HAWKE'S BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Minutes of a meeting of the Environment and Integrated Catchments Committee

Date:	12 June 2024
Time:	9.00am
Venue:	Council Chamber Hawke's Bay Regional Council 159 Dalton Street NAPIER
Present:	Cr S Siers – Chair Cr D Roadley – Deputy Chair Cr W Foley *(online)* Cr X Harding Cr T Hokianga *(online)* Cr J Mackintosh M McIlroy – Regional Planning Committee rep Cr J van Beek *(online)* Cr M Williams
In Attendance:	N Peet – Chief Executive C Dolley – Group Manager Asset Management I Maxwell – Group Manager Integrated Catchment Management K Brunton – Group Manager Policy & Regulation (online) S Young – Group Manager Corporate Services L Hooper – Team Leader Governance J Bennett – Programme Finance & Controls Manager J Kingsford – Manager Regional Projects J Townshend – Manager Catchment Operations S French – Acting Manager Science S Wilson – Lincoln Agritech N Tiuka – Ngati Kahungunu Taiao Unit B Shanahan – Team Leader Marine Science M Mitchell – Biosecurity & Biodiversity M Short – Catchment Management Lead - Biosecurity

1. Welcome/Karakia /Housekeeping /Apologies

The Chair welcomed everyone and Martin Williams led a karakia to open the meeting.

Resolution

EICC128/24 That the apologies for absence from Councillors Hinewai Ormsby, Charles Lambert and Neil Kirton be accepted.

Siers/Harding
CARRIED

2. Conflict of interest declarations

Councillor Roadley declared an interest in item 6 Land for Life as one of the pilot farms.

There were no conflicts of interest declared.

3. Confirmation of Minutes of the Environment and Integrated Catchments Committee meeting held on 20 March 2024

EICC129/24 **Resolution**

Minutes of the Environment and Integrated Catchments Committee meeting held on Wednesday, 20 March 2024, a copy having been circulated prior to the meeting, were taken as read and confirmed as a true and correct record as amended to record Councillor Xan Harding's vote in favour of the resolutions of *item 5 Dangerous dams, Earthquake-prone dams and Flood-prone dams policy review*.

Harding/Roadley
CARRIED

4. Public Forum

There were no speakers.

5. Braided Rivers Research Project Results

Scott Wilson introduced his presentation (attachment 1), on the data collected, analysis undertaken, and findings of the 5-year Braided Rivers Research Project aimed at understanding the amount of water exchanged between braided river systems and underlying groundwater resources. Highlights covered:

- Braided rivers have a braidplain aquifer and are best considered as a river system.
- Ngaruroro River is not hydraulically connected to the aquifer in the upper section but becomes hydraulically connected in the lower section.

Councillor Thompson Hokianga arrived at 9.24am

- Narrowing of the river and bed elevation impact on the hydraulic connection of the river to the aquifer in the river system.
- Further altering of riverbeds has the potential to negatively impact on cultural and economic benefits.
- Ngaio Tiuka noted the importance of the findings and new information from the research project and the opportunity to take this into account in gravel extraction and nature-based solutions for river management, particularly cultural and other benefits.

Katarina Kawana arrived at 10.21am

- Protection of aquifer recharge zones is provided in the Regional Policy Statement.
- Simon Harper advised that Scott Wilson and GNS are going to present a technical workshop for HBRC staff doing work in the area.

EICC130/24 **Resolutions**

That the Environment and Integrated Catchments Committee:

1. Receives and notes the *Braided Rivers Research Project Results* report and presentation.
2. Recommends that Hawke's Bay Regional Council directs the CE to consider the implications of this research for flood resilience and Kotahi planning with a particular focus on the critical importance of the protection and enhancement of aquifer recharge zones to river systems and the communities reliant on them.

Williams/Harding
CARRIED

The meeting adjourned at 10.34am and reconvened at 10.50am

6. Land for Life update

Michael Bassett-Foss introduced the item, noting:

- The scale of the challenge is so large that the tools the Council has available are not sufficient on their own to address them and require assistance from others' funding, e.g. Central Government.
- Stage 3 aims to roll out to another 90 farms and keep momentum to drive uptake further.
- Funding of $3.38M over 2 years is required, with HBRC to underwrite the $400k shortfall through reprioritisation of the Integrated Catchment Management budgets.
- Engagement is under way with central government ministers and Minister Hoggard is scheduled to visit HB and a pilot farm in July. Invitations to the visit have also been extended to ministers for Trade (Todd McClay) and Trade and Climate Change (Simon Watts).
- Green lending and access to capital are not expected to be a significant challenge for farmers as indicated by banks and given that the planting adds to the farm's bottom line.
- Advice from pilot farms is that they want to plant more natives and the decisions on what is planted are made by the landowners.
- The Governance structure for the project is included in the Business Case attached to the Agenda.

EICC131/24 **Resolution**

That the Environment and Integrated Catchments Committee receives and notes the *Land for Life update* staff report.

Williams/Harding
CARRIED

7. Sediment impacts from the February 2023 Cyclone Gabrielle event on marine environments of Hawke Bay

Becky Shanaghan, Marine Biologist and HBRC Team Leader Marine Science, introduced the item and the team online, Daniel Leduc, NIWA Benthic Ecologist, and Andrew Swales, NIWA. Highlights from the presentations included:

- It is estimated that 300 million tons of sediment were eroded by Cyclone Gabrielle and inflows to the sea in Hawke Bay were visible from space
- Overall objectives of the project were to understand sediment impacts in affected marine environments of Hawke Bay and Gisborne to enable rapid fisheries management decisions.
- High turbidity (suspended sediment) started to ease 7-10 days after the cyclone and seasonal variations were close to normal.
- Wairoa Hard was the most impacted, including logs on the seafloor, and sponges and kelp no longer present after the cyclone. Wairoa Hard is a snapper nursery.
- Evidence showed significantly improved macrofaunal abundance in October from June samples.

- Sedimentation has increased significantly on NZ coasts over the last century and is a major threat to coastal ecosystems.
- The sediment transport model and observations from camera transects both indicate that sedimentation impacts are most pronounced inshore and along the western and central parts of Hawke Bay, with Wairoa Hard having been most impacted.
- Sediment deposits are not from resuspended marine sediments but rather recent deposits of eroded soils transported by rivers.
- In further research, researchers are looking to add in resin acid tracers to be able to determine contributions from streambank erosion and pine forest harvesting.
- A seabed disturbance model shows that sedimentation has increased over the last decade and Cyclone Gabrielle had a short term effect.
- Kelp was absent from Hawke Bay for many years prior to Cyclone Gabrielle.
- Committee members were asked to email any specific questions they have to the Governance Team for seeking answers from the science team.

EICC132/24 **Resolution**

That the Environment and Integrated Catchments Committee receives and notes the *Sediment impacts from the February 2023 Cyclone Gabrielle event on marine environments of Hawke Bay* staff report.

McIlroy/Williams
CARRIED

8. Alligator Weed update

Iain Maxwell introduced the item, which was taken as read. Mark Mitchell and Matt Short, Team Leader Biosecurity, spoke to the item and noted:

- Aim is to prevent Alligator Weed establishing in Hawke's Bay due to the severity of its impacts, rate of spread and survival of deep root systems – taking an eradication approach.
- Long term costs of letting Alligator Weed go and controlling it on a site-based basis would be more than taking an immediate eradication approach. Work paid from staffing budgets this financial year and $100k redirected from the PCA programme to pay for work in 2024-25 financial year while maintaining the target levels of service however hasn't taken into account the discovery of any new incursions of other new pests.
- Native to Brazil, lives in the water but has impacts on pasture, and has no known predators in New Zealand.
- Northland is the hotspot for Alligator Weed, Waikato is managing sites with progressive containment, and Horizons and Taranaki are working on eradication.

EICC133/24 **Resolution**

That the EICC notes the proposed approach to managing the Alligator weed incursion and highlights any areas of concern.

Siers/Mackintosh
CARRIED

9. HBRC environmental education update

Sally Chandler introduced the item, which was taken as read, and through a presentation highlighted:

- Environmental education began in 2003 at HBRC with the Enviroschools kaupapa. There are now 73 Enviroschools in the region with the potential to reach 10,200 tamariki and their whanau.
- Always working to get more schools on board through promotion on social media and other means.

- HB doesn't have capacity to offer the kura kaupapa full emersion programme however there is an option for those kura to link into resources nationally if they want to take up the Enviroschools kaupapa.

EICC134/24 **Resolution**

That the Environment and Integrated Catchments Committee receives and notes the *HBRC environmental education update* staff report.

Siers/Roadley
CARRIED

The meeting adjourned at 12.57pm and reconvened at 1.25pm with Councillor Will Foley and Katarina Kawana having left the meeting.

10. Update on the IRG flood control and drainage programme

Chris Dolley introduced the item, which was taken as read. Jon Kingsford provided a brief outline of the programme status. Discussion and queries covered:

- Recent damage to SH50 bridge north end abutment caused by a recent 150mm rain event will be the responsibility of Waka Kotahi to repair as it is their bridge. The HBRC upstream work flood resilience work to take pressure off the bridge area is …
- A catalogue of the quantity and quality of borrow material for flood resilience work is being created
- The potential to fund flood resilience infrastructure through using gravel from within the catchment was discussed in the context of giving rivers room and nature-based solutions.
- Where consents are being sought for these projects, this is being progressed through a private plan change to specific rules in the Hastings District Plan that relate directly to the works.
- In future, this government will look to fund projects that are already consented.

EICC135/24 **Resolution**

That the Environment and Integrated Catchments Committee receives and notes the *Update on the IRG flood control and drainage programme* staff report.

Williams/Mackintosh
CARRIED

11. Update on the North Island Weather Events resilience programme

Chris Dolley introduced the item, which was taken as read, noting a recent productive meeting with Crown Infrastructure Partners (CIP) as the administrator for the programme. Jon Kingsford provided a brief overview of what was covered in the paper and questions and discussions covered:

- Some tasks were brought forward after the meeting with CIP and the Order in Council is now in place.
- Reporting to EICC will be on programme operational progress, financial reporting will go to Corporate & Strategic Committee as part of the consolidated organisational financial report, and risk issues will go through the Risk and Audit Committee.
- Goal is to have negotiated land access agreements such as purchase or easements, instead of using the Public Works Act. As well there are options for access through the Soil Conservation and Rivers Control Act.
- A decision paper on the funding for the Havelock North Streams flood resilience work is going to be put to the Regional Council in July. HBRC signed the category 2 funding agreement with the Crown, however there are no HBRC flood control assets and HDC runs it as a stormwater management programme. Work is underway and won't be delayed by the funding decisions yet to be made.
- HBRC is working with the Awatoto Industry Group in relation to options for flood protection, how that might be funded and understand whether solutions align to other

HBRC flood resilience work.

- Māori Land Court is involved in the process of land acquisition, for easements as well, for whenua Māori.
- Schedules are being actively managed and changes need to be negotiated with Crown Infrastructure Partners as the schedule was set by the Crown.
- The project manager is the one who coordinates the expertise required, not the expertise itself.

EICC136/24 **Resolution**

That the Environmental and Integrated Catchments Committee receives and notes the *Update on the North Island Weather Events resilience programme* staff report.

Siers/Harding
CARRIED

Councillor Martin Williams led the group in offering a karakia to close the meeting.

Closure:

There being no further business the Chair declared the meeting closed at 2.28pm on Wednesday 12 June 2024.

Signed as a true and correct record.

Date: by EICC resolution 11 September 2024 **Chair:** Sophie Siers

Subsurface Processes in Braided Rivers: Ngaruroro River

HBRC Environment & Integrated Catchments Committee

12 June 2024

LINCOLN AGRITECH

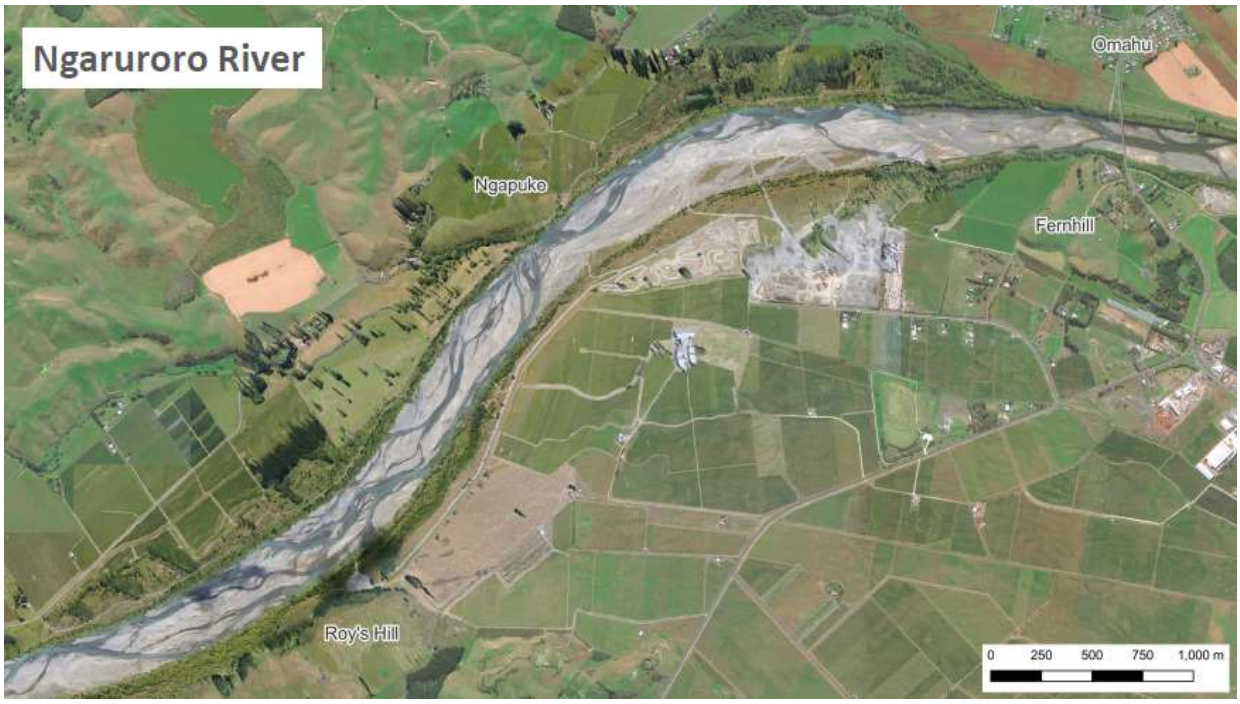
NIWA

Research Questions Revisited

1. How do braided rivers work beneath the riverbed?
2. How can we represent such a complex river system in a regional scale model?
3. What impact is river management having on river losses?

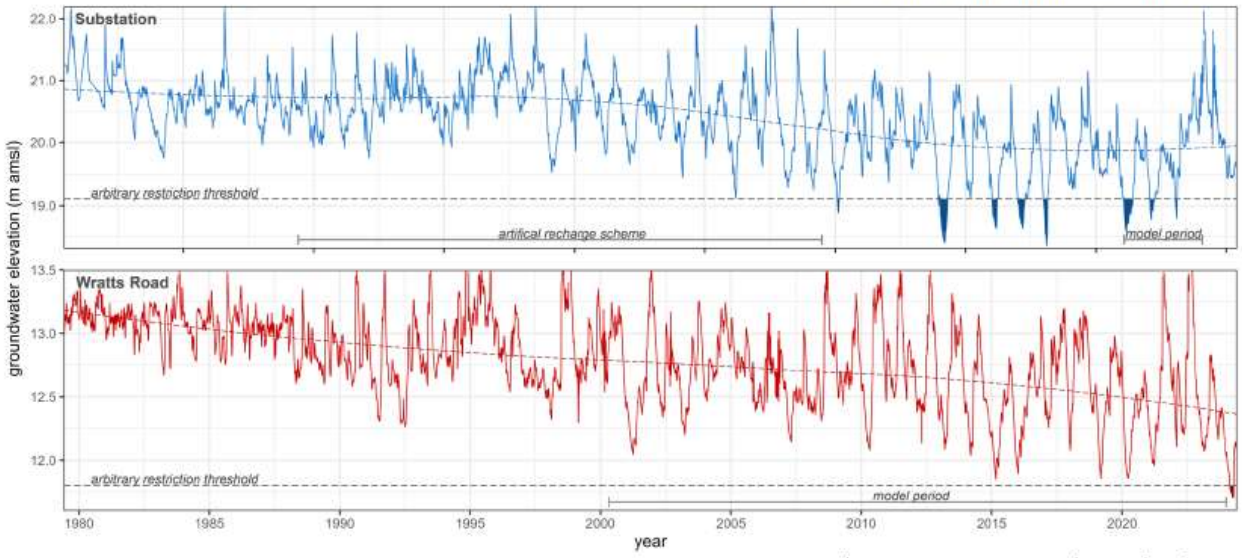
LINCOLN AGRITECH

NIWA



Motivation

~0.9 m reduction in mean groundwater level

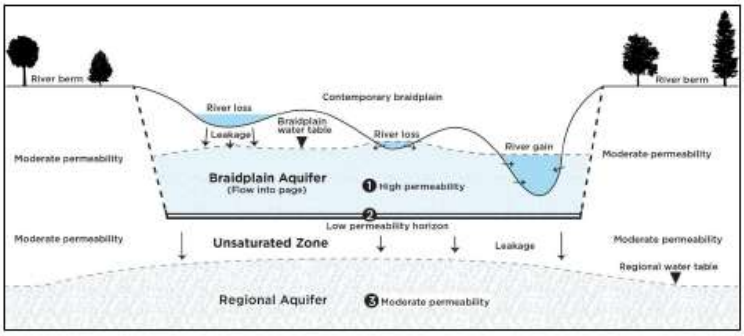


~0.7 m reduction in mean groundwater level

1- How do braided rivers work beneath the riverbed?

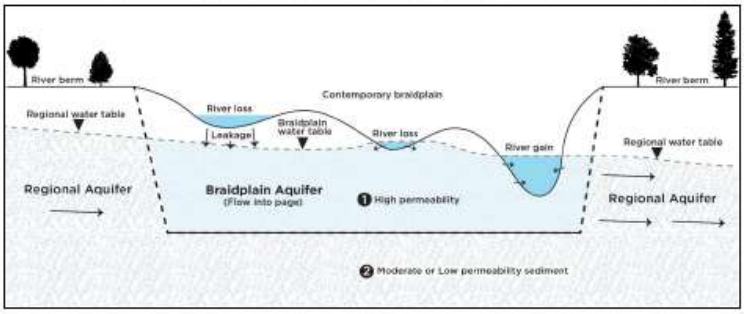
Hydraulically disconnected

(recharge vertical)



Hydraulically connected

(recharge lateral)



Local Significances for each site

Ngaruroro

Hydraulically disconnected at upper section

Hydraulically connected at lower section

Recharge controlled by river width (upper section) and bed elevation (lower section)

Long-term decline in groundwater levels

Engineered by bed narrowing (early 80's) and drop in bed elevation

Wairau

Hydraulically connected

Recharge controlled by river elevation

Long-term decline in groundwater levels

Engineered by bed narrowing (1960's) and drop in bed elevation

Riverbed lowered into clay-bound sediments in upper part of plains

Selwyn/Waikirikiri

Hydraulically disconnected

Recharge controlled by river width & limited by underlying low-permeability sediments

Ephemeral - method developed to determine losses and vertical K from satellite photos

River un-modified

Braidplain reservoir potentially being affected by bed incision due to weed growth

Conceptual paper

https://doi.org/10.5194/egusphere-2023-2767
Preprint. Discussion started: 13 December 2023

Conceptualising surface water-groundwater exchange in braided river systems

Scott R. Wilson[1], Jo Hoyle[2], Richard Measures[2], Antoine Di Ciacca[1], Leanne K. Morgan[3], Eddie W. Banks[4], Linda Robb[1], and Thomas Wöhling [1,5]

[1]Environmental Research, Lincoln Agritech, Lincoln University, New Zealand
[2]National Institute of Water & Atmospheric Research, Christchurch, New Zealand
[3]Waterways Centre for Freshwater Management, University of Canterbury, Christchurch, New Zealand
[4]National Centre for Groundwater Research & Training & College of Science & Engineering, Flinders University, Australia
[5]Chair of Hydrology, Technische Universität Dresden, Dresden, Germany

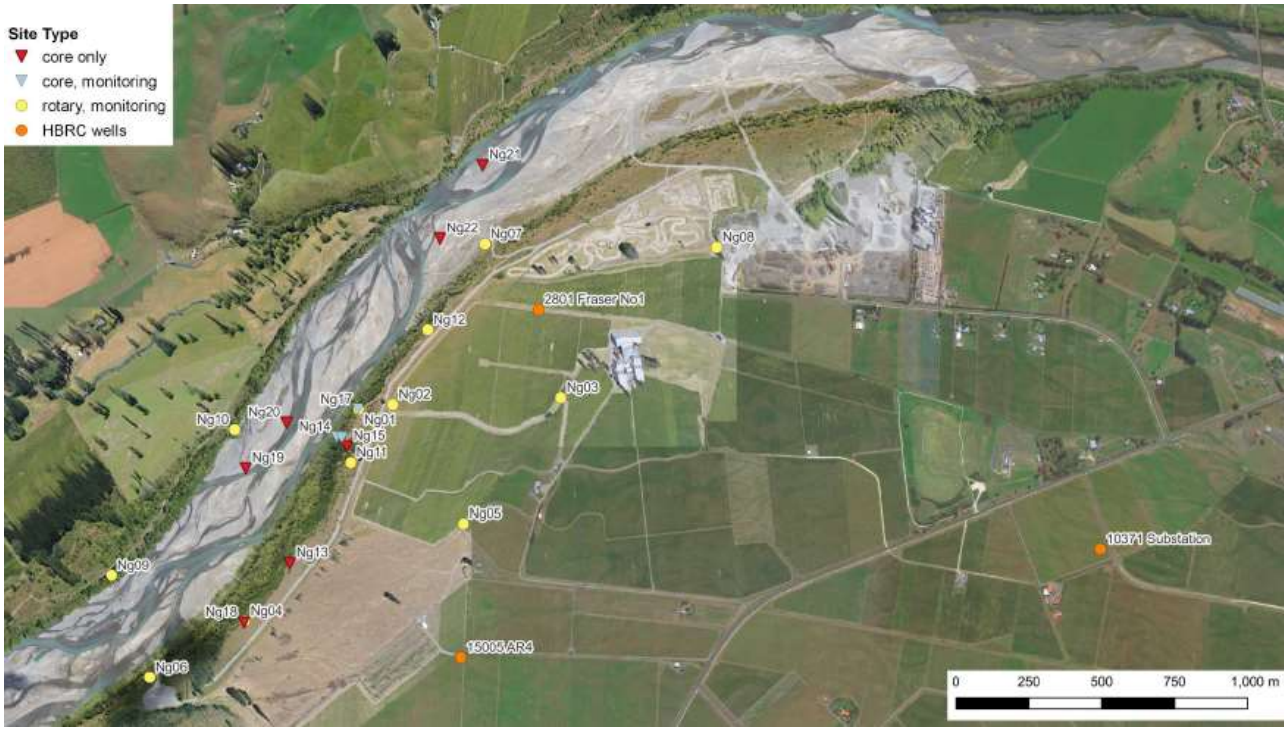
Correspondence to: Scott R. Wilson (scott.wilson@lincolnagritech.co.nz)

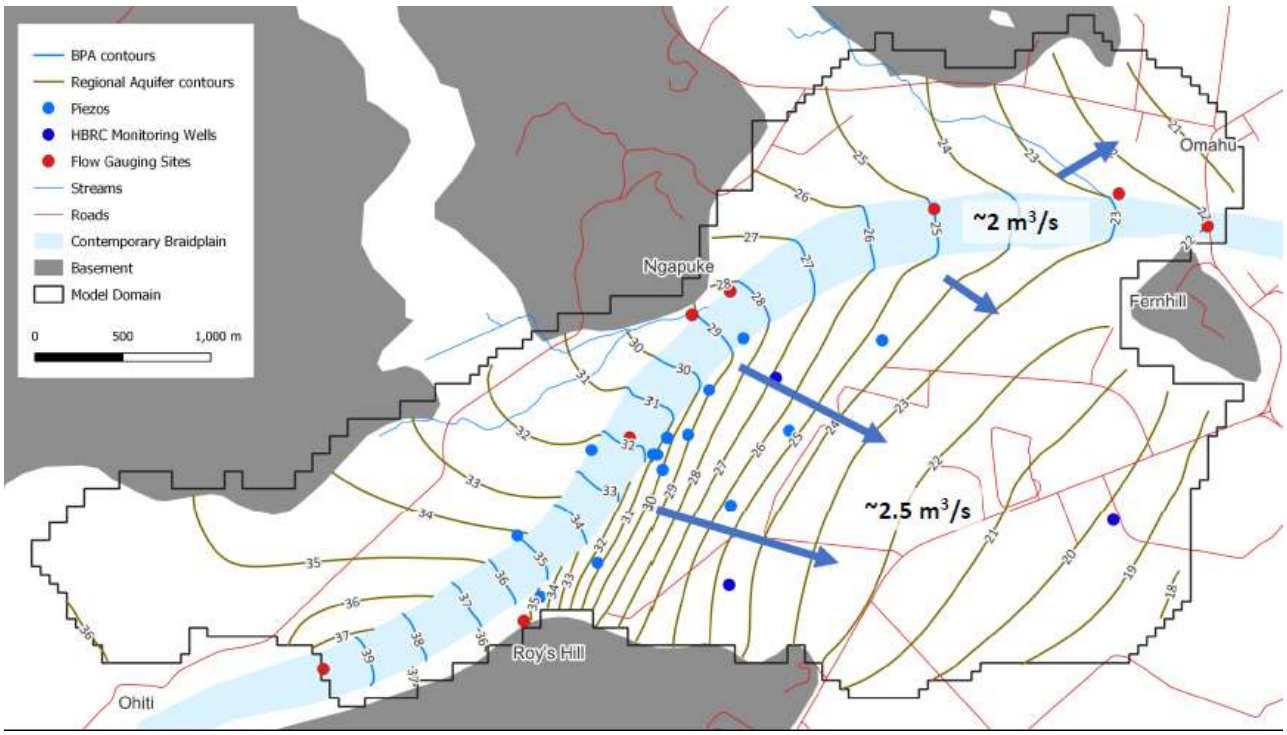
2 - How can we represent such a complex river system in a regional scale model?

The conceptualisation makes this easy:

Simply use the average water level in the *braidplain aquifer* to represent the "river" in Modflow

Di Ciacca, A. Wilson, S.R., Durney, P., Stecca, G., Wöhling, T.: Model simplification to simulate groundwater recharge from a perched gravel-bed river. Research paper submitted to Journal of Hydrology, manuscript HYDROL58276 submitted Feb 2024.

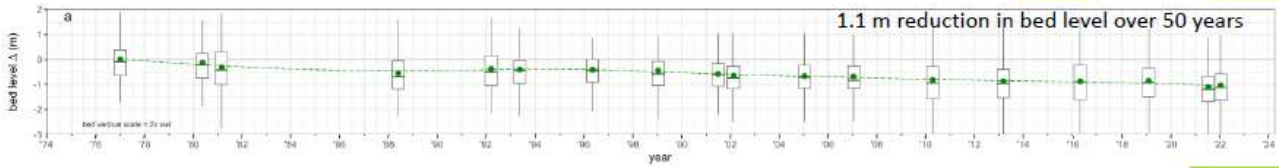

Site Type
core only
core, monitoring
rotary, monitoring
HBRC wells
Ng21
Ng22
Ng07
Ng08
2801 Fraser No1
Ng12
Ng03
Ng02
Ng17
Ng10
Ng20
Ng14
Ng01
Ng15
Ng11
Ng19
Ng05
10371 Substation
Ng09
Ng13
Ng18
Ng04
15005 AR4
Ng06
0
250
500
750
1,000 m

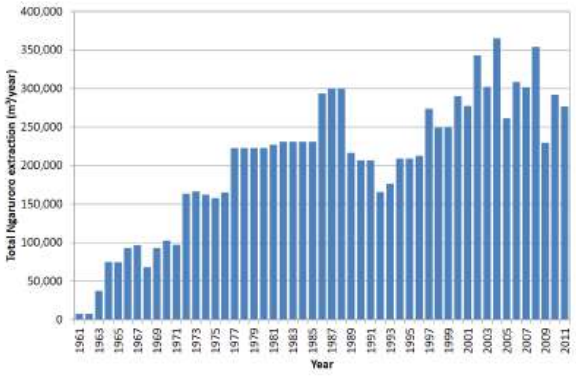

BPA contours
Regional Aquifer contours
Piezos
HBRC Monitoring Wells
Flow Gauging Sites
Streams
Roads
Contemporary Braidplain
Basement
Model Domain
0
500
1,000 m
Omahu
Ngapuke
Fernhill
~2 m³/s
~2.5 m³/s
Roy's Hill
Ohiti

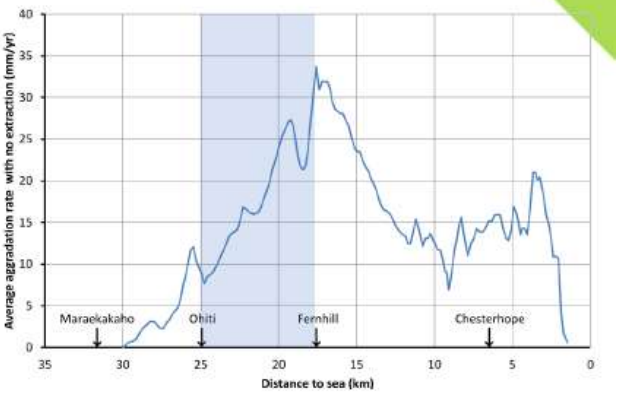
3 - What impact is river management having on river losses?

- Primary source of aquifer recharge to Heretaunga Plains
- Major gravel extraction reach, drop in bed elevation
- River confined to approximately half natural width

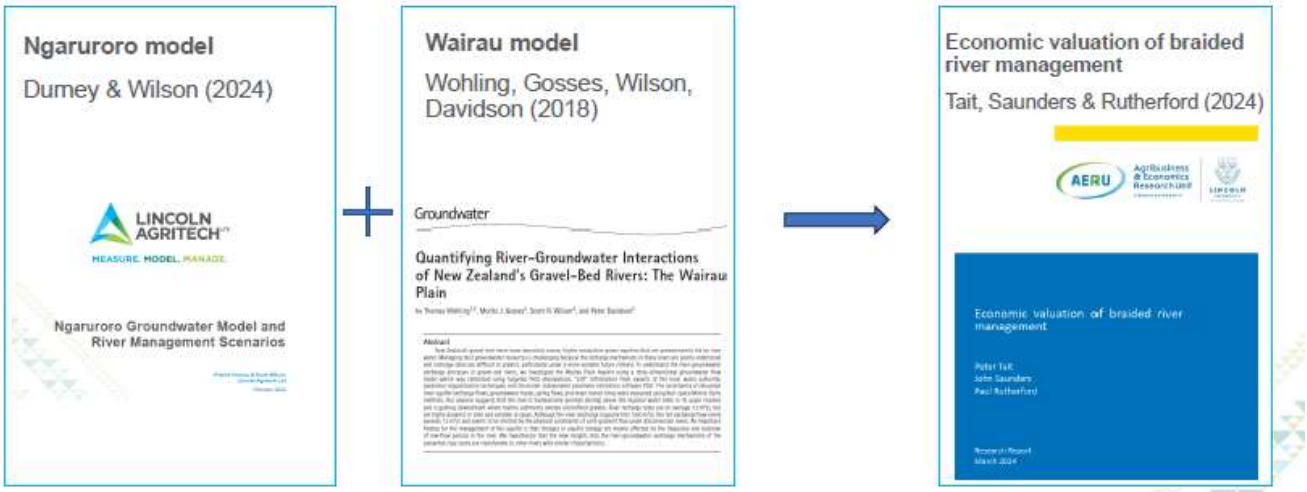
Ngaruroro River influence on Substation well

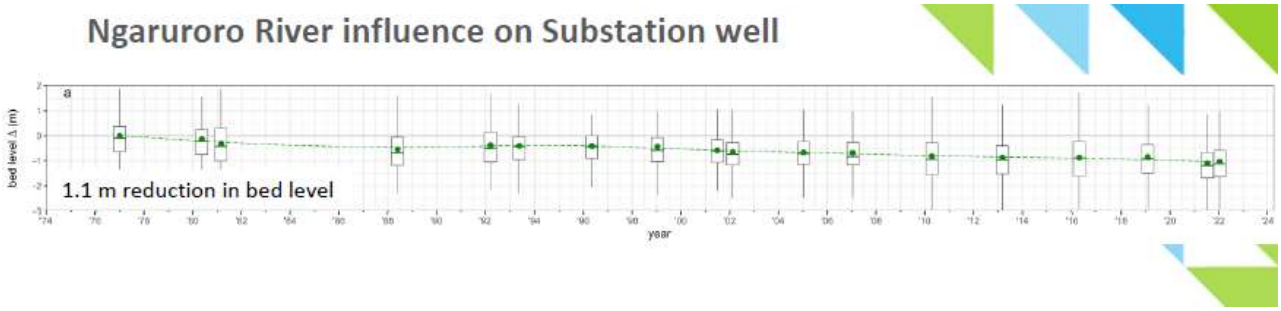


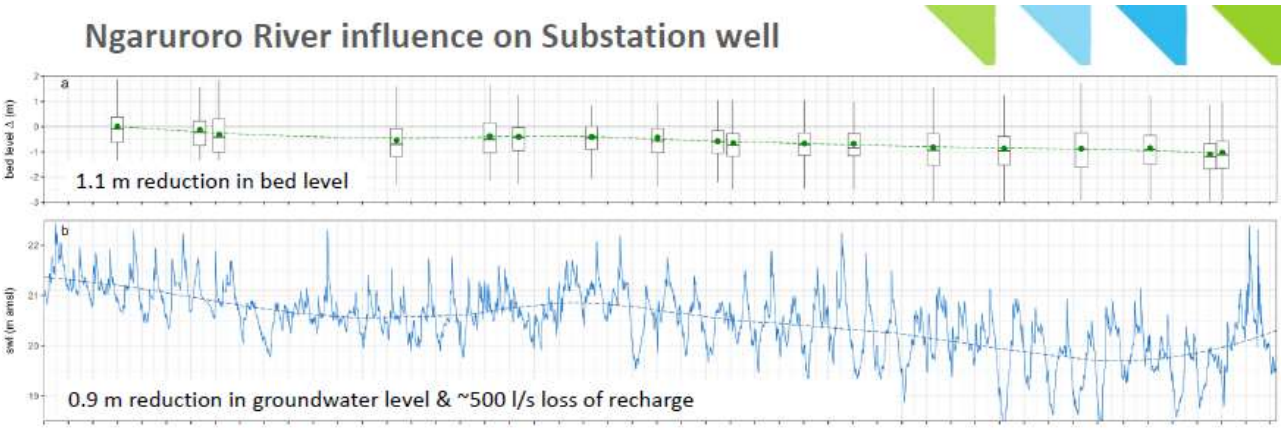




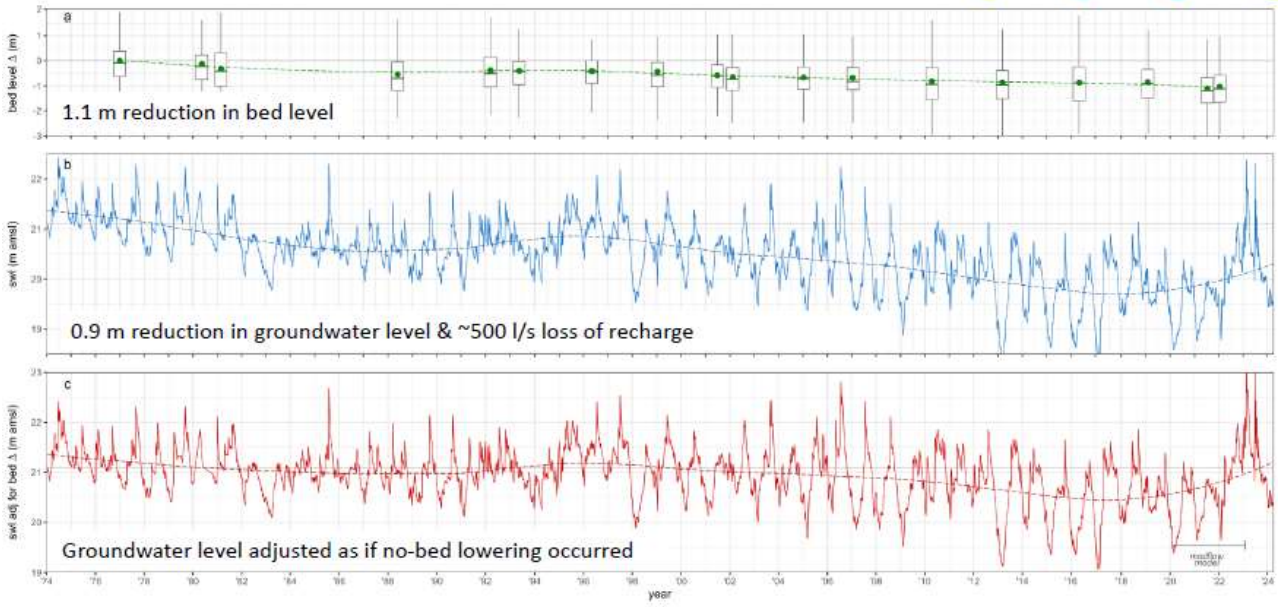
Hydrological modelling & economics



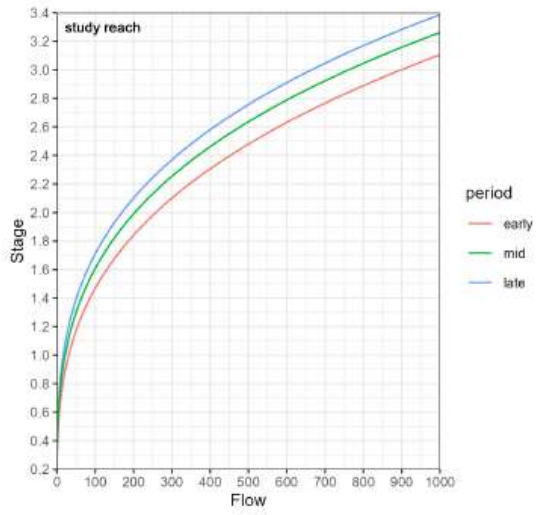




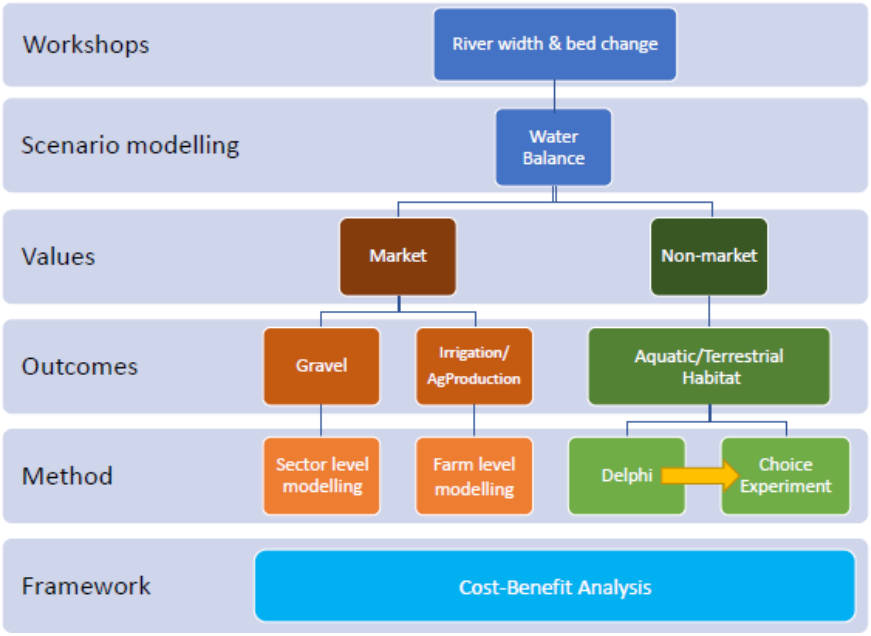
Ngaruroro River influence on Substation well



Impact of bed scouring



Economic Assessment



HBRC Ngati Kahungunu

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LAL NIWA TUD

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AERU

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Delphi Process for scenarios

Interviews with ecologists to assess impact on:

- Benthic ecology
- Freshwater bird habitat
- Sport fish habitat
- Native fish habitat

Economic Modelling of River Scenarios

River Widening

+ve benefits for market & non-market values

- gravel windfall for extractors
- can be achieved within existing stopbanks

Bed Raising

+ve benefits for market & non-market values

- costs in reduced gravel extraction
- environmental & cultural benefits offset market costs

Bed Lowering

-ve benefits for market & non-market values

- costs in loss of security of supply for irrigators
- headwater & flow recession in springs

Summary

- Braided rivers have a “braidplain aquifer” and are best considered as a “river system”
- A river system may be perched above the regional aquifer, or connected to it
- In perched settings, narrowing of the river reduces recharge
- In connected settings, gravel extraction can reduce recharge to groundwater if it lowers water levels in the river
- In both the Ngaruroro and Wairau, historic records and modelling show that gravel extraction has resulted in reduced groundwater recharge by ~ 500l/s
- Continued lowering of the bed could have a –ve impact on market and non-market values
- Raising and/or widening of the bed could have a +ve market and non-market benefit