Greater Heretaunga and Ahuriri Land and Water Management Collaborative Stakeholder (TANK) Group

TANK

Meeting 26:
9 February 2017

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REGIONAL COUNCIL

Karakia

Karakia

Ko te tumanako

Kia pai tenei rā

Kia tutuki i ngā wawata

Kia tau te rangimarie

I runga i a tatou katoa

Mauriora kia tatou katoa

Āmine

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Agenda

9:30am	Welcome, karakia, notices, meeting record
9:45am	Matataki – (current position, expectations and process for going forward)
10:30am	Feedback survey results and revised work programme
11:00am	WCO update (if needed)
11:15am	Rivers, Modified Watercourses & Farm Drains Discussion Document
12:30pm	**LUNCH**
1:00pm	Fine-tuning flow regime management scenarios for modelling
1:15pm	Stream depletion and spatial management of GW abstractions
2:45pm	**COFFEE BREAK**
3.00pm	Priority water allocation discussion document
3:40pm	Verbal update from working groups
4:00pm	**CLOSE MEETING**

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Meeting objectives

1. Take stock of current issues with the TANK work programme and collaborative process.

2. Understand the relationship between groundwater abstractions and stream depletion as indicated by the GW/SW model.

3. Agree on a policy framework for determining how surface water restrictions (e.g. minimum flows) should apply to stream depleting groundwater abstractions.

4. Fine-tune flow regime scenarios to be modelled and reported back

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Engagement etiquette

- Be an active and respectful participant / listener
- Share air time – have your say and allow others to have theirs
- One conversation at a time
- Ensure your important points are captured
- Please let us know if you need to leave the meeting early

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Ground rules for observers

- RPC members are active observers by right (as per ToR)
- Pre-approval for other observers to attend should be sought from Robyn Wynne-Lewis (prior to the day of the meeting)
- TANK members are responsible for introducing observers and should remain together at break out sessions
- Observer's speaking rights are at the discretion of the facilitator and the observer should defer to the TANK member whenever possible.

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Meeting Record – TANK Group 25

- Matters arising
- Action points

Action points

		Person	Status
25.2	Circulate Item 5 on sediment before the next TANK meeting on 9th February 2017.		Completed
25.3	Further information requested about what a drain, ditch and river means and what implications this has for deciding on objectives and management responses		Discussion document on Agenda for today (TANK#26)
25.4	HBRC to refine the scenarios for modelling presented during TANK#25 and get back to the TANK Group with something more polished.		On Agenda for today (TANK#26)
24.4	HBRC Groundwater Scientist to come back to the TANK Group with more information on the cause of increasing Phosphorous trend in the confined aquifer.	HBRC	Due 9 Feb

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Action points

		Person	Status
24.8	Economics Assessment Group to consider who and how the detailed analysis of sediment management packages should be done (due March 2017) and report back to the TANK Group.	EAWG	To be considered at next EAWG
24.9	Investigate inserting biological farming and ecological economics expertise into the Economics Assessment Working Group.	HBRC/ EAWG	To be considered at next EAWG
24.10	HBRC to come back to the TANK Group with some advice on the purported changes to the Hastings District Plan regarding land use rules for activities on land above the unconfined aquifer	HBRC	Summary Omahu/ Irongate PC due 9 Feb
24.11	DOC and HBRC to discuss the recent funding for wilding pines offline, quantify impacts and bring advice to the TANK Group.	DOC/ HBRC	Links to 24.5

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Matataki

Mana Whenua Group

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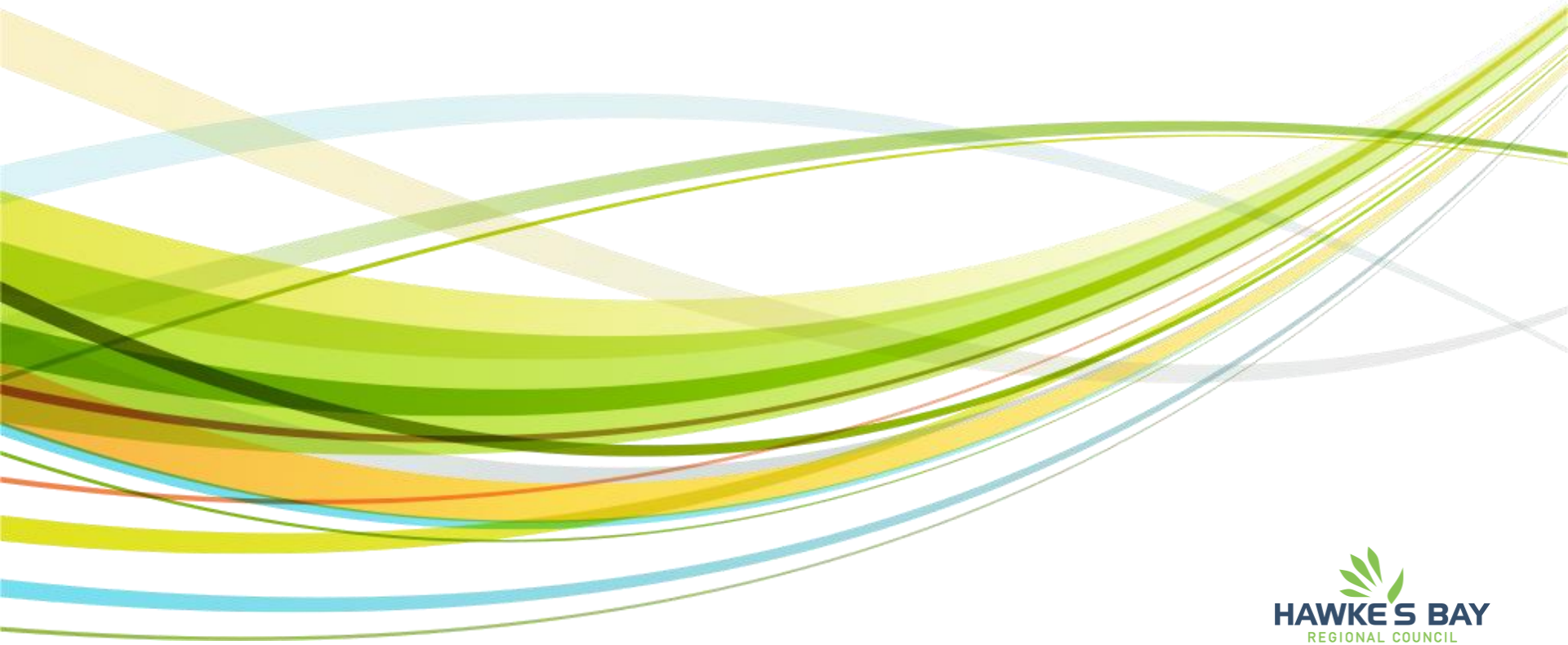
Survey results and work programme



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TANK Group survey results

Q1. Overall, how satisfied or dissatisfied are you with the TANK Group?

Answer choices	Responses	
Very satisfied		0
Somewhat satisfied	55.6%	5
Neither satisfied nor dissatisfied	22.2%	2
Somewhat dissatisfied	11.1%	1
Very dissatisfied	11.1%	1
TOTAL		9

- 2 of the 9 respondents only answered this question.

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Q2. What changes would most improve the collaborative stakeholder process?

Unique themes

- Get to the point (i.e. areas of actual disagreement on limits and start tabling solutions)
- Put a topic (river system) to bed before moving on to the next
- Appropriate time allocated for meaningful discussion
- Preparedness to compromise (principle of gifts and gains)
- Legal weight to the collaborative process
- Cramped meetings

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Q3: Are there any specific topics that you would like the Group to discuss/debate that are not covered in the revised work programme?

Answer Choices	Responses	
Yes	**28.57%**	2
No	**57.14%**	4
Don't know	**14.29%**	1
Total		7

Comments (2)

2 comments were:

- should all waterways be considered equal e.g. drain vs stream
- Legal constraints, how the end goal can be achieved from a legal perspective

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Q. 4 What date do you prefer for the additional TANK Group meeting in May?

- **30 May** was the preferred date for an additional meeting (5 out of 7 respondents)

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Water Conservation Order Update

James Palmer

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Rivers, modified watercourses and farm drains
Discussion Document

Mary-Anne Baker

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Rivers, modified watercourses and farm drains

- River, waterbody and water all defined in RMA
- Farm drains contain water but are not rivers or waterbodies
- Distinction between modified watercourse and farm drain sometimes not clear
  - Drains constructed to provide drainage – and can acquire ecosystem values
  - Management of drainage systems – has impacts on ecosystem values
  - Drains constructed to drain wetlands are modified watercourses

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Construction of drainage systems

- Installation of farm drains requires authorisation – permitted with conditions or subject to resource consents.
- Objectives for farm drains not always consistent with ecosystem health objectives
- Water in farm drains is subject to plan provisions/rules about discharges and water quality.

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Managing the H Plains Flood Control Scheme

- Councils has adopted a multi value approach for rural and urban watercourses under its control
- Site by site assessment to understand opportunities and costs for improvements
- Flood control and drainage still main values

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Management of farm drainage ditches and modified watercourses

Do you agree with these recommendations?

1. That diversion and discharge of water by and from farm drainage canals (ditches) is managed through rules in the RRMP

2. That discharges into the water that is in drainage ditches is managed through rules in the RRMP

3. That provisions for ecosystem improvements to modified watercourses (that were constructed primarily to protect communities from flooding and provide drainage of productive land) take into account those flood protection and drainage objectives

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Questions and comments from the plenary

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GW/SW Quantity Modelling

Proposed Modelling Scenarios - Update

Rob Waldron

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GW/SW Quantity Modelling Scenarios

- Various GW/SW modelling parameters (levers) can be changed to model different scenarios.
- Developed 10 proposed scenarios - circulated prior to today's meeting.
- Proposed scenarios incorporate current & alternative allocation & restriction regimes that would apply to SW abstractions & stream depleting GW abstractions.

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GW/SW Quantity Modelling Scenarios

- Restriction regimes based on:
  - Current framework
  - New minimum flows
  - Staged reductions with minimum flows
  - Flow sharing with minimum flows
  - Flow sharing without minimum flows

- Scenarios incorporating minimum flows based on:
  - Habitat-flow modelling in Ngaruroro and Tutaekuri
  - Oxygen-flow modelling in Karamu

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Modelling Stream Depleting GW Abstractions

- Scenario restriction regimes apply to SW abstractions & stream depleting GW abstractions.
- Scenario 1 represents the current framework – current classified stream depleting GW abstractions linked to river flow restrictions.
- All other scenarios indicate modelling re-classified stream depleting GW abstractions.

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Modelling Stream Depleting GW Abstractions

- GW model can be utilised to assess the stream depletion effects from GW abstractions.
- Opportunity to develop new policy for determining what stream depleting GW abstractions should be linked to river flow restrictions based on the type of stream depletion effect.
- Scenarios can model the re-classified stream depleting GW abstractions based on potential new policy

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Stream Depletion in Heretaunga plains

Preliminary modelling results and proposed solutions

Jeff Smith and Pawel Rakowski

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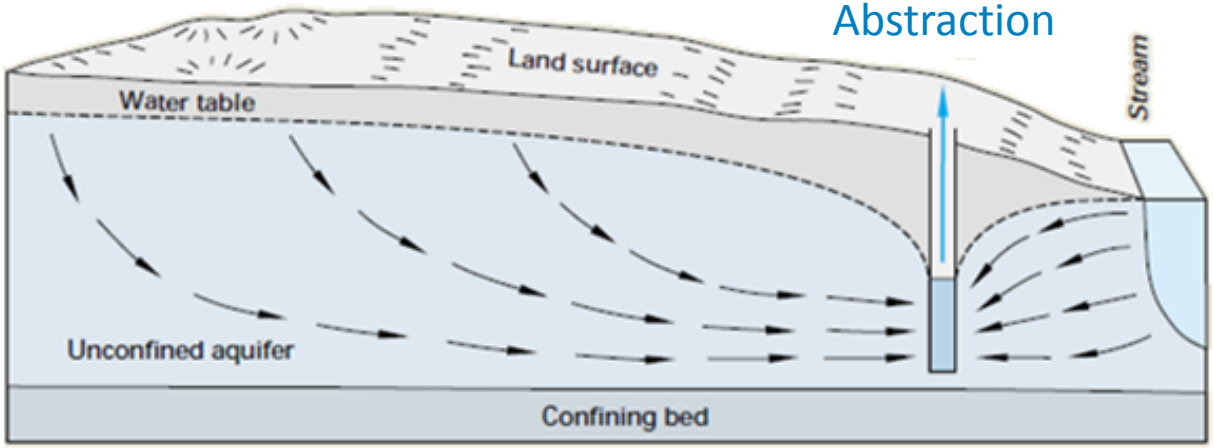
Overview

1. **Pawel Rakowski –** HBRC Senior Resource Modeller:
   i. Stream depletion explained
   ii. Approaches to modelling stream depletion
   iii. Modelling results: Heretaunga Plains – zones of connectivity
   iv. Implications and future modelling investigations
2. **Jeff Smith:**
   i. Policy options – Tukituki (PC6) framework
   ii. Policy options – Heretaunga Plains
   iii. Questions for Breakout Groups

Stream Depletion

Bore
Abstraction



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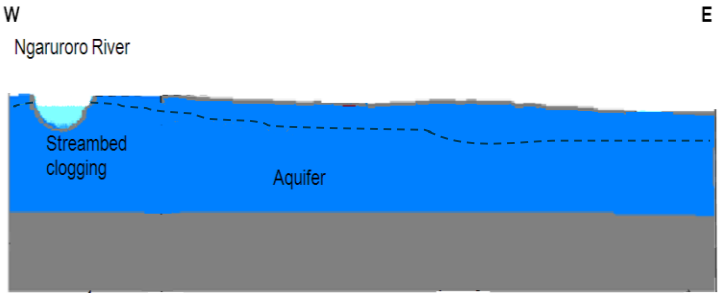
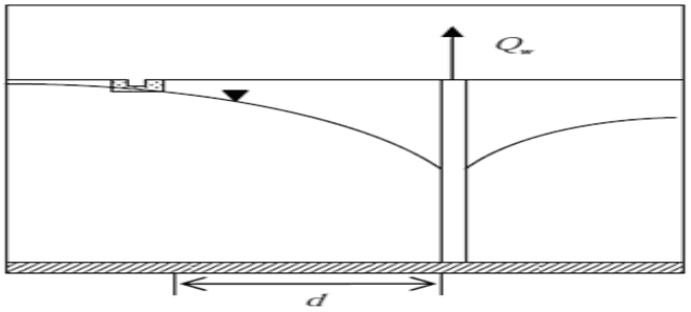
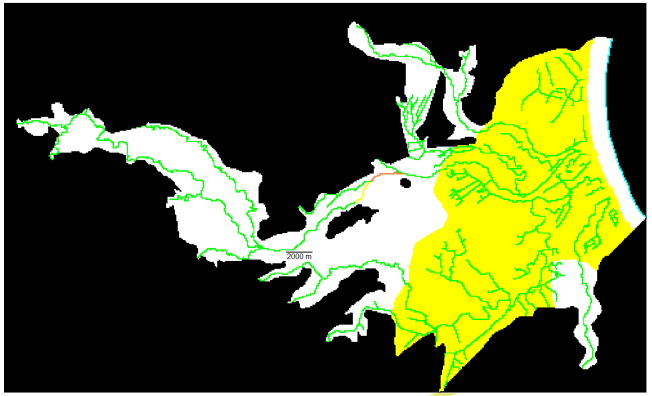
Analytical vs numerical modelling





Analytical models:

- Typically analytical methods are used
- Limitations: simple geometry, simplistic boundary conditions, no changes to aquifer properties
- One stream only
- Uncalibrated



Numerical models:

- Complex geometry, parameters, more realistic. Calibrated to observed flows
- Basin wide effects at multiple locations

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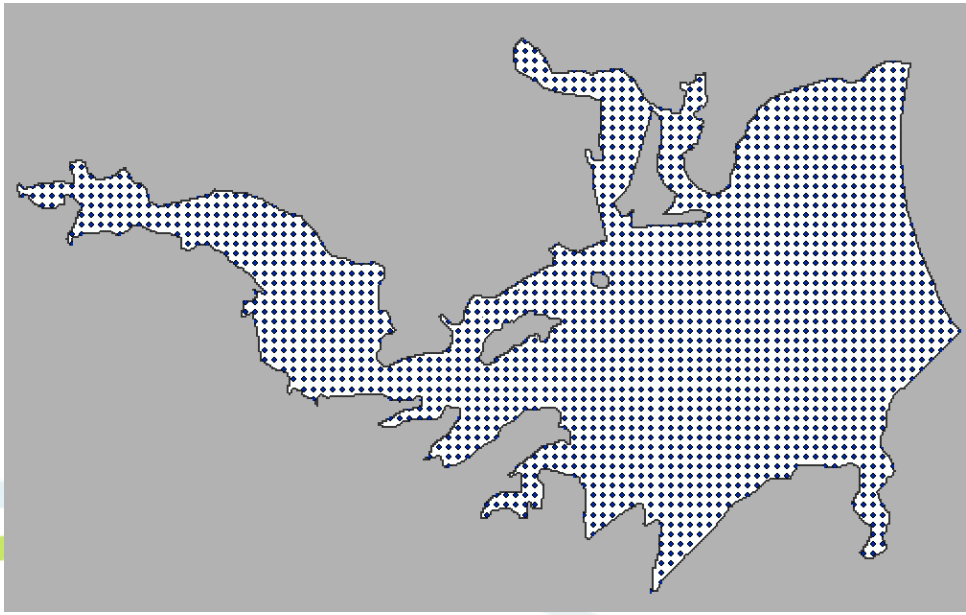
Heretaunga Plains Groundwater model

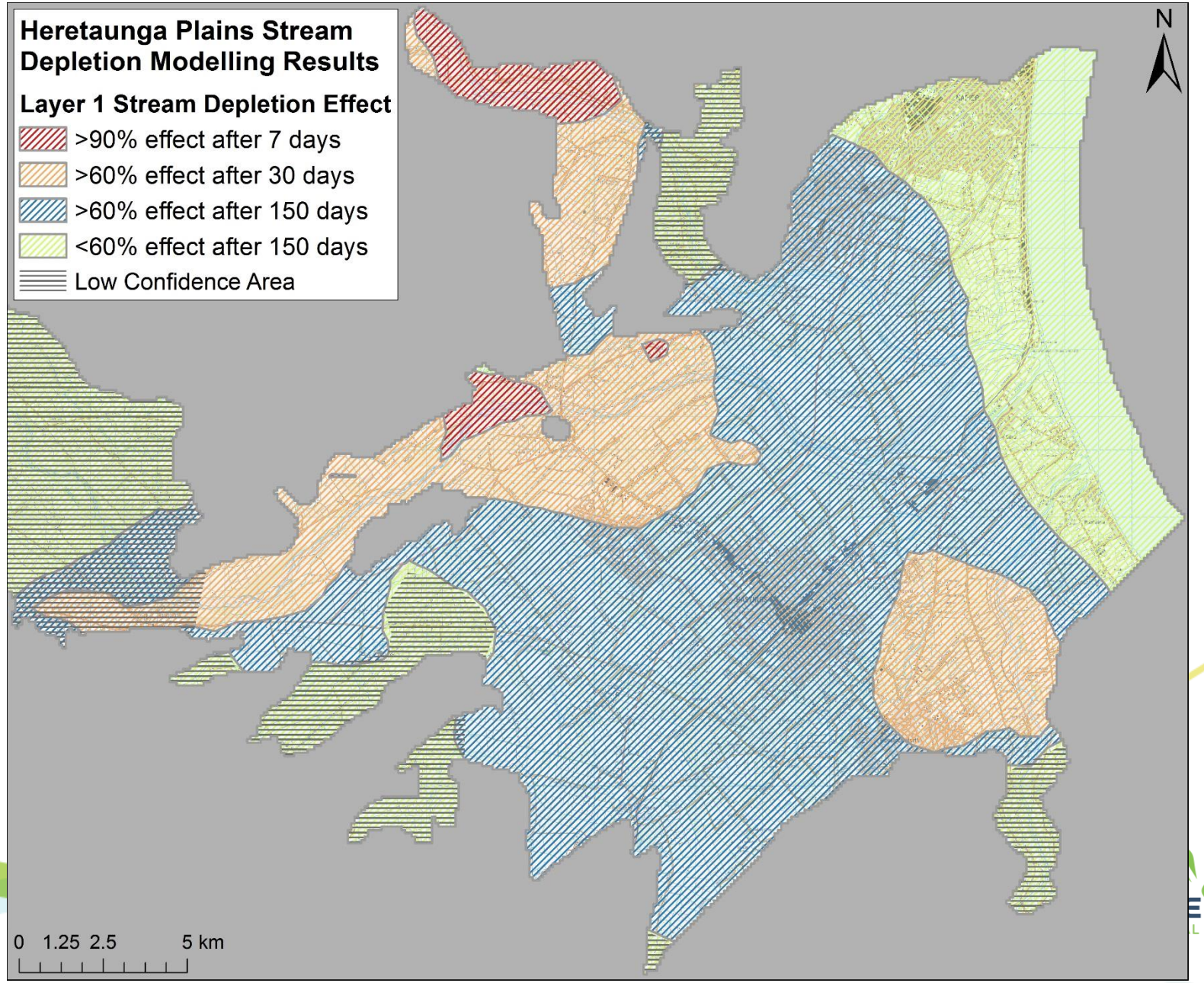
- Calibrated to observed spring flow and river losses
- Ability to calculate spring depletion throughout the Heretaunga plains

Application in groundwater model

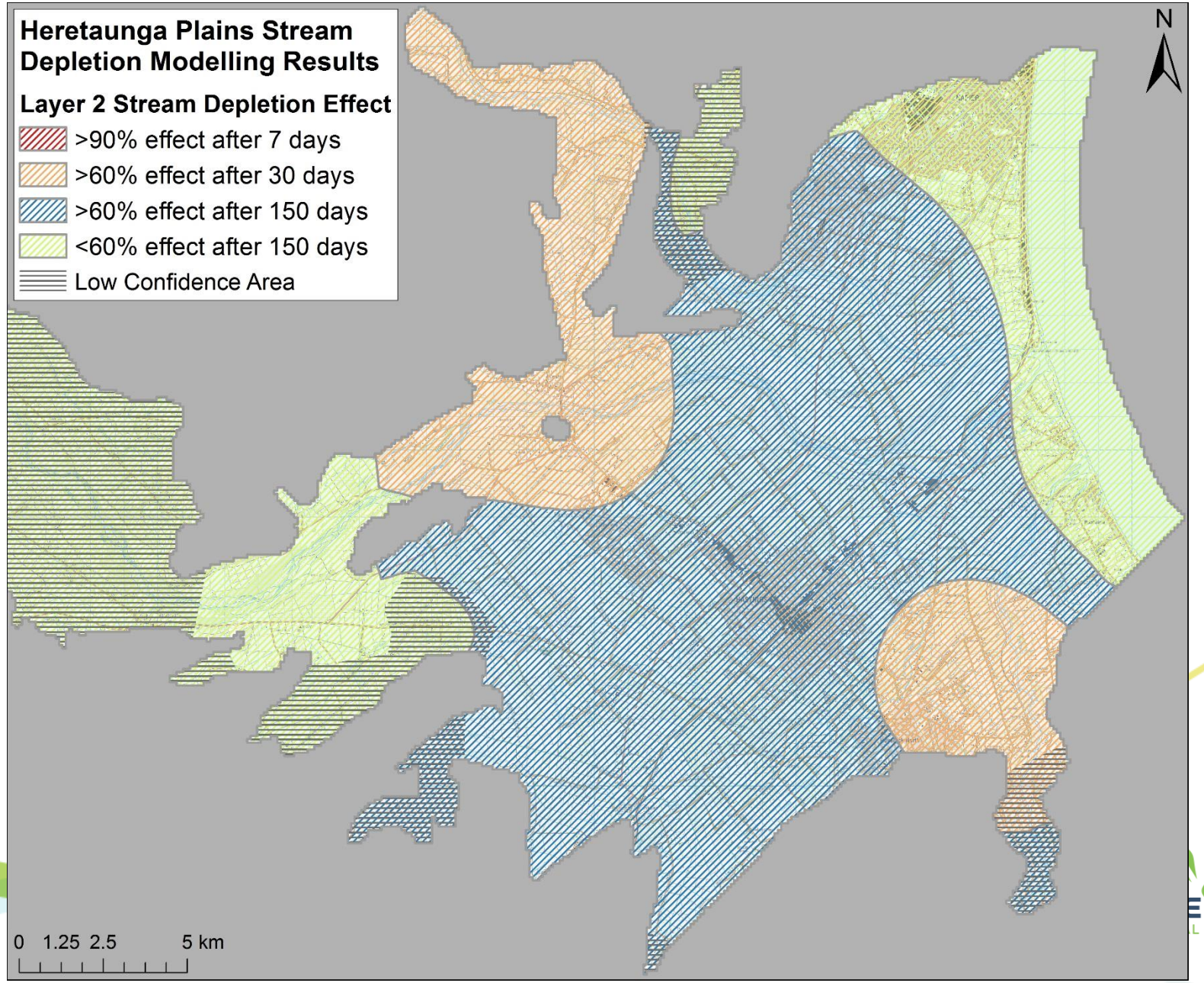
- October 2012 –February 2013 model period
- Run the model and calculate how much water is lost from rivers to aquifer and how much spring flow is calculated at specific times
- Add a pumping well, and calculate flows again
- Difference is an impact at this location
- Divide impact by pumping rate to get % depletion
- Repeat for other locations
- Tukituki plan change zones:
  - >90% in 7 days - direct
  - >60%in 150 days – high
- Further zone - >60% 30 days



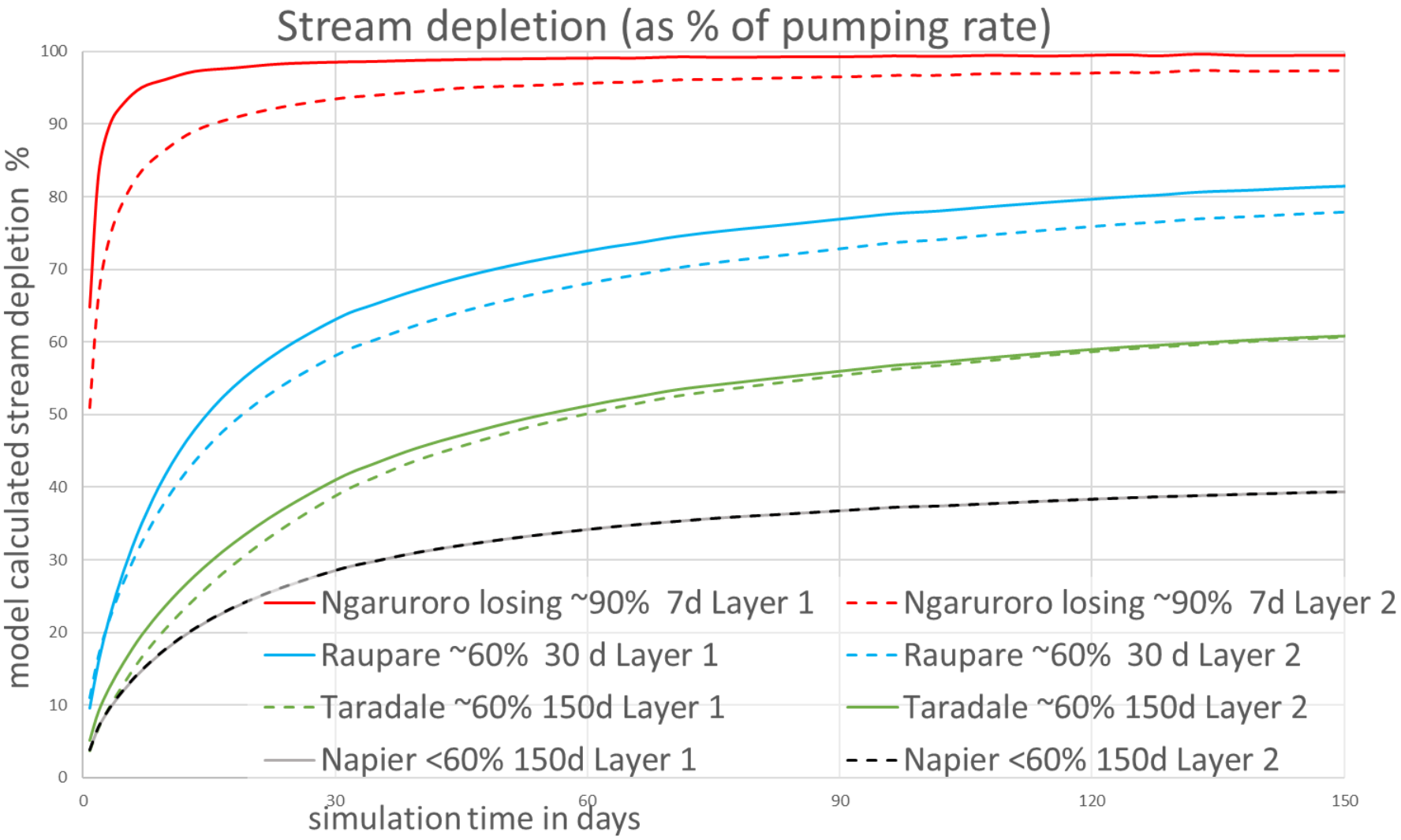
Stream Depletion Modelling - Layer 1 Results



Stream Depletion Modelling - Layer 2 Results



Modelling results - dynamics



based model version hpm033r4sdzr3

What does this mean?

- Very high connectivity of GW to SW across Heretaunga Plains
- Analogy – aquifer is like a bath tub
- Effects on stream flows are not localised
- Local effects from individual abstraction may be small, but combined abstractions contribute to declining water levels and flows
- Local abstraction restriction zones **alone** are probably not a very effective way to protect connected surface waterways, because streams would still be impacted by remote abstractions

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March modelling report can:

- Simulate effect of pumping restrictions for different zones to determine the effect on stream flow:
  - No irrigation in entire domain
  - 150 day zone
  - 30 day zone
  - 7 day zone
  - Current restriction zones
- Model mitigation options, e.g.:
  - Artificial recharge
  - Streamflow augmentation from groundwater

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Policy Options for Heretaunga Plains

Application of Tukituki (PC6) framework for managing stream depleting takes would result in **almost all groundwater takes** subject to **river flow restrictions**

Restriction zones **alone** are probably not a very effective way to protect connected surface waterways

Modelling can be used to explore other management options (for reporting to the March meeting)

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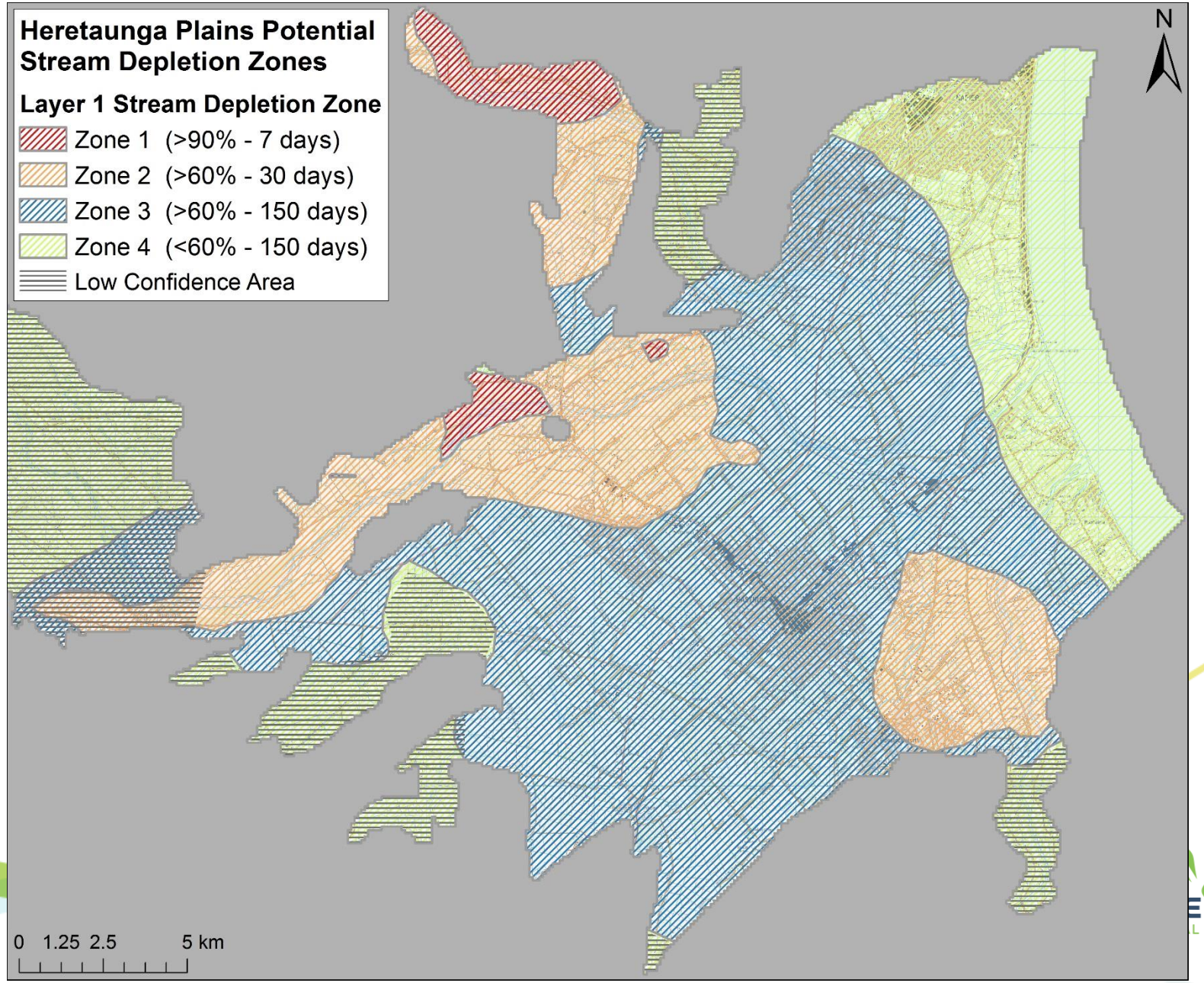
Tukituki (PC6) Policy TT11:

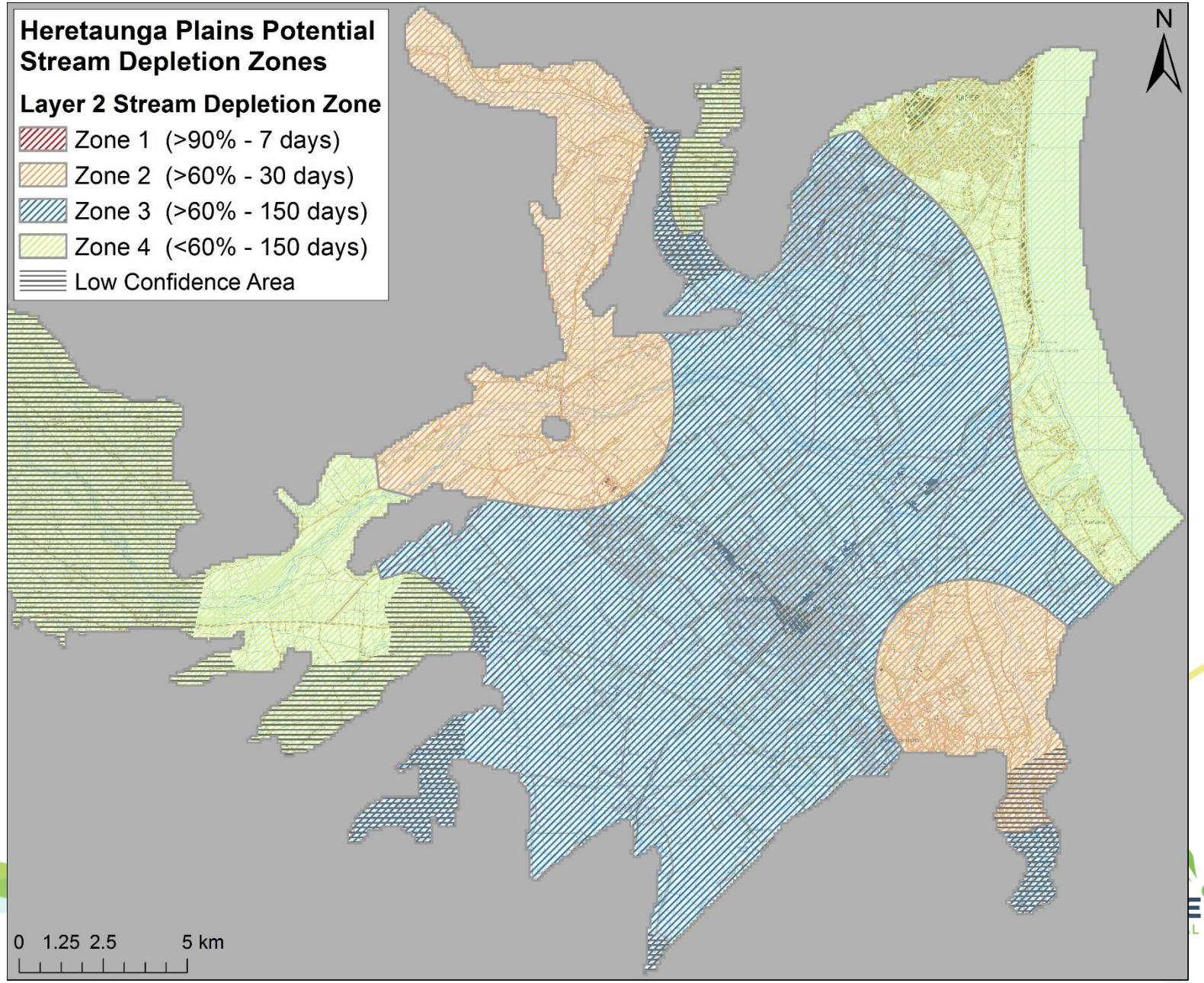
Table 5.9.7: Management of Surface Water Depletion Effects

Classification of surface water depletion effect	Magnitude of surface water depletion effect	Management approach
Direct	The surface water depletion effect is assessed as: (a) 90% or greater of the average groundwater pumping rate[35] after 7 days of pumping; and (b) greater than 2 L/s.	The calculated loss of surface water is included in the surface water allocation regime, and specific minimum flow restrictions are imposed on the groundwater take, subject to the proviso in POL TT11(2)(c).
High	The surface water depletion effect is assessed as: (c) 60% or greater and less than 90% of the average groundwater pumping rate[36] after 150 days of pumping; and (d) greater than 2 L/s.	The calculated loss of surface water is included in the surface water allocation regime, and specific rate of take / volume restrictions are imposed on the groundwater take in accordance with POL TT11(2)(d).
Medium	The surface water depletion effect is assessed as: (a) 20% or greater and less than 60% of the average groundwater pumping rate[36] after 150 days of pumping; and (b) greater than 2 L/s.	The calculated loss of surface water is included in the surface water allocation regime, but no specific minimum flow or rate of take restrictions are imposed on the groundwater take.
Low	The surface water depletion effect is assessed as: (a) less than 20% of the average groundwater pumping rate[36] after 150 days of pumping; or (b) 2 L/s or less.	The calculated loss of surface water is not included in the surface water allocation regime, and no specific minimum flow or rate of take restrictions are imposed on the groundwater take.

Stream Depletion Zones - Model Layer 1



Stream Depletion Zones - Model Layer 2



Heretaunga Plains Policy Options:

1. All stream depleting takes (>60% after 150 days) included in Surface Water allocation
2. Directly connected takes (>90% from surface water after 7 days) – low flow restrictions same as surface water takes

Highly connected takes (>60% from surface water after 30 days or 150 days) – difficult to mitigate stream depletion via low flow restrictions, therefore:

3. Consider mitigation scheme:
   - Artificial Recharge?
   - Flow Augmentation?

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HP Policy Option:

- Mitigation scheme could be included in TANK Plan with timeframes for delivering:
  - Strategic Water Study with best option for mitigation
  - Implementation plan
  - Development and commencement of mitigation scheme
- Transitional rules required in the meantime

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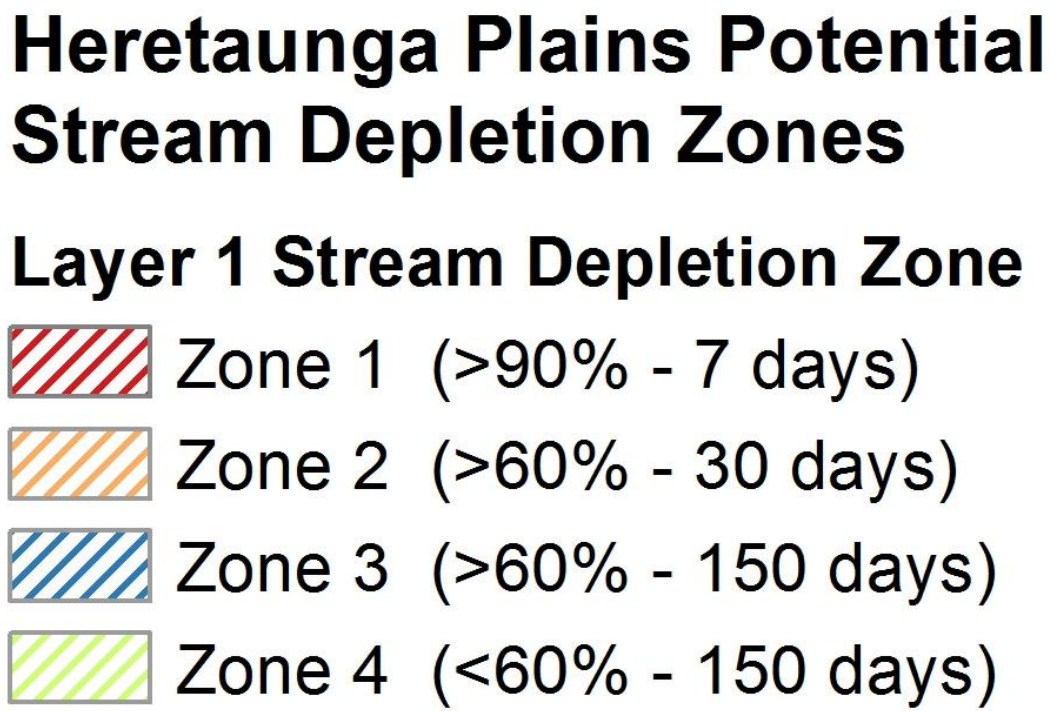
Breakout session:

1. Do you agree with classifying stream depletion in four zones:



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Breakout session:

2. Recommendation: groundwater takes in Zones 1-3 should be included in the surface water allocation - **do you agree? If not – why not?**

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Breakout session:

3. **Mitigation**

   - One option is for minimum flow **restrictions** applicable only to directly connected (**Zone 1**) takes, provided a **mitigation scheme** is implemented to manage adverse effects on surface water bodies caused by groundwater allocation

Is there an appetite for modelling a mitigation Scheme? e.g. flow augmentation or artificial recharge

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Breakout session:

4. **Scenarios**

   - Are there any concerns, questions or suggested alternatives to the 10 scenarios proposed?

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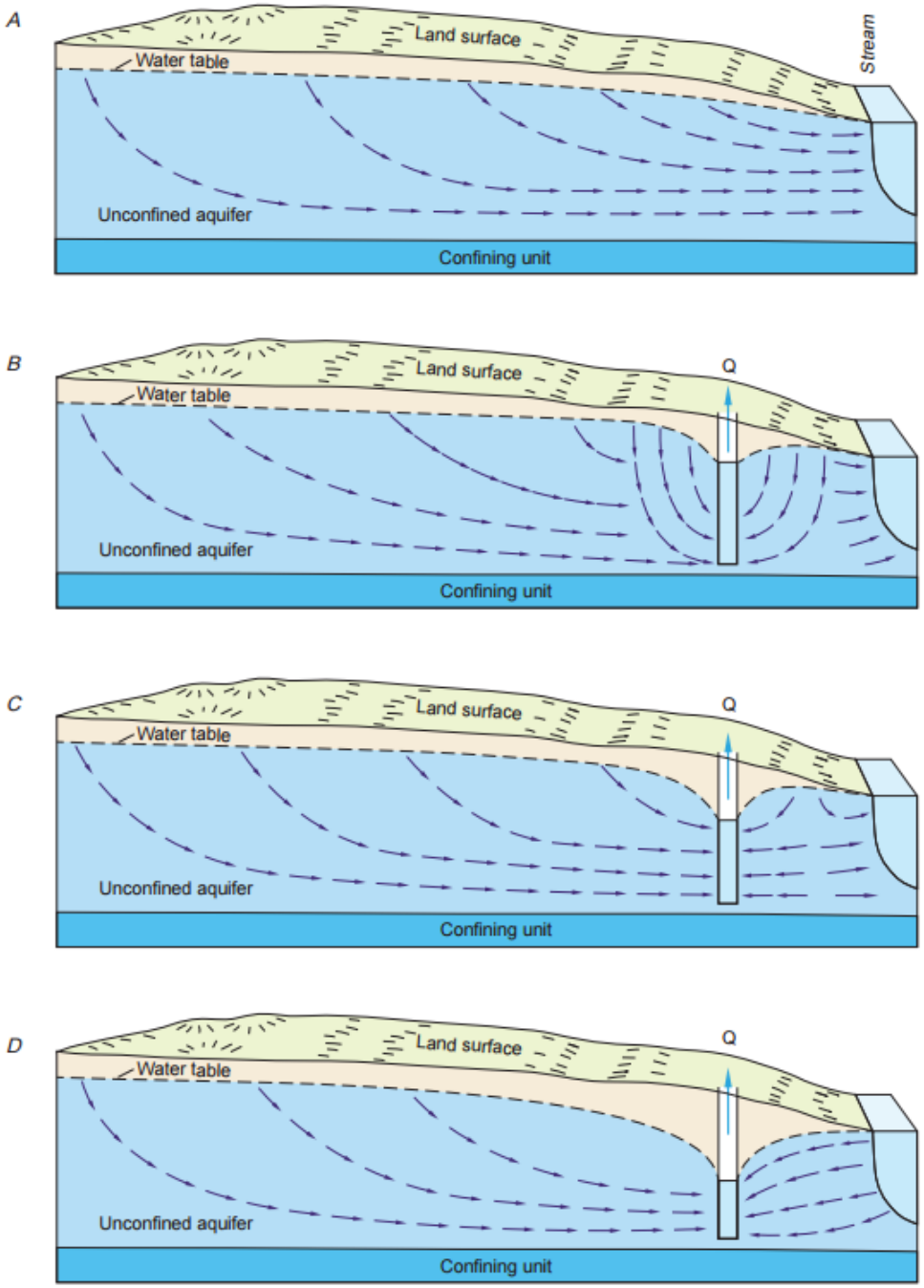

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Priority Water Allocation
Discussion Document

Mary-Anne Baker

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Priority End Uses of Water

- First-in first served;
  - viable allocation regime where water is still available
  - in the absence of any allocation policy to the contrary.

- Increasingly sophisticated approach to water allocation
  - Reaching limits of available water
  - Increasing community interest in how water is managed

- Reasons for allocation and re-allocation under scrutiny

- Debate about reasons for favouring one end use over another.

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Water Allocation Policy

- Allocation function and tools provided in RMA
  - Domestic, stock drinking and fire-fighting expressly provided for

- No direction about how water should be allocated
  - Efficient use and allocation regimes
  - Existing investment recognised

- NPS recognises all abstractive uses –no priority specified

- Council plans do not specify preferred end uses for allocation
  - Priority end use during drought recognised with Tukituki plan change.

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Identifying preferred end uses

- Some options for judging what should be preferred end uses;
  - High value (economic value)
  - Contribution to regional economy
  - Community benefits (health/social/recreational values)
  - Adverse effects if water not available
  - Uneven access in market for water

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Reasons relevant for TANK

1. Protecting water uses for social/non-economic reasons and for which there is no ‘market’ including for community water supply,

2. Recognising the link between productive land (primary production) and water use) and

3. To meet community demands that water be used for specific ‘high added value’ end uses; depending on the ability to develop suitable criteria and assessment of unintended outcomes

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Breakout session

1. Should some end uses have priority over others?

2. Why or why not?
   - i.e. what reasons exist for differentiating between preferred ends uses?

3. What additional information is needed to identify preferred end uses?

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Management during droughts

- Equal pain or protection of preferred or vulnerable end-uses?
  - Human health and wellbeing including schools, rest homes public water supplies etc.
  - Animal welfare
  - Commercial end uses; should be there any distinctions?

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Breakout session

1. What end uses of water should get higher priority to take water during droughts? Why/why not?

2. What additional information is needed to identify preferred end uses during droughts?

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Verbal updates from Working Groups

- Engagement
- Economic Assessment
- Stormwater
- Wetlands/Lakes
- Mana whenua

Next meeting – 22 March 2017

Ahuriri reporting

- Review of state, trends and management options
- Recommended options for management strategies
- Report on nutrient and other contaminant loads (incl. Waitangi Estuary)

Report on modelling results

Closing Karakia

Nau mai rā

Te mutu ngā o tatou hui

Kei te tumanako

I runga te rangimarie

I a tatou katoa

Kia pai to koutou haere

Mauriora kia tatou katoa

Āmine