighed against the benefit that it is presumed to have.*

*One other point, if bans aren't significant in supporting flow there may be other reasons for limiting abstraction, there could be other GW users who might be materially affected if water table levels were allowed to decline. There are people with shallow wells for drinking water, the fact that a ban might not help the flow issue doesn't remove from the table the issue of whether we need to be attentive to abstraction because of other impacts it may have on other users in the catchment.*

*We did feel that it was important in some way to be more systematic about gathering the anecdotal evidence because if the anecdotal evidence says wait a minute this is the way it used to be... well if that's not flow related ..what is it related to and what other changes would need to occur in the catchment to get us back to that or closer to that starting point and we don't really have a clear picture of that is."*

**Action Item**

- 27.8 HBRC to bring back more information on the sustainability of the current level of abstractions, particularly in light of climate change.
- 27.9 HBRC to present the findings from a water aging study of the aquifer.

Questions	Group 1 John C, Lesley, Pete X, Nick J, Jenny M	Group 2 Ian, Tim, Ivan, Xan Aki	Group 3 Joella, Neil, Mike, Jerf, Mary-Anne	Group 4 Jeff, TK, Tom, Pawel Emma	Group 5 Thomas, Marei, Vaughan, Mark, Mike, Nathan
<b>Additional Comment</b>	How difficult all this was!  Need time to digest this before any decisions can be made.		Appears to confirm observation during previous droughts. Understanding implications of graphs on p22 important. Hard to decide without more thought and discussion. Concern about complex science and understanding. * How can we answer questions without understanding what we are looking at. Changes focus from 4.200/2400 etc that needs time to digest/share <ul style="list-style-type: none"> <li>• Time to consider other mitigation measures</li> <li>• Fx of other impacts on aquatic habitat</li> </ul>	See transcript above.	Still absorbing information – staged reductions before bans.  If started reducing water takes before bans in force.  Maori viewpoint needs to sit alongside this process.
<b>What percentage of stream depletion recovery should justify restrictions?</b>	<ul style="list-style-type: none"> <li>• Need time to reflect</li> <li>• Clear statements of what model is saying</li> <li>• Do scenarios on +/- allocation</li> <li>• Combination scenarios :recharge + ban?</li> <li>• Are lead levels in the pressure of the aquifer accounted for spatially?</li> <li>• Differential impact/contribution of Nga and Tutae</li> <li>• Water age impacts/issues</li> <li>• Investigate Bridge Pa augmentation agreement</li> </ul> Define +" Augmentation– wetlands, streams out of stream storage – multi purpose? And rec eco. <ul style="list-style-type: none"> <li>• Impacts on fish passage/habitat</li> <li>• Understand drivers of past change - '31 earthquake.</li> </ul>	<ul style="list-style-type: none"> <li>• Different responses for mainstream vs tributary</li> <li>• Binary system (on/off) not best i.e. Staged reduction better</li> </ul>	Try and determine when efforts are more than minor  More modelling but see *	Question should be: How do we achieve stream/river flows if restrictions aren't effective?  Trigger levels and GW allocation should be considered in terms of GW users.	30% improve <del>50%</del> 10% Depends on minimum flow 2400 vs 440
<b>Over what period of time? E.g. 7, 30,60 days other</b>		More info required	Understanding river flows overtime		N/A Not available
<b>Should groundwater pumping restrictions be focussed on small streams?</b>		Pumping restrictions focus on smaller streams <ul style="list-style-type: none"> <li>- Yes – manage reduction</li> <li>- <b>Is this achievable?</b></li> </ul>			
<b>What further modelling is required?</b>		Yes – time periods of 60 days <ul style="list-style-type: none"> <li>- Effect of staged reductions</li> <li>- <b>Logistically how would growers manage this?</b></li> <li>- Is highflow harvesting feasible</li> </ul>	Modelling stages reductions still important (initiate restriction sooner) Need for timely realtime information to guide decision making Effect of reductions @ high flows in the longer term. Model: How much water to prevent need for bans →model 1 for 1 @ Valley Rd cf stm augment @ Bridge Pa scheme idea. What is effect on river flow +G/W from release of stored water	Could <u>combined</u> mitigation be modelled? <ul style="list-style-type: none"> <li>• Tutae kuri</li> <li>• Mitigation/recovery @ 4,400</li> <li>• GW users/sustainability and interference</li> <li>• High level calc. of storage required to meet certain minimum flows</li> <li>• Evidence for 2,400m3/s being unsuitable for min flow and levels of habitat protection.</li> <li>• Anecdotal evidence(historic)</li> </ul>	<ul style="list-style-type: none"> <li>• The whole recharge subject</li> <li>• Storage – how to use, where</li> </ul>
<b>Staged reductions or total bans – scenarios in preparation</b>		See above	Further modelling – need to see beneficial effects of staged reduction on flows.		<ul style="list-style-type: none"> <li>• Yes</li> <li>• No 400m rule</li> <li>• Over zones (even)</li> <li>• Mātauranga Maori – Science</li> </ul>
<b>Are we in a position to decide on preferred levels of habitat protection?</b>		? – impact of mitigation - Impact of other factors Water quality Sediment	No need more info on connections and fx incl in Raupare & Karamu		



## 8. Item # 7 – Verbal updates from Working Groups

### **Water Conservation Order** – from James Palmer

The Water Conservation Order tribunal have yet to schedule their first meeting and it will be 1 – 2 months before they first get together to decide their approach. Not likely that submissions will be called for in the next 2 months, much slower than thought. TANK will probably be more advanced with our deliberations and will have more to take to the tribunal collectively. This will improve the chances of TANK being the primary vehicle of advice.

### **Fresh Water Improvement Fund** – from James Palmer

Government announced \$100m cleanup fund, first round closes on the 13 April. HBRC does not want to miss the opportunity for funding and intends to apply for Ahuriri and maybe Karamu. It will be for fencing, planting, stock exclusion around the estuary etc.

### **Swimmability Targets** – from James Palmer

Already mentioned this morning by Anna. We need to provide the Government with some draft targets for the region by October and finalised by March 2018. We will need to work with TANK, to see how the TANK swimmability aspirations are included in those targets.

### **Water Summit** – from James Palmer

A first meeting has been held regarding a proposed Water Summit in late May. This will involve HBRC, HDC, NCC, NKII and HBDHB. The focus will be on Heretaunga and looking for TANK Member participation. This is an opportunity to engage the broader community in what TANK is doing and hear their views regarding some of the issues.

### **Draft Plan Change** – from Mary-Anne Baker

A skeleton plan change was circulated with the meeting papers. It aims to give a flavour of what things would look like but it needs early engagement with Mana Whenua to ensure that the values are appropriately expressed. After this a wider discussion will be held with feedback on the text.

### **Sediment Management Work** Peter Kay - HDC Rural Community Board/Sheep & Beef Sector

Six meetings held so far from which a reference group has been formed which will be meeting in May. They will be bringing recommendations to the group as to the directions that sheep and beef farmers should be taking. It was stressed to them that if they did not do anything and put their heads in the sands they would be legislated. Bottom lines may be farm environment management plan or there could be other suggestions.

Communication to date has been a problem. There seems to be a wealth of information available on the regional council website but people do not know how to access it.

### **Economics Group**

Attempting to set up another meeting on 6 April. Last meeting is reported on the portal, if portal cannot be accessed please let Desiree know.

### **Update from Stormwater Working Group** – Rina Douglas

The discussions held this morning on the Ahuriri Estuary, were very timely for the SWG, some good sessions held last year where a lot of the issues were identified. The SWG are now looking at actions, and trying to come with some concrete actions to solve the problem. First looking at best practice across the country, and will be bringing that back to the SWG at their next meeting. NCC is in the process of improving their stormwater systems. Hopefully will get Jason Strong to report to TANK to explain what NCC is doing to address the problems.

***Post meeting update: Jason intends to present NCC's stormwater plans to the TANK Group on 14 June.***

### **Think Tank - Drew Broadley**

More public exposure this year. Tank Talk going into community newspapers, Napier and Hastings Mail, in April. Engagement Group to meet again shortly.

## 9. Karakia and close.

Marei Apatu gave a karakia to end the meeting at 5.10pm.

## Summary of Action Points

ID	Action item
27.1	HBRC to bring back the new NOF swimmability tables to the TANK Group for consideration
27.2	Refer the list of potential guest speakers to the Engagement Working Group for consideration in light of the revised work programme.
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.
27.4	HBRC to consider default policies to manage flow in tributaries to complement what we find for the main stem.
27.5	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)
27.7	HBRC to organise an expert to present to the Group on RHYHABSIM and fish habitat levels of protection.
27.8	HBRC to bring back more information on the sustainability of the current level of abstractions, particularly in light of climate change.
27.9	HBRC to present the findings from a water aging study of the aquifer.