

Meeting Thirty - Record

When: Thursday, 27 July 2017, 9:00am – 4:30pm

Where: Ellwood Function Centre, 12 Otene Rd, Waipatu, 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
Keith Dolman	CEO, Hawke's Bay Forestry Group
Bruce Mackay	Heinz-Watties
Chris Dolley	Napier City Council
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
Jenny Mauer	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

NAME	ORGANISATION
Vaughan Cooper	Royal Forest & Bird Inc.
Xan Harding	Hawke's Bay Winegrowers
Desiree Cull	HBRC Programme Leader
Drew Broadley	HBRC Communications Team
Gary Clode	Manager Regional Assets
Iain Maxwell	HBRC Group Manager Resource Management
James Palmer	HBRC Group Manager Strategic Development
Jeff Smith	HBRC Team Leader/Principal Scientist Hydrology
Jim Sinner	Cawthron Institute
Joyce-Anne Raihania	Senior Maori Strategic Advisor
Mary-Anne Baker	HBRC Senior Planner
Pawel Rakowski	Senior Resource Modeller
Robyn Wynne-Lewis	Facilitator - Core Consulting
Sandy Haidekker	Water Quality and Ecology Senior Scientist
Stephen Swabey	HBRC – Manager Science
Tom Skerman	Acting Group Manager – Strategic Development
Peter Bevan	HBRC Councillor
Tom Belford	HBRC Councillor
David Renouf	Observer
Matt Kneebone	Hastings District Council

Meeting Objectives

1. Agree Clive River management direction and Plan drafting instructions
2. Agree direction stormwater management direction and Plan drafting instructions
3. Consider GW modelling outputs
4. Consider establishment of the Water Augmentation Working Group

AGENDA ITEMS

1. Welcome and karakia

Welcome and Karakia to open the meeting.

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.

3. Item # 1: Notices

- **Farmers Reference Group:** Mary-Anne signalled that members of the Farmers Reference Group will be attending the next TANK meeting as observers to present their work-to-date on solutions to reducing sediment loss into waterways.
- **Water Conservation Order (WCO):** Mary-Anne reported that the WCO for the Ngaruroro and Clive River has been notified by the Special Tribunal with a closing date for submissions of 24 August 2017. James Palmer added that HBRC had a brief discussion at its council meeting the day before, and concluded its desire to preserve the integrity of the TANK process and seek alignment between the two processes where ever possible through sensible sequencing which will could allow the TANK Group's work to inform the Tribunal's decision-making. He noted there remains a high degree of uncertainty around how the Special Tribunal will progress in regards to both scope and timeframes. See also Item# 7 below for discussion about a TANK submission about process to the tribunal.
- **Administration** – Desiree informed the Group about a change to the system for reimbursement from vouchers to cash via HBRC's payroll system. A request to check tax provisions for Koha was made.
Post meeting note: a check was made with the finance team who were aware of tax provisions but advised the change was to ensure consistency with council policy.
Desiree also noted that at least one member didn't receive their meeting papers due to an old email address and circulated an email list for members to update or tick-off.
- Members were requested to ensure e-mail and contact details were updated as necessary.
- **James Palmer's ongoing role** – the Group took the opportunity to congratulate James on his appointment as CEO. James reinforced that the TANK process is one of, if not the most important project for HBRC's core business and gave his commitment to resource it as such. It is his intention to prioritise his attendance and to stay with the process to hear ongoing discussions. He may not be the right person going forward to act as its default spokesperson but will discuss with Iain Maxwell and Tom Skerman.

Action Item

30.1 HBRC to come back to the TANK Group with suggested replacement for James Palmer as default spokesperson.

4. Item # 2 – Meeting Record 29 and Action points

Desiree noted a change made by Dr Jeff Smith to a technical point he had made about stream depletion and it was agreed by the TANK Group. Later in the meeting the Meeting Record was adopted as a true and accurate record.

Desiree also spoke to the slide showing the action points from Meeting #29. She noted that Dr Morgenstern's presentation on the age of water will be emailed out as well as put on the portal and online. The discussion on water storage from the previous meeting will be referred to a Water Augmentation Working Group (to be discussed later in the meeting).

5. Item # 3 – Clive River: Values and Options for Management

Mary-Anne introduced the item and the context for the presentation which included reference to the WCO application and the Ngati Hori Iwi Management Plan.

Aki Paipper - Kohupātiki Marae, Ngati Hori

Aki Paipper spoke on behalf of Ngāti Hori and Operation Pātiki. She noted it was a privilege to share what she has been involved with over the past 8-9 years. Her presentation covered mandate, priorities, sites of significance, historical context, recent planning documents, education initiatives, on-the-ground projects and use/events. Aki finished her presentation by advocating for an urgent integrated catchment planning approach.

Clive River has many sacred sites of waahi tāpu significance. It was once a healthy source of seasonal food and 'route 66' - part of a vibrant transport network for Mana Whenua; increasingly the 'front yard' with growing use of the river, walkways/cycleways and planted corridors. Kohupātiki Marae has been especially focussed on bringing back Pātiki to the river and has been heavily involved in better riparian land management and ensuring

the historical significance of the river is recognised. Aki noted that the wool scour at Clive is on the original site of Otanenuiarangi Pā. Operation Pātiki has been learning about estuary flounder to better understand what is needed to restore the fish habitat, the state and health of the awa. Unacceptable issues to be managed better include excessive weed growth, sediment inputs, and urban and industrial stormwater.

Sandy Haidekker – Water Quality and Ecology Scientist

Sandy started by noting that Meeting #25 covered in detail water quality and ecology. Today takes that discussion a step further and suggests a “higher” vision for Clive/Karamu. Her presentation covered:

- Recommended management measures to meet identified values
- Suggested an integrated management approach
- Provided information to discuss a strategy and action plan for the Karamu catchment.

Sandy found that a soft sediment river bottom could function as a healthy lowland river system, but to improve the Clive aquatic ecosystem, both water quality in the Karamū and riparian land management in the wider catchment need to be improved. She noted that when she was looking for reference data from other councils for healthy lowland streams there were none. Lowland streams throughout New Zealand are highly degraded which provides us with a unique opportunity to think-big and make it an exemplar for community-driven active management. She encouraged the group to think-big and inspire collective community ownership and action.

Sandy proposed the following vision:

“Our vision for the Clive river and Karamu catchment is a healthy lowland ecosystem in a productive landscape, that restores mauri and supports endemic biodiversity with a diverse and abundant fish community, healthy riparian vegetation, and provides for safe recreation.”

Gary Clode, Manager Regional Assets

Gary started by noting his support for Sandy’s proposed approach to deal with the Clive River as a lowland stream as he believes this is how we will make the most gains. His presentation covered:

- **Sediment Accumulation:** How much is there and where does it accumulate?
- **Sediment Mobilisation:** What flow is required to move sediment through the system, down the Clive and out to sea?
- **River Mouth Alignment:** Will fixing the river mouth to one location help with moving the sediment?
- **Flow Augmentation:** Will adding extra flow from another source help to move sediment?

This presentation answered long held questions about whether sediment can be removed from the lower reaches by changing river management – and essentially concluded that it could not.

Below the Karamū-Raupare confluence, Clive River gains about 6-7mm sediment per year in some places, but about 30-50mm per year at Clive River mouth and up to the rowing club. Dredging has previously occurred every 10 years to clear the build-up of sediment, mainly to serve recreational users in the lower Clive. This is expensive, around \$1 million each time.

It was a necessarily technical presentation to explain the amount of force or pressure required to mobilise sediment. Gary explained why there isn’t enough flow ‘pressure’ in this river system. It’s due to the flat grade of the river and back-pressure from the sea mouth. The concept of a training wall to set the river mouth position would not help sediment to move through the system, even at times of high flow. Higher flow into the Clive River from the Ngaruroro for example would mean more sediment coming in, without sufficient pressure to clear or move sediment through the system.

Matters raised by TANK members:

- The group expressed support for a vision but stressed it needed to connect with the community experience of the river and start with the “why” its important first (rather than what and how). The Group was reminded of the reaction to people swimming in the Clive on the way home from the jet boat trip and the observed impact from a neighbour’s stock in tributaries.
- **Do we have science/knowledge to convince the community to impose a harvest restriction or rahui to protect whitebait?** *Identification of spawning sites and habitat quality tend to be more important than over-harvest. The fishery is in a better state than it was 30 years ago due to identification of spawning sites.*
- **What are barriers to freshwater augmentation?** *The large volume needed to mobilise the sediment, no bore could handle it.*
- **Did you try more than one site for training walls? Do they have to be perpendicular to coast?** *There was no point playing around with refinement as the modelling showed such an obvious adverse effect on the Clive River.*
- **If dredging is proposed, will you analyse the quantity of sediment that will be dumped to sea?** *Yes*
- **What impact has the removal of wetlands had?** *In terms of sediment movement, suspect wetlands are of no help.*
- **Is there an opportunity to stop sediment upstream?** *Yes through better land management.*
- **Do we know where sediment hot spots are?** *Yes through SedNet.*
- **Can we narrow bed width at low flows to help move sediment?** *Yes, but we need to account for flood water and suspect flood issue is too difficult to overcome plus it would impact on recreation values.*
- **Have you looked at an independent mouth for the Clive River?** *No, as I don’t think it would make it better.*
- **What are the 3 things you would do to improve the Clive River?** *Need to start on the land, need to look at what rural and urban sectors are doing. Also develop lowland catchment shading to keep temperature down and improve oxygen.*
- **Are there any sections of Ngaruroro where there is surplus gravel?** *Yes about 300 cubic metres per year is extracted by gravel contractors.*
- **Is a weed boat that also removed the weeds feasible?** *Yes but an application to the Freshwater Improvement Fund application was declined. More investigation into this weed harvesting was still going to happen.*

Following Q&A, the Group broke into small groups to answer the following two questions:

1. Do you agree with the proposed vision for the Clive River?
2. Do you agree with the recommended package of management measures to meet the needs of the above values?

Recommended Management Direction Agreed by the Group

- **Water quality** – riparian land planting for shade and whitebait spawning. There is a preference for native plants, but this would be part of a long-term strategy that allows for shorter term ecosystem improvements or other site constraints
- **Macrophyte ‘weed’ management** – continue weed boating with weed retrieval (cut and carry) in the short to medium term until riparian vegetation becomes more effective
- **Research & investigation** – gather more information on sources of E.coli contamination, develop mitigation measures, and consider options for channel design
- **Water Quality** – a focus on measures to reduce sediment and nutrients being discharged into the rivers in the catchment and better management of urban stormwater and industrial discharges
- **Water Quantity** – establish an allocation limit and water allocation rules.

The Group supported these, with additional suggestions including:

- better management of urban and industrial inputs – particularly to reduce fish kills;
- adding education and communication for awareness and understanding;
- creating public space access so people can better connect with the Karamū.
- emphasising good land management practices (with a focus on stock exclusion/ fencing),
- improving water quality
- creating native bush corridors over time
- understanding the sources and composition of sediment.

Q	Group A	Group B	Group C	Group D	Group E
Do you agree with the vision					
1	We're okay with it (needs fleshing out)	<ul style="list-style-type: none"> Wider community is the audience Needs to be shorter/catchy/easy Needs emotion Wai Wae Wae - Why care? Wai (Water) Wae Wae (leg) Communication about why we need to care Effect on neighbour 	Yes	Agree with vision Holds through time	Alternative vision/Sales pitch (or mission) "Restoring the Heretaunga Water Garden" (then bullet the existing vision)
Do you agree with management measures?					
2	<u>Management Measures</u> <ul style="list-style-type: none"> River bed is natural under current process and shape Set objectives for -desired water -MCI target, fish species expected. Need to have ; Urban sediment traps Stock exclusion rules and fencing. Planting plans 	<u>Management</u> <ul style="list-style-type: none"> E-coli investigating sediment transport path Education and communication Industry lead resolve fish kill problems More public access to waterway to increase appreciation Education & relationship engagement 	Yes Emphasis on whole catchment including upper catchment	Minimise sediment – identify sources Industrial contaminants	More emphasis on land management plan Currently not clear enough that it is included in catchment management. Catchment management to improve water quality:
Anything missing?					
			What is Missing? Natives species that can provide bank stabilisation <ul style="list-style-type: none"> - Carex lessiona - Ribbon wood - Cabbage tree 		

			- Others Could plant weeping willows with natives and remove willows over time.		
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6. Item # 4 –Water Augmentation Working Group

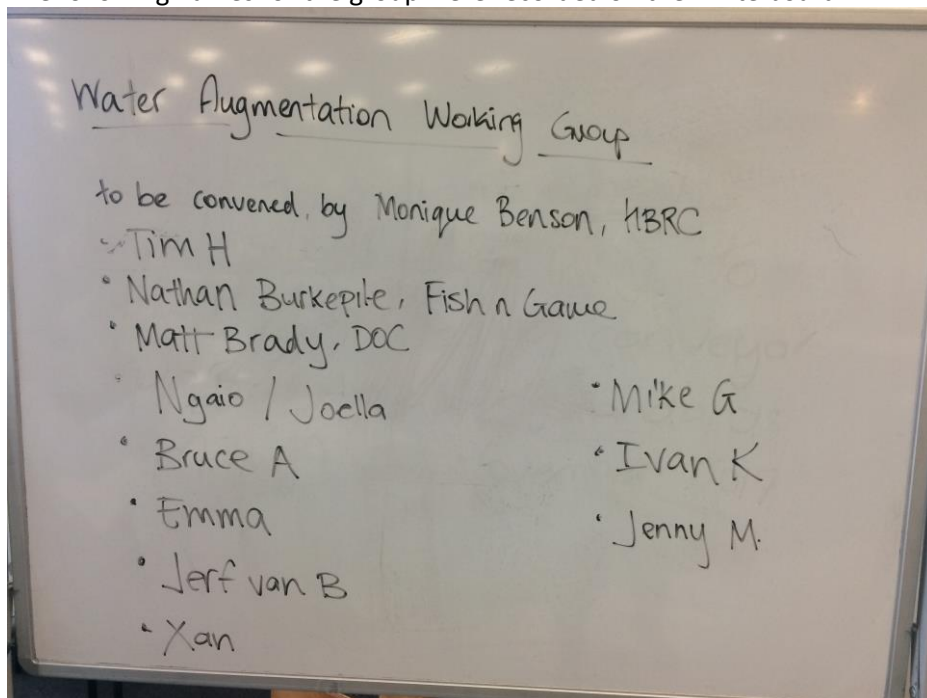
The proposal to convene a Water Augmentation Group was discussed. This working group was signalled early in 2016 in the wiring diagram. Monique Benson, HBRC staff member will be Convenor.

The working group will focus on developing the management option to augment lowland stream flows to manage the stream-depleting effects of groundwater takes, now we know it is viable. Other augmentation and/or storage options will look to address:

- Mitigating Ngaruroro River flows reduced by the combined effect of groundwater takes
- The impact of a possible new minimum flow regime for the Ngaruroro River
- Investigating opportunities to satisfy currently unmet demand, i.e. Out of Stream storage, Ngaruroro pre-feasibility, managed aquifer recharge and lowland augmentation.

James Palmer provided some learnings from the Tukituki plan change experience and stressed that the TANK plan change must stand on its own with or without water storage. The plan change can reflect an adaptable approach, however.

The following names for the group were recorded on the white board:



Action Item

30.2 Monique Benson to make contact with the Water Augmentation Working Group members and schedule first meeting.

7. Item # 5 HDC's District Plan provisions

Hastings District Council presented a summary of how the Hastings plan manages risks to the unconfined aquifer. Hastings has a place-based plan, identifying the life supporting capacity of the Heretaunga aquifer and the Kaitiaki role of Mana Whenua. The storage, handling and use of hazardous substances - including preventing these entering stormwater - is subject to performance standards. The standards include requirements that facilities stop contaminants (including those related to the use of arsenic, and organic matter containing animal

waste) being spilled or washed away to ground. The plan also has controls for roofing to prevent further zinc contamination.

Matters raised by TANK members:

- **The management of risks posed by existing and possible new septic tanks was discussed.** *Septic tank discharges are managed by the Regional Council. Normally where there is a reticulated system councils would expect landowners to join up to it. Requiring retrospective connections is affected by “existing use rights” in the RMA. If any kind of a renewal or upgrading is required then it would come back to HBRC. HBRC can retrospectively control some discharges if required to. We would need to have much better understanding of the risks of those existing systems and what the options were to manage them. Investigation of the cost, benefits and the impacts.*
- **How can we eliminate fish kills in Ruahapia and Tomoana?** *That is all about water quality which is a HBRC function. District Councils do have a part to play in that because of discharging S/W into streams. HBRC set the standards.*
- **What provision is there in the plan relating to zinc?** *HDC does have a provision in the plan in relation to roofing components of new buildings. Not to use zincalume cladding. Does not apply to existing buildings.*
- **Has the definition of hazardous substances been altered to include feedlots?** *No, feedlots are dealt with by HBRC under their Regional Resource Management Plan rules.*
- **Do we have any rules about the semi confined aquifer?** *No, solely in relation to unconfined.*

8. Item # 6 NCC’s plan for new stormwater wetlands

NCC advised that 70% of Napier stormwater goes untreated into Ahuriri estuary. Napier Council is aware that this is now seen as unacceptable practice. Napier Council is now working with the Regional Council, in relation to meeting stormwater discharge consent conditions, to stop point-source discharges from industrial sites entering the stormwater network and improve site management, create stormwater treatment wetlands and improve riparian land management and design of the estuary edge.

Alongside this, Napier is developing a ‘master plan’ to recognise and provide for the cultural, ecological significance and recreation values of the Ahuriri estuary. NCC introduced two consultants from Isthmus who presented the Master Plan for Ahuriri. The master plan covers the upper estuary, lower estuary and inner harbour for water quality improvements. The master plan is being developed alongside a Joint Estuary Management Plan with HBRC, NCC, Mana Ahuriri and the Department of Conservation to address coastal erosion, inundation, water quality, economics, recreation, development pressures and to retain the area’s special character. Napier City Council will be seeking public input into the master plan.

Matters raised by TANK members:

- **Can you comment on ‘large water sports potential’?** *There is potential for boating activity, yachting, small boats. Just about creating better access. The area is overcommitted recreationally now. The proposal to dredge is totally off the books.*
- **Increasing the wetlands: there is a potential conflict with the airport with swans etc.** *Consultation needs to happen with the airport. Flight paths need to be worked through. A conflict that needs to be managed.*
- **What about protection of wilderness areas?** *There needs to be a balance and the design team acknowledge the importance of habitat and areas that are no- go areas. This process will be worked through.*
- **Need to be careful with language and how the community views things.**
- **What about timeframes and climate change effects on sea level? Is the plan to work with the Coastal Hazards project which has long timeframes?** *Council has committed to doing something. As part of that they still need to talk to a lot of people and groups. These plans do take into consideration coastal inundation.*
- **What are the main contaminants contained in the stormwater and are there different treatments for those contaminants?** *Our stormwater is not a lot different to anywhere else. Zinc, copper and hydro-carbons are*

particular contaminants. NCC haven't got a design yet as to what will be used for treatment. There are also a lot of nutrients going in there. Most contaminants are bound to the sediment and so you are looking at removing the sediment. A unique opportunity to pump the water into the wetlands before it gets into the estuary. This allows it go through a treatment process before it is allowed into the estuary. Still requires upper stream treatments.

- **Water quality control in NCC existing consent appears to be non-existent. TANK can set water quality discharge standards on consents. How is everything going to integrate?** *This comes back to this being a big picture as a masterplan. Issues will be dealt with when they arise.*
- **Will the depth of the wetland areas account for wading birds?** *It is all about bring the ecological system, wading birds, tides, different gradients etc together. There is still a lot of design work to be done.*
- **Is there any area in the Masterplan where you will be focussing on Mahinga Kai?** *The masterplan is about improving water quality and would help with that, and they would be looking at introducing more locations for cockles to breed, mature and for long term harvesting.*
- **Local knowledge an important factor including in relation to local management reserves along Hardinge Road. and in relation to customary fisheries, RAMSA wetlands, the Ahuriri Estuary Protection society, and the IUC Global Harvest project**
- **Is there a process for keeping the TANK group informed?** *Happy to bring it back.*

9. Item # 7 WCO Process Statement

James Palmer presented a draft submission that could be lodged with the special tribunal about the WCO decision-making process. Minor tweaks were made to the wording by the Group and then a show of hands was requested to determine whether a consensus decision to submit it as a TANK submission could be agreed. A handful of members did not wish to agree to signing at that time. Some members expressed the need to check with parent organisations, particularly those who are applicants to the WCO.

It was agreed to email the statement to the Group tonight with a deadline to reply.

Matters raised by TANK members:

- **Why have you not used the word “outstanding”?** *We don't want to pre-empt the process, the tribunal is set up to establish whether the values are outstanding, the minute we all endorse that we have essentially said that the WCO is warranted. Now you might collectively decide that you want to go there, but we don't need to at this stage.*
- **Can you define upper reaches and lower reaches – is the upper reaches going to include any pastoral areas?** *In recent times we have talked about upstream of Whanawhana which is typically considered to be the most unmodified part of the catchment. It is an arbitrary distinction. The presence of pastoral land and Ngamatea Station was noted and there was no consensus on the boundary between upper and lower. It would be a matter to be considered by the Tribunal. The thing that needs to be emphasised is that the TANK group has to consider some of the same issues that the WCO does, so we can't just split the job into two. We overlap in legislation. The National Policy Statement requires us to identify and protect significant values of outstanding fresh water bodies. We have to protect from mountain to the sea around a whole range of values. So we are in the situation, like it or not, that we are looking at many of the same issues that the WCO process is. So we both go and do different bits of work at different times and will try and bring them together. So we will listen to them and they will listen to us effectively.*
- **If you go to the Gentle Annie then over the last 20 years there has been some algae accumulating up there. So there has been some change.** *It actually underscores the issue that we have here. The WCO can't put in place and resource an implementation plan. It can only establish some environmental rules. The TANK plan change process can however, identify the necessary requirements and implement the plan to improve land use and get better water quality outcomes. So we have a much better set of tools than WCO has.*
- **Isn't it likely that the Tribunal is going to take this approach anyway because they might want to partition reaches?** *There are no guarantees on this, they have unfettered discretion on how they run their process. It is not an “either/or” or a “yes/no” decision. They can impose the order on parts of the area. They will need to*

identify if there are outstanding values. That is the very first test. They will do that from the Clive Lower reaches right up to the top, once they have determined where those are, and what those values are. Then they will start thinking about what limits and controls and what have you, need to be put in place on the various areas.

- Does that outstanding value assessment contribute to the outstanding value assessment under the NPSFM? That is a great question, there is a project currently trying to work through this aspect of the NPS for the region at the moment.

Action Item

30.3 HBRC to email the joint process statement to TANK members with a deadline to reply.

10. Item # 8 Stormwater draft plan provisions

Mary-Anne (on-behalf of Rina Douglas who is overseas) updated the Group on the progress of the Stormwater Working Group. The proposed direction for the plan change is:

- Using new subdivisions and developments as an opportunity to introduce good practice design
- Better onsite design and ‘housekeeping’
- Managing the legacy
 - Working with TLAs to understand and adopt best practice options to manage public stormwater network discharges and inputs
- Align TLA and RC requirements for better consistency
 - Adopt new processes/management systems

Matters raised by TANK members:

- Can you define Stormwater? *All water running off site or road. Aspirational goal: the rain that falls (large or small) should be clean as it joins the network.*
- Rain can be managed quite easily. But extreme weather events not so easy and they have the most risk. Can the staff come back to us on this with more information, and a definition around stormwater and different volumes of water experienced when there are extreme weather events. *Yes this is the design standards around expected quantity and quality outcomes for different storm events.*
- Impacts of stormwater on drinking water? *For Rina to answer.*
- One thing not seen is the word ‘permeability’ - so when a subdivision is consented make more permeable areas so that there is less water runoff. Reduces the amount of contaminants in stormwater.
- It seems logical that if we are to be more demanding of requirements in this area we will effectively require more infrastructure and put increasing asset management demands on the TLAs. Therefore it seems reasonable to give TAs a heads up, through the LTP process. *Agreed.*
- At the last three meetings of HBRC, stormwater has been on the agenda, the mood of the councillors is that this is a neglected area. Need to ensure farmers are not the only parties held responsible for poor water quality outcomes and also need to address contamination from municipal areas.

Q	Group F	Group G	Group H	Group I
Policy 1 - Using new subdivisions and developments as an opportunity to introduce good practice design				
1	This s/w infrastructure legacy issue is relevant globally Deferred maintenance a key reason Agree on vision By-Laws consistency and connectivity All the tools (regulatory) working together Costing timelines HDC 30 year capital pgm Retention/Detention – zero risk to drinking water quality	Common sense	Are we happy “good practice” is adequate? Good practice is described in eg Auckland	Add permeability design – reduce stormwater quantity
Better onsite design and ‘housekeeping’				
2		Assumption of “equity” amongst consents holders and with other parties – hort/ag (does it capture residential?)	Yes	✓
Managing the legacy				
3		Education & information in parallel	Dealing with legacy • Tank should consider community values – possibility of TANK submission on Councils LTPs Priority approach Agree: Especially low hanging effluent (fruit)	✓
Working with TLAs to understand and adopt best practicable options to manage public stormwater network discharges and inputs Align TLA and RC requirements for better consistenc				
4		Detail – looping back through TANK	Time limits appropriate	<ul style="list-style-type: none"> • Stormwater reduction as priority • Education • Auditing monitoring • Innovative on treatment of wastes • Penalties/fines

11. Item # 9 Groundwater Modelling Results (Pawel Rakowski – HBRC Senior Resource Modeller)

Pawel presented one of his two presentations as time was running short. He presented some preliminary information about long-term trends in groundwater levels and the annual water budget, i.e. how much water comes in and goes out of Heretaunga Plains. This was to help the Group visualise what happens to groundwater levels at current use, and what might happen if this changed. There is more water available in the Plains system than is currently being used, but extra use may have adverse effects on the health of rivers, streams, fish, bugs and insects - if allocated.

Pawel explained that if pumping is kept at current annual levels, no further decline of water levels and flows from springs is predicted. However if pumping continues to increase at current trends, there will be an overall groundwater level decline, reductions in water flows from springs and reduced river flows in future decades, depending how much more water was being pumped.

Matters raised by TANK members:

- **Isn't the amount lost to the coast simply a guess?** *It could be. This water that is abstracted from the aquifer is contributing to declining spring flows. Not necessarily the final picture, but if this keeps increasing it could be a problem.*
- **All this is based on current water takes, not current resource consents.** *Allocation is really hard to calculate as a lot of assumptions about how water has been allocated are necessary. Estimation is 200 million m³. Allocations do not exceed the total recharge of the aquifer. But must point out that if you pump up to 100% of recharge there would not be any water left in the springs.*
- **Do you take into account the seasonal variations?** *This is the average.*
- **Are the numbers what the model is suggesting?** *So this is a combination of different sources. Rainfall and river. Outputs don't add up to the inputs because a combination of different sources of data has been used. Observed data and modelled data provide a rough idea.*
- **Any record going back before artificial recharge and irrigation pumping really got underway?** *There is limited information, for example with groundwater monitoring, several bores go back that far. But we do have some issues with data quality with some of them. There are no real records before 1980 and even after then the data is quite poor.*
- **The recharge is quite artificial and may not reflect groundwater in that area.** *This model is based on good quality observation. We do have some records for artificial recharge only in a local area.*
- **Is it safe to conclude that we are currently in a stabilised situation, that we don't need to go as far as your extreme case but any increase in the level of pumping will destabilise the levels?** *If you increase pumping you will reduce flows and you can increase up to a point where you pump more than is coming into the aquifer and then you will permanently drain it. Before that happened you would see some streams drying out. The system would be stable however.*
- **Is it possible to estimate what an acceptable level of increased abstraction might look like?** *If you want to increase abstraction by 10% the model can predict what level of flow the streams will have.*
- **With respect to reliability when forecasting scenarios, and if we were to model a 10% increase in pumping what is your gauge on accuracy?** *A very good question but the further we go with more extreme scenarios, we stress the model, and the less reliable it gets. With 10% there is comfort with the accuracy of results, but with 100% there is much less comfort. 100% would result in significant problems.*
- **The 2012 dry year included a ban on pumping. Should that not be included in the scenarios?** *This was not built in the forecast. When you push to extreme scenarios the model becomes unreliable.*
- **If demand increased by 20% over the next 50 years, and existing users could be 10% more efficient, and a net 10% increase wouldn't stress the system then there would be no need for water storage?** *This analysis does not include percentages like that. There is no data on projected increases. This analysis focusses on long term behaviour and long term effect, and doesn't include extreme events, if we have a particularly dry summer.*

12. Agenda for next TANK Group meeting

NOTE: Subject to change

- Monitoring Plan
- GW modelling outputs
- Scenario results for SW
- Base case economic modelling outputs
- Report back from farmer reference group

13. Closing Karakia

Summary of Action Points

ID	Action item
30.1	HBRC to come back to the TANK Group with suggested replacement for James Palmer as default spokesperson.
30.2	Monique Benson to make contact with the Water Augmentation Working Group members and schedule first meeting.
30.3	HBRC to email the joint process statement to TANK members with a deadline to reply.