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

TANK

Meeting 38:
22 March 2018

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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

Water is a taonga

Agenda

9:45am	Welcome (Robyn)
9:50am	Objectives for today (Mary-Anne)
	Updates
10:00am	Lowland Stream Enhancement (Jeff)
11:30am	High Flow Allocation (Jeff)
1:00pm	**LUNCH**
1:30pm	Economic Analysis reporting (Leander Archer – AgFirst)
2:30pm	River flow Management Scenarios
3:30pm	**COFFEE BREAK**
3:45 pm	TANK Treaty Partners Group
4.15pm	Confirm Meeting records (Mtg 37)
4.20pm	Meeting 39 Agenda (19 April)
4:30pm	**CLOSE MEETING**

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Introductions
Apologies
Housekeeping
Recording

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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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Notices and announcements

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Meeting objectives

1. Agree management framework and policy direction for lowland stream depletion management
    - Stream flow enhancement
    - Riparian land/wetland management
    - Allocation limit and re-allocation of water

2. Agree on high flow allocation management framework and policy direction

3. Receive initial economic modelling results

4. Agree further economic modelling scenarios

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Stream Flow Enhancement

WAG

Jeff Smith

Mary-Anne Baker

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Concerns expressed

- *Doubt regarding the environmental benefits of a lowland stream augmentation scheme*
  - Evidence to show benefits
  - Water quality as well as flow improvements
- *Augmentation treats the symptoms of groundwater abstraction and not the cause*
  - Costs of infrastructure
  - Measured in stream effects incentivises behaviour change
- *Augmentation is a short-term solution*
  - No other solutions are presented
  - Staged approach is suggested that allows for adapting to outcomes required
- *A view that reduction of pumping would be more effective than augmentation*
  - Some benefit to flows but would not be an effective solution on its own – (ban scenarios tested already)
  - New allocation regime results in a 15% average decease in allocations – variable effects
- *Some TANK Group members do not support the further allocation of groundwater for stream augmentation*
  - Proposal to include stream enhancement flow within allocation limit

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Proposal 1: groundwater management and stream flow enhancement

Policies to manage groundwater abstraction and stream flow enhancement;

- Refer to Proposal 1 on page 8 of discussion paper

1. Do you agree with the approach contained in the policies

or

2. Agree but with conditions?
3. Do you disagree ? – why

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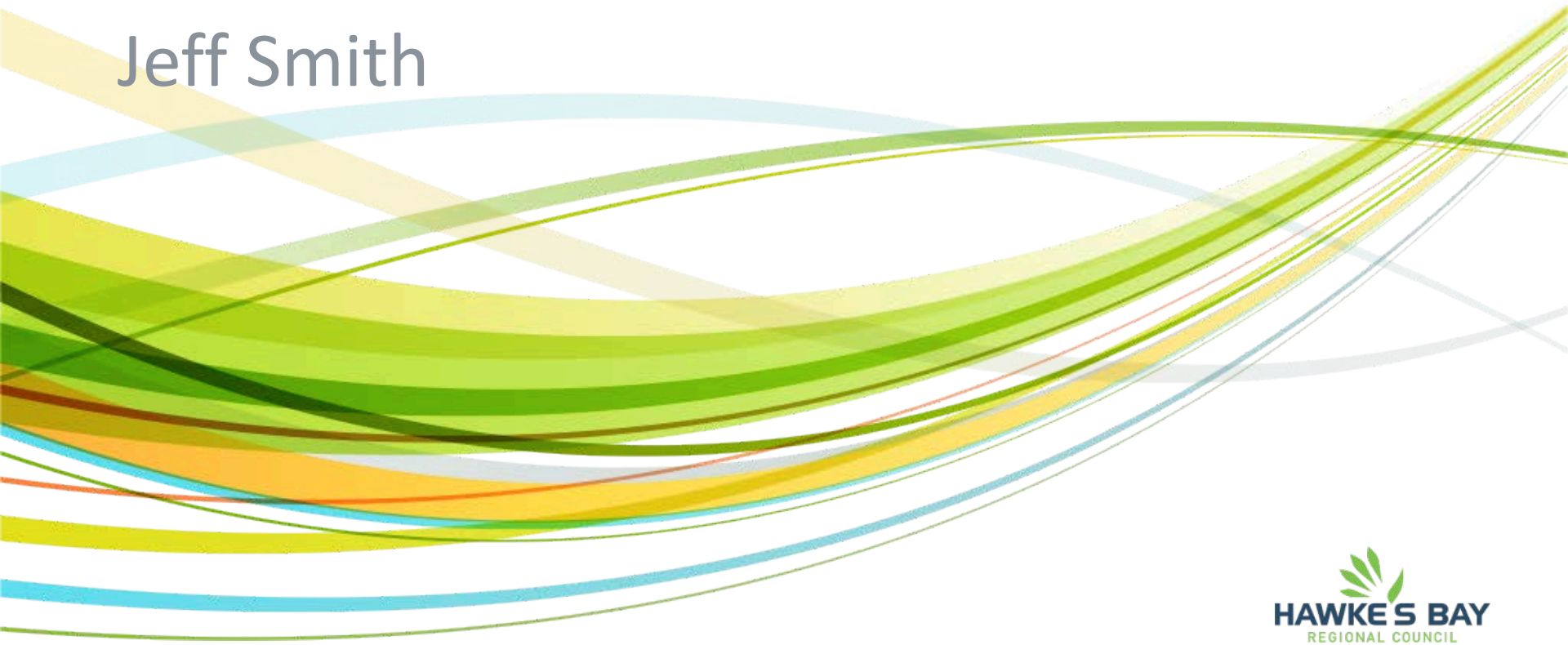
High Flow Water Allocation

Jeff Smith



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Overview

1. Introduction
2. Capacity of high flow allocation to meet demand
3. Assessing instream effects of high-flow allocation
4. Summary and Discussion

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1. Introduction

- Surface water allocation is exhausted, but there is demand for water (out of stream AND/OR environmental purposes)
- Demand may be met from storage
- Requires a high-flow (harvesting) allocation
- Current high-flow allocation (HFA) is 2,000 L/s, with minimum flow 20,000 L/s

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1. Introduction

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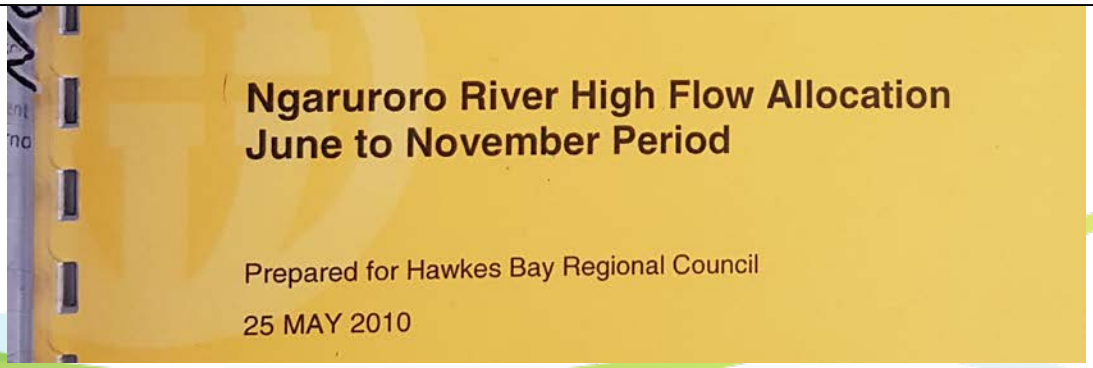
1. Introduction

7 Ecological Consideration of Scenarios
7.1 FRE3

The **FRE3 statistic** is a measure of flow variability, being the number of times per year the flow exceeds three times the median flow.

The FRE3 statistic incorporates both a frequency and intensity component (MfE 1998), and its application in New Zealand rivers has shown close correlation with instream biological (benthic) variables, such as periphyton and macroinvertebrate community structure (Clausen & Biggs 1997).

The FRE3 method has been **used here as the ecological basis for the broad assessment** of biological consequences of all eight high flow allocation scenarios.



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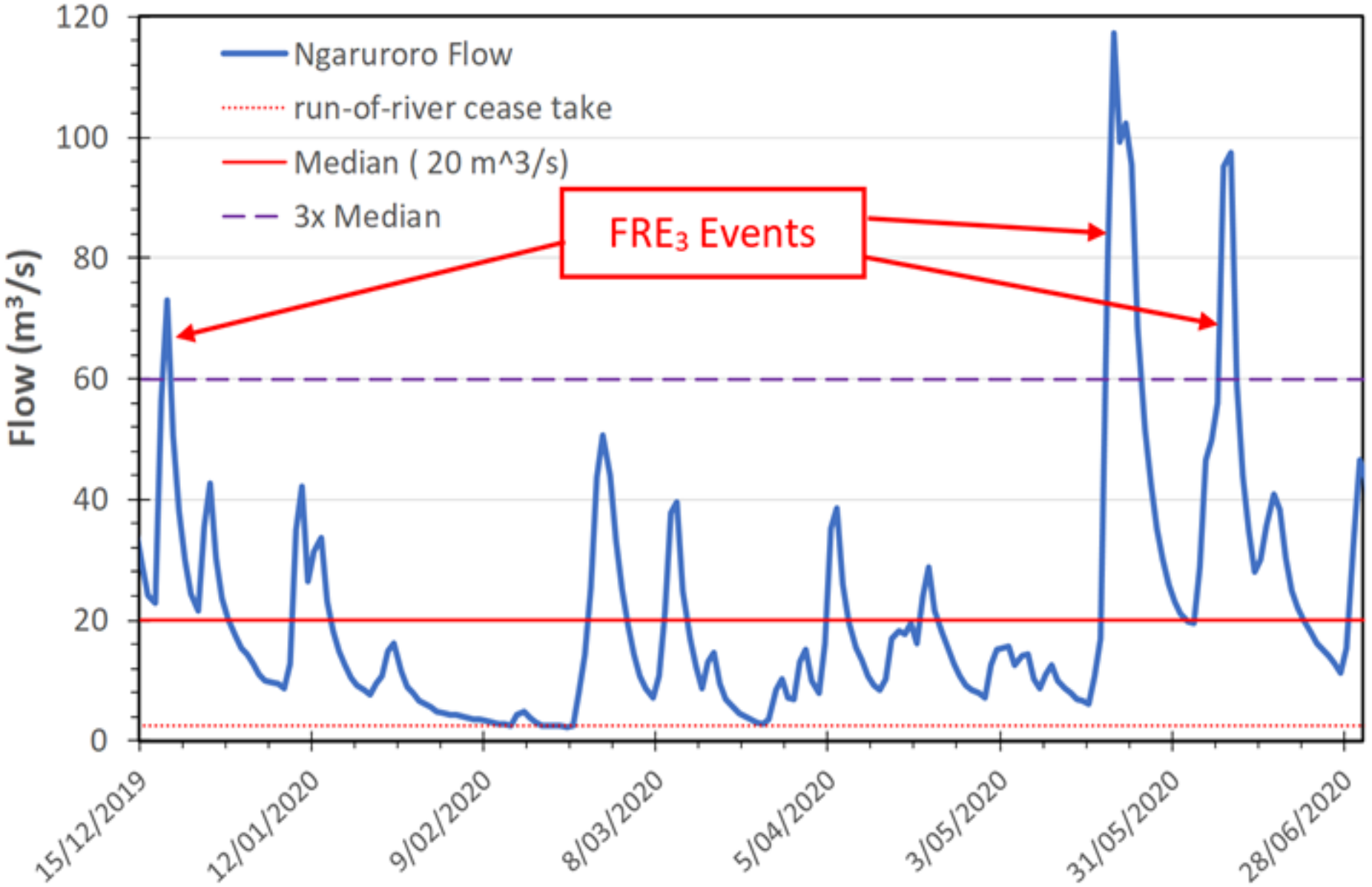
1. Introduction



1. Introduction

Results
mainta
should

River

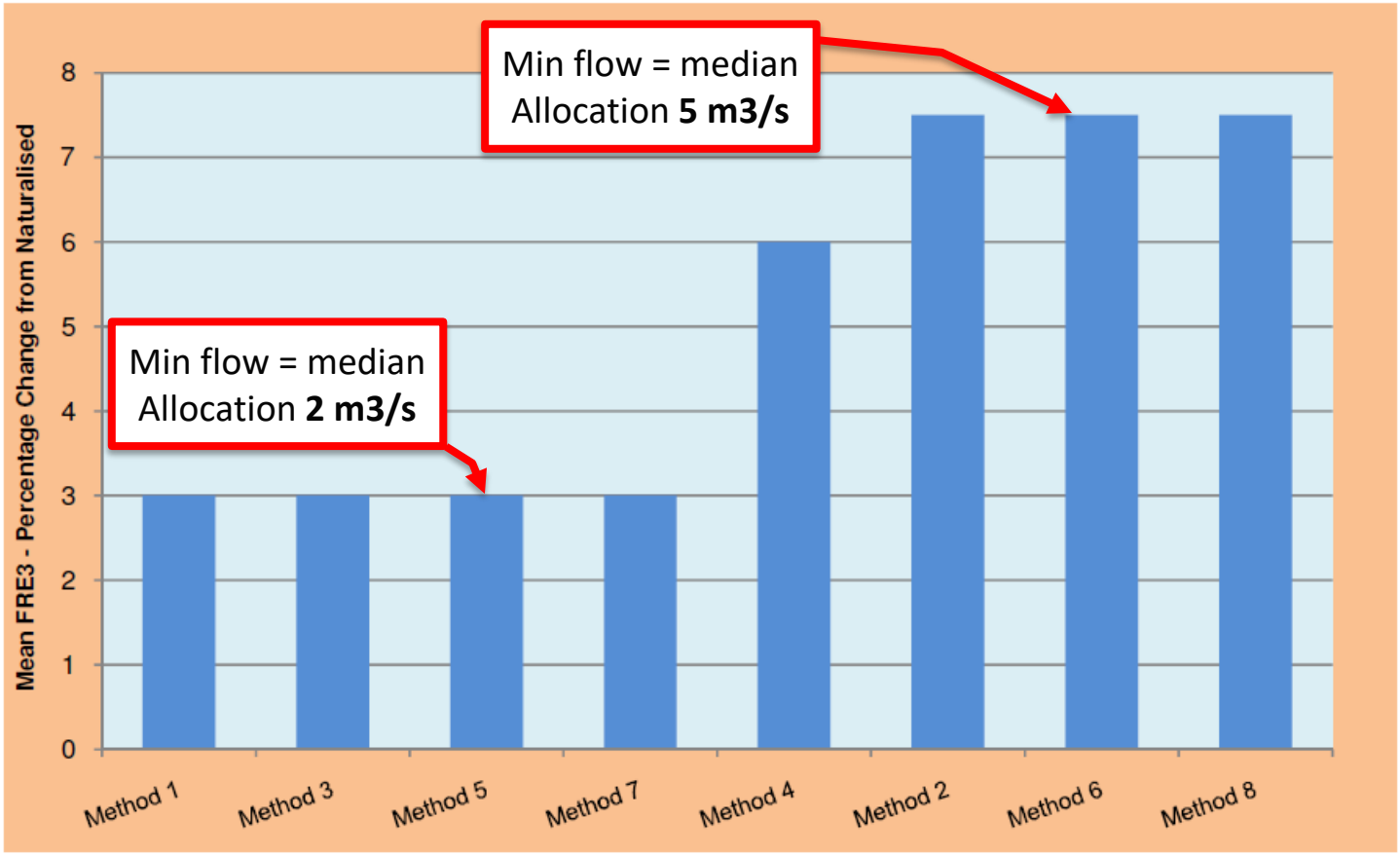


Figure 7-1: Percentage Change from Naturalised FRE3 Value for Allocation Methods

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1. Introduction

- Current high-flow allocation would be exhausted if used for Ngaruroro augmentation
- Tonkin + Taylor (2010) ascertained that 3,500 ha of additional irrigation may be available in Heretaunga Plains/Ngaruroro Catchment
- This may be met from 17.5 Mm^3 of storage

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1. Introduction

Aims of this analysis:

- Identify a high flow allocation that may be sufficient to meet the irrigation demand for 3,500 ha with 17.5 Mm^3 storage; and
- High flow allocation options must meet criterion of less than 10% change in FRE_3 when compared to FRE_3 for naturalised flows.

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High Flow Allocation – Modelled Scenarios

- Trigger flow = **20,000 L/s**
- Allocation scenarios:

1. 2,000 L/s – Existing allocation
2. 4,000 L/s – Existing + ***2000 L/s*** *of additional allocation*
3. 6,000 L/s – Existing + ***4000 L/s*** *of additional allocation*
4. 8,000 L/s – Existing + ***6000 L/s*** *of additional allocation*

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2. High Flow Allocation to meet demand

Aim:

Identify a high flow allocation that may be sufficient to meet irrigation demand for 3,500 ha with 17.5 Mm^3 storage

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2. High Flow Allocation to meet demand

Approach:

- For each scenario, the volume of harvested water available Jun-Sep was calculated from 2015 to 2032
- Assumed that 17.5 Mm^3 of water harvested each winter would be sufficient to meet demand for irrigating 3,500 ha

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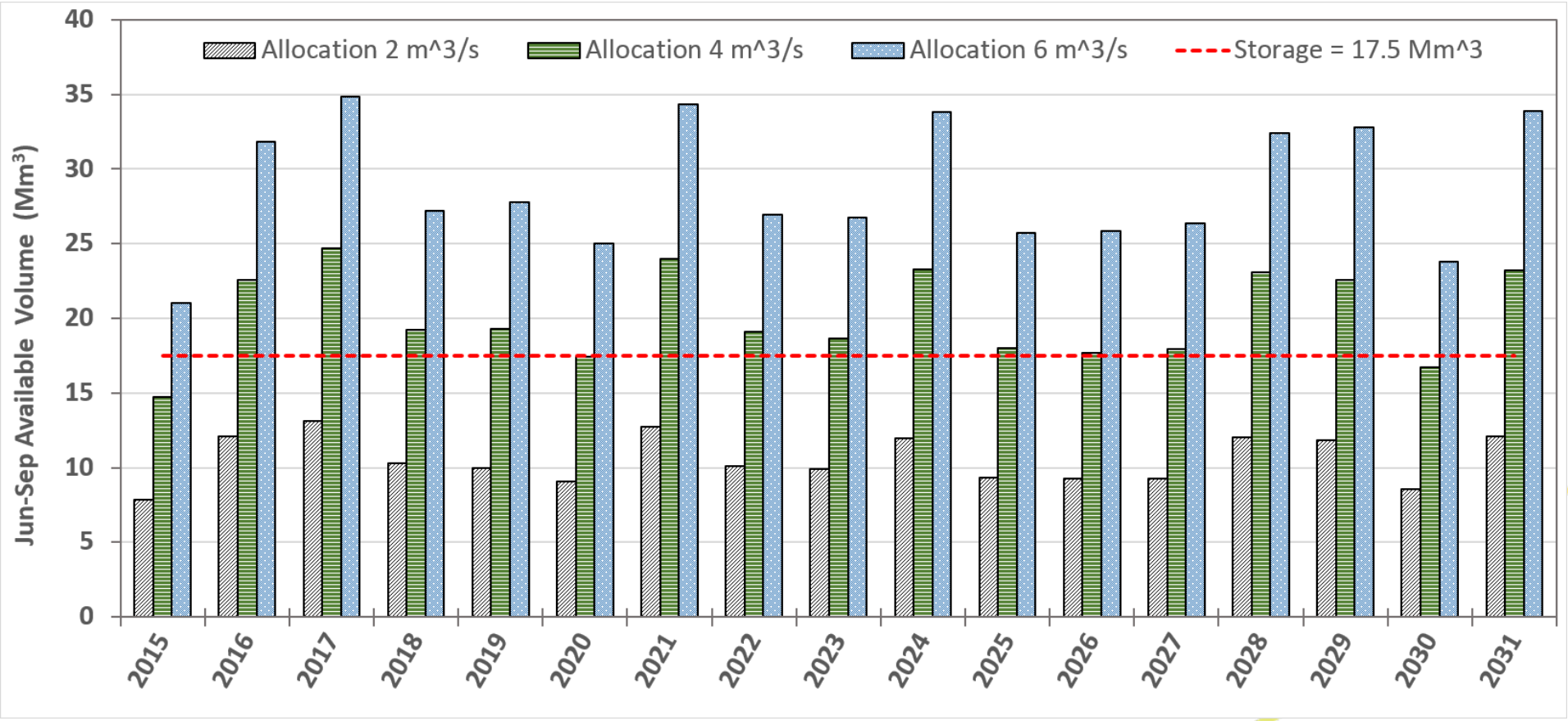
Jun-Sep volumes available for additional high flow allocation



Dotted red line indicates storage capacity sufficient to meet demand for 3,500 ha of irrigation

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2. High Flow Allocation to meet demand

- Additional high flow allocation of 2 m^3/s would not be sufficient to satisfy storage capacity
- Additional allocation of 4 m^3/s may be sufficient to fill the reservoir capacity during most, but not all, years of the simulation
- Additional allocation of **6 m^3/s** is predicted to be satisfactory for filling 17.5 Mm^3 of storage during all years of the simulation.

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2. High Flow Allocation to meet demand

- A total HFA of **6 m^3/s** (existing 2 m^3/s plus additional 4 m^3/s for future demand) **may** be sufficient to provide new irrigation to 3,500 ha in most years.
- Greater certainty for a total HFA of **8 m^3/s** to irrigate 3,500 ha.
- A total HFA of 8 m^3/s is most likely to provide additional stored water for environmental purposes, such as augmentation during low flow periods.

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3. Instream effects of high-flow allocation

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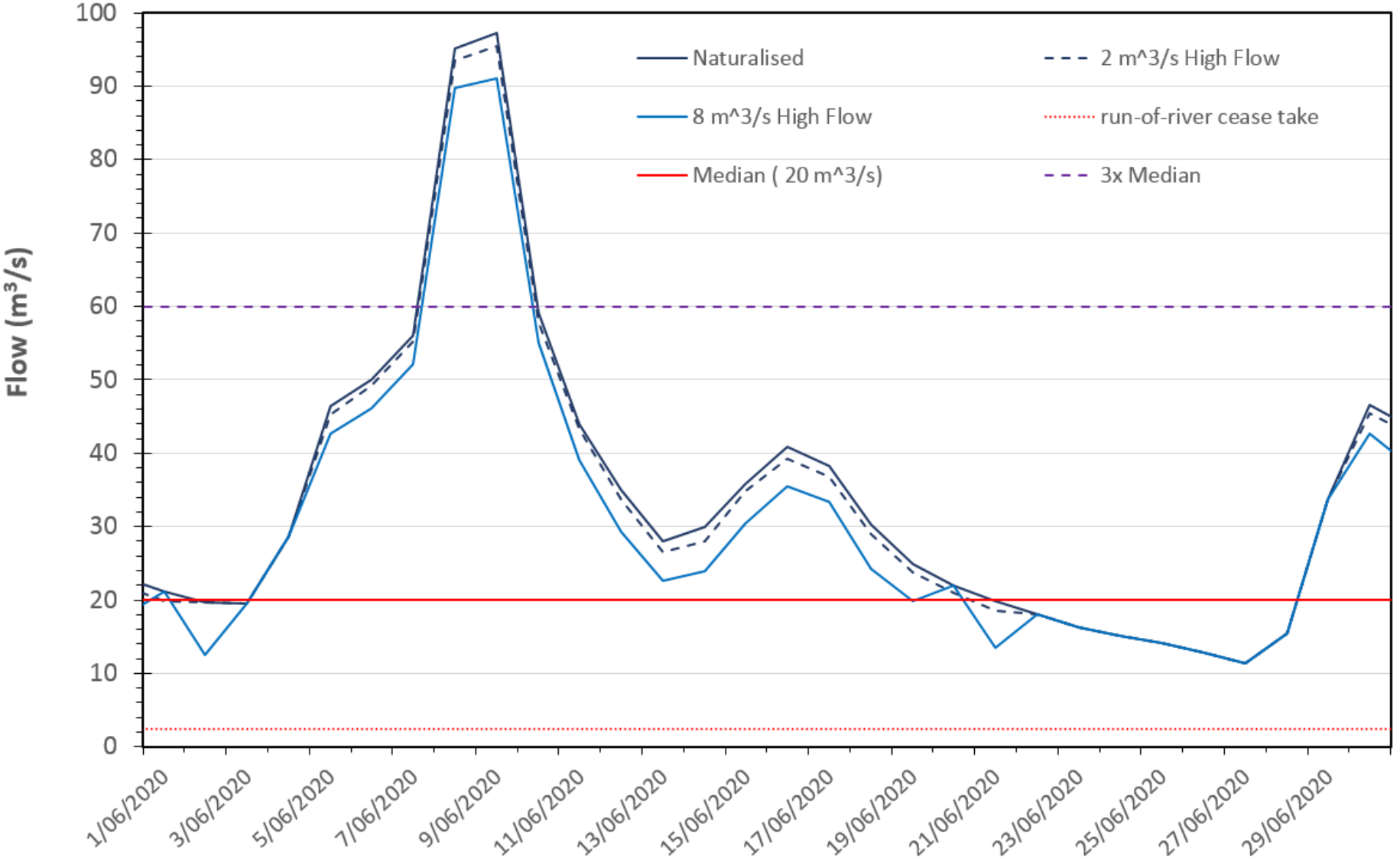
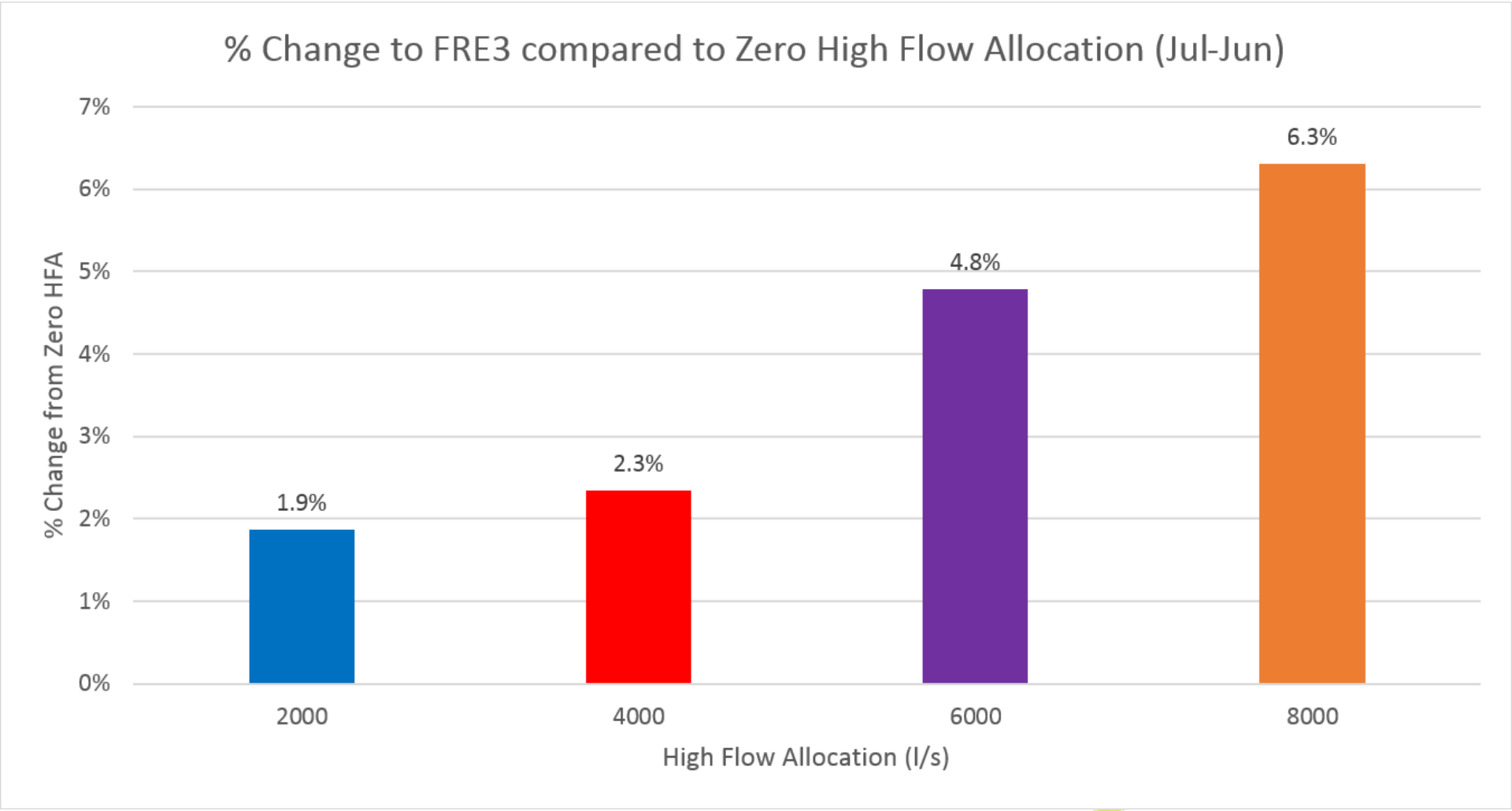
Example of impact of high flow allocation on Ngaruroro River Flows



FRE_3 changes by less than 10% for all scenarios



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Summary

- High flow allocation of 6 m^3/s, with 17.5 Mm^3 storage, may be sufficient to meet demand for 3,500 ha of new irrigation.
  - Assumptions and unknowns apply, e.g. locations of storage and irrigation demand
- Allocation of **8 m^3/s** would provide **greatest certainty** for meeting future demand.
- FRE_3 changes by less than 10% for all high flow allocation scenarios
  - High flow allocation up to 8 m^3/s would maintain ecological instream values of the Ngaruroro River.

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Discussion

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Proposal 2; High Flow Management and Allocation

Management framework for high flow allocation – refer page 16/17 of the discussion paper;

- 2a – allocation limit and managing adverse effects
- 2b – benefits of water storage
- 2c – Council commitment
- 2d - Prohibition policy

1. Do you agree with the approach contained in the policies

or

2. Agree but with conditions?

3. Do you disagree ? – why

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Proposal 2; High Flow Management and Allocation

Management framework for high flow allocation – refer page 17 of the discussion paper;

2a – **High flows allocation limit**

1. What allocation limit and management approach do you prefer?

2. Do you prefer an alternative regime? – Why?

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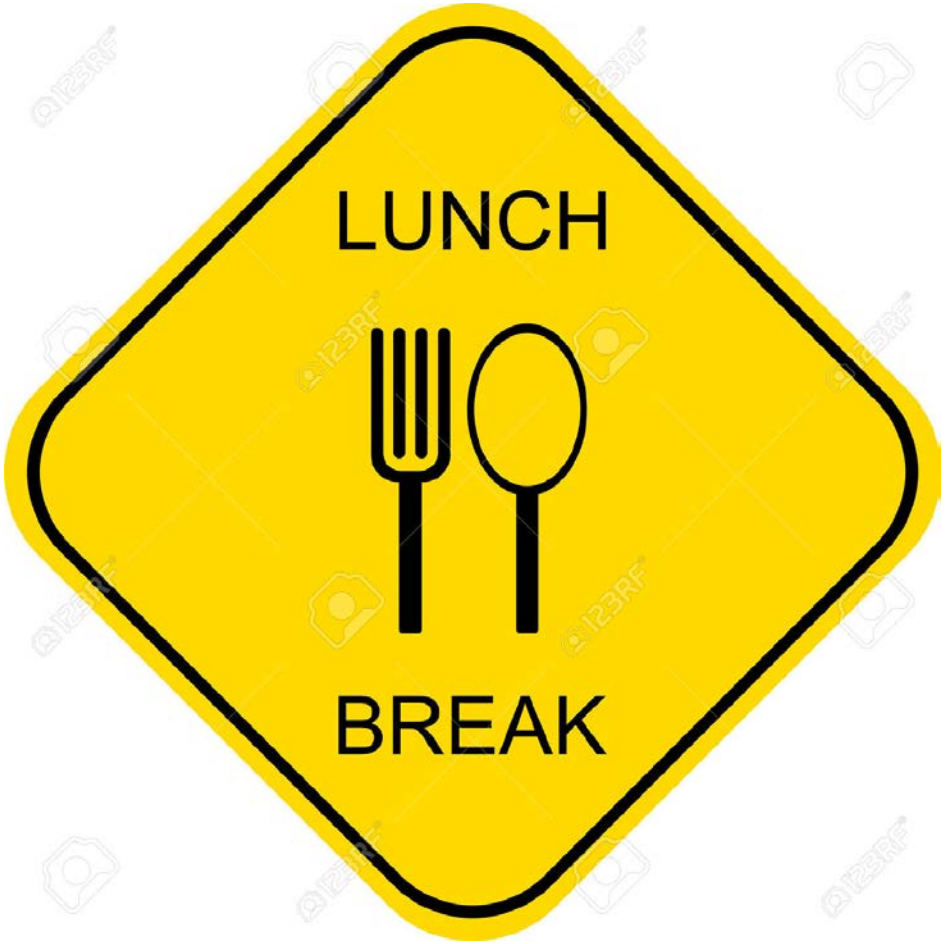

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Economic Analysis - Part 1a

Leander Archer
AgFirst Consultants

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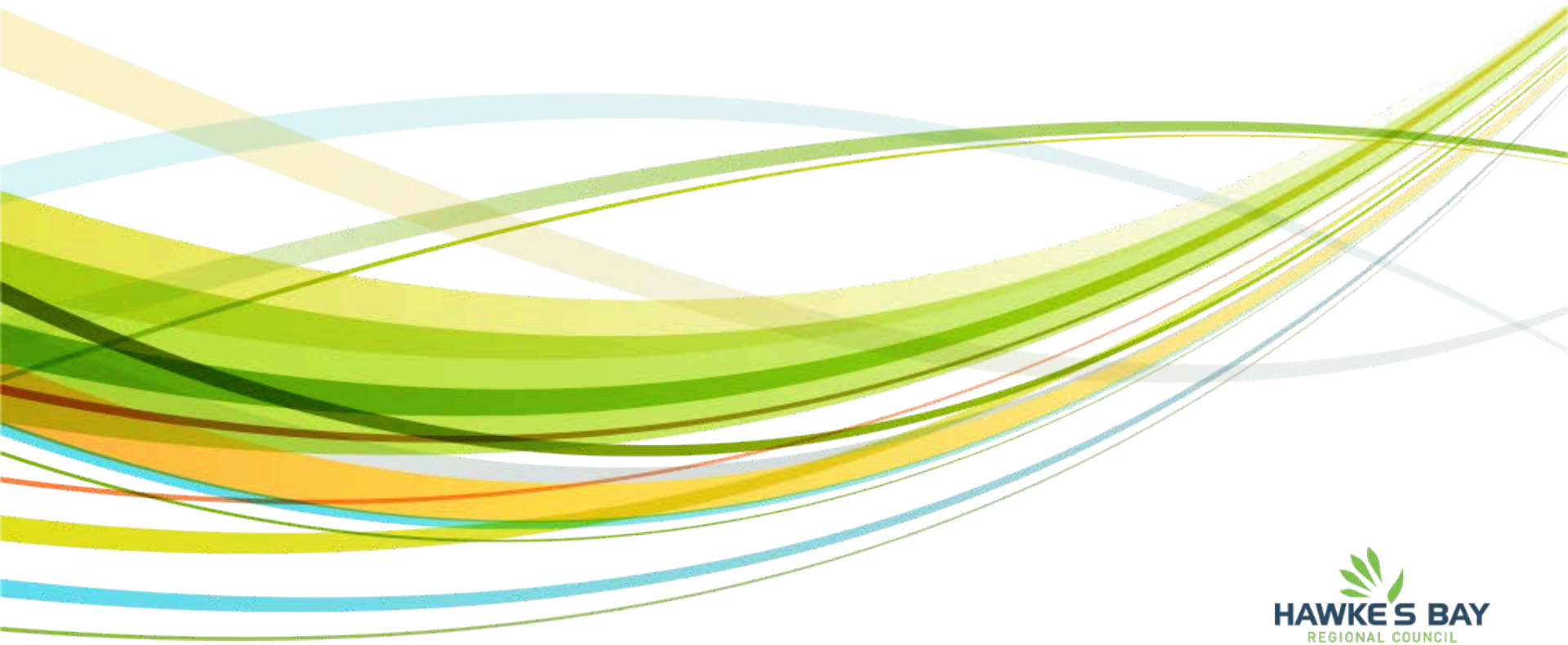
Management Scenarios – Management Variables



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- Review the number of management scenarios
  - Days below minimum flow
- Decisions on management variables
  - Emergency water
  - Timeframes
  - Standardise allocation methodology

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Effect on Number of Days Below the Trigger Flow

Dr Thomas Wilding

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For this presentation, the discussion document is taken as read

In particular, Part 3 of pre-circulated Item 2:

TANK low and high flow management discussion document March 2018

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Trigger Flows vs Minimum Flows

- We do not manage the MINIMUM FLOW that these rivers drop to each year
- Instead, we manage water use based on **TRIGGER FLOWS**

Minimum flows – big dams like this *can* keep river flow above a set minimum

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Flow would naturally drop to low flows – but less often

- Water use increases how often flow drops below the trigger value
- Increases both the number of years below and the number of days per year below.

Example - Tutaekuri water use
Occurrence of flows less than 3,000 L/s
increased from 4 years to 10 years
(out of 30 years flow record, using estimated actual use)

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Review Number of Management Scenarios for Further Assessment

- Summary of critical values and their flow needs;
  - RHYHABSIM
- Number of days below trigger flows
- Reliability of supply
  - Impacts on production

- Review number of management scenarios?

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Proposal 3a; Management Scenarios

Reduce the number of management scenarios for further analysis;
Refer page 29 of the discussion paper

1. Do you agree with the proposed reduction in the number of scenarios?
2. Agree but with conditions?
3. Do you disagree ? – why

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Management Variables

- Emergency water
  - Effects on river flows
- Timeframes for new flow triggers
- Standardising allocation of water

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Ngaruroro and Tutaekuri Rivers: 10% Emergency Water Take Modelling

Rob Waldron and
Jeff Smith

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Introduction

- During low flow periods, an emergency water allocation is regarded as highly valuable for survival of trees and vines, plus salvaging some revenue from high value crops.
- Emergency water provision applies to abstraction subject to **cease-take rules**: i.e. surface water takes and possibly Zone 1 groundwater abstraction.
- An emergency allocation has been suggested, based on 10% of consented allocation.
- Science team were requested to model effects on river flows

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What happens to flows if there is a 10% emergency water take?

- The potential impact of a 10% emergency water take has been modelled for the **Ngaruroro** and **Tutaekuri** Rivers.
- For modelling, the emergency water take was calculated as the total of:
  - Zone 1 groundwater abstractions - *10% of estimated actual stream depletion*
  - Surface water abstractions - *10% of maximum daily allocation*

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Groundwater is a small component of the 10% emergency water take

Flow Management Site	Zone 1 Groundwater (l/s)	Upstream Surface Water (l/s)	Total 10% Emergency Water Take (ls)
Ngaruroro at Fernhill	8	161	169
Tutaekuri at Puketapu	7	83	90

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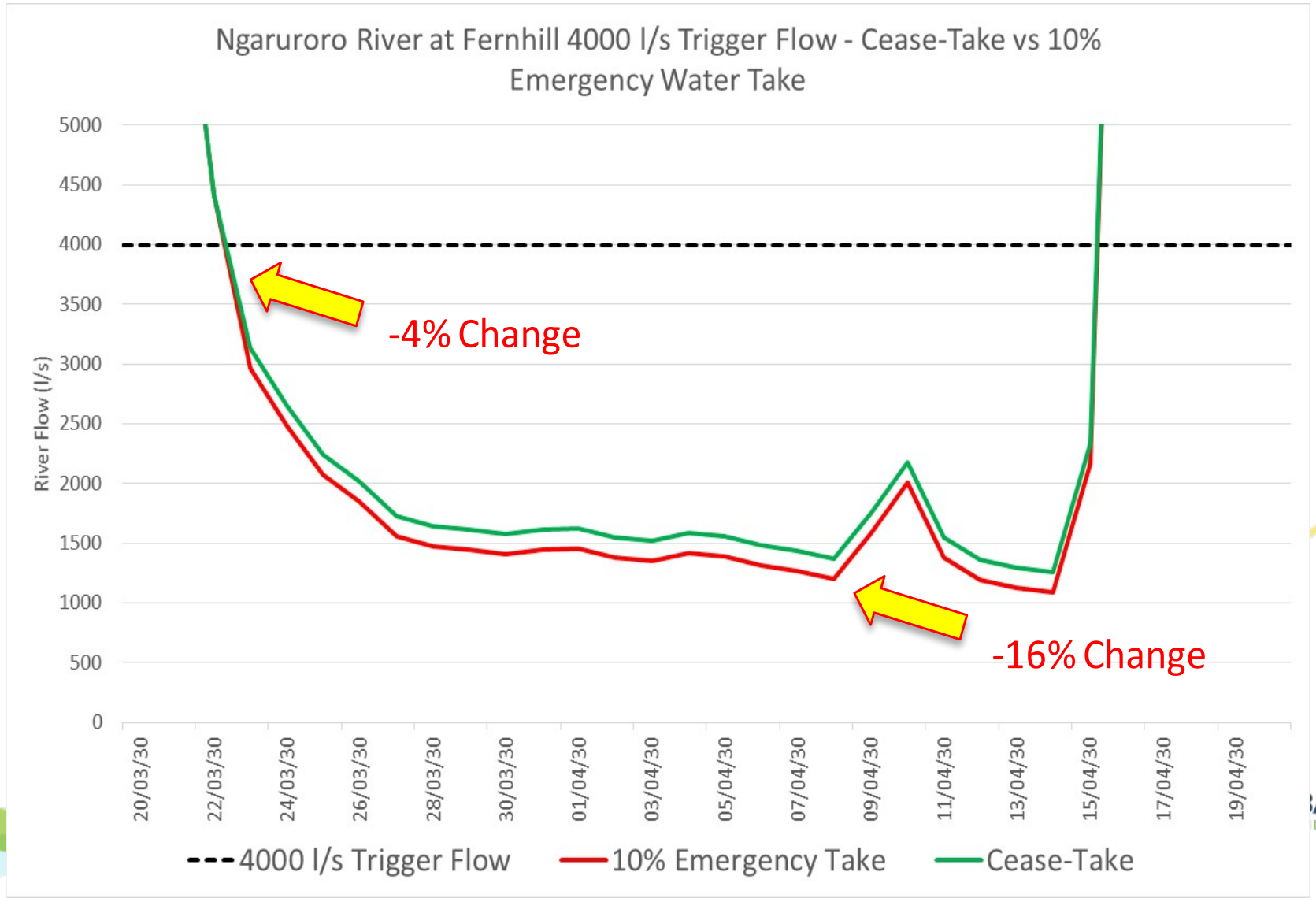
Modelled river flow - with and without 10% emergency take

10% emergency water take is only abstracted when river flow is below the trigger flow



Minimum and maximum impact from a 10% emergency water take

Flow Management Site	Trigger Flow (l/s)	% Change to River Flow Below Trigger Flow	
		Min % Change	Max % Change
Ngaruroro River at Fernhill	2400	-7%	-16%
	3600	-5%	-16%
	4000	-4%	-16%
Tutaekuri River at Puketapu	2000	0%	0%
	2500	-4%	-5%
	3300	-3%	-5%

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Summary of effects from 10% emergency allocation

- Ngaruroro River

  Up to **16% reduction** in river low-flows for any trigger flow

- Tutaekuri River

  Up to **5% reduction** in river low-flows

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Discussion

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Proposal 3d; Allowing for emergency water takes

Provide for an emergency water allowance of 10%

(i) at any trigger flow

or

(ii) only if trigger flows are increased

or

(iii) not at all

Refer to page 29 of discussion document

1. Which option do you prefer?

2. Do you have any additional conditions?

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Timeframes

- The impact of a range of management scenarios is being analysed.
  - Higher trigger flows will have an impact on
    - Individuals and their families – their income and lifestyle
    - Contribution to the local and regional economy
    - Flow-on economic and employment impacts
  - How long before they should be required to be complied with?

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Proposal 3b; Timeframes for flow triggers

The economic analysis will assess costs of;

(i) applying new flow triggers within ten years for all permits

And

(ii) New trigger flows applying by <date>

Refer page 29 of the discussion paper

1. What **date** do you consider appropriate for applying management scenarios that increase the trigger flows?

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Standardising allocation

- The crop water demand is the same irrespective of whether the water supply is surface or groundwater
  - Adopt the same allocation methodology?

- No change to allocation limit (7-day Q95 formula) or trigger flow (tbc) is being proposed
  - There will be an impact on amount of water allocated to permit holders
  - Current margin between allocated versus used water

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Proposal 3c; Standardising Allocation of Water

Assess impact of standardising allocation of water for the same crop/soil type regardless of whether a surface or groundwater take.

Refer page 29 of the discussion paper

1. Do you agree with this proposal?
2. Agree but with conditions?
3. Do you disagree ? – why

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Mana Whenua Update

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Meeting Records

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Action points- Meetings 33, 34, 35

ID	Action item	Person responsible	Status
37.1	Recommendation table to be updated including recommendation 2.1, and circulated post-meeting. Members to email feedback to Ceri.	Ceri	
37.2	Circulate electronic copies of the HDC and NCC presentations to the Group	Ceri	
37.3	Final version of Meeting 33 record would be re-circulated to the Group via email with the amended Meeting 36 record. These would also be added to the portal and website.	Nazlee	
37.4	Circulate Draft Plan to members, with executive summary following meeting 37.	Mary-Anne	

Next meeting – 19 April2018

- Meeting freshwater objectives
  - EAWG report back
  - Farmer reference group
    - ‘Strawman’ management proposal

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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