







# Whakahaumanu i ngā awa Pātiki





# How do I fit here?

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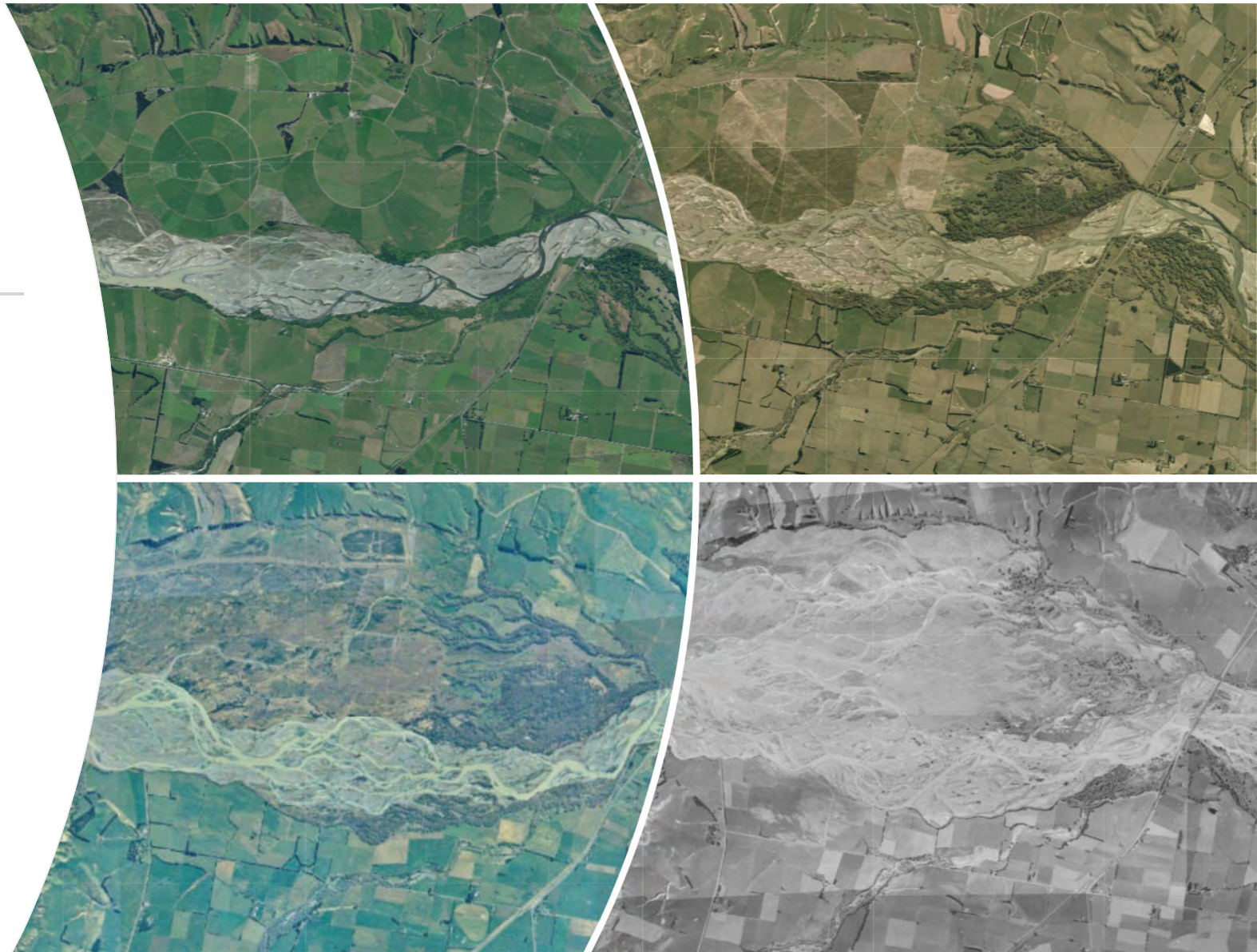
Development of mixed-value projects  
In the river corridor.  
Ranger/ underplant/ lateral values



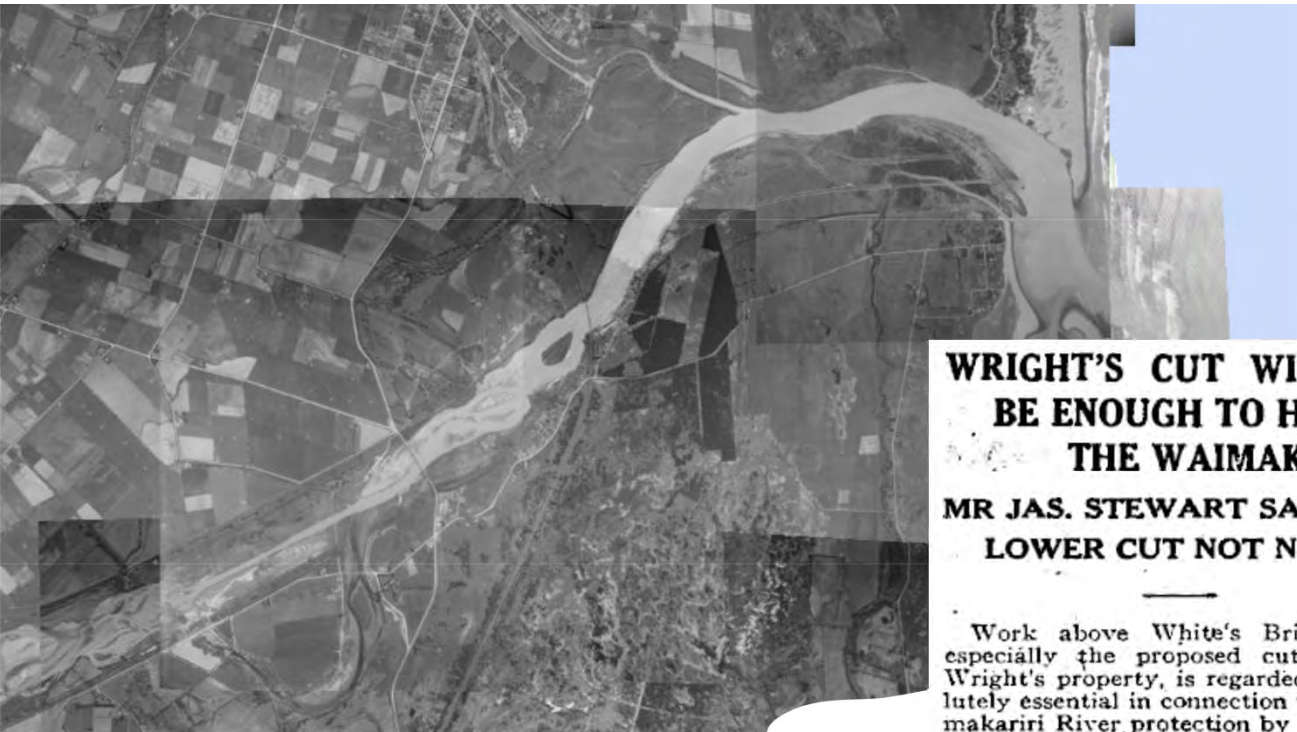


## Our land-use history

- Narrowing of the braided rivers; and emphasis on production.
- Flooding and management
- Weeds and their management
- Native species and their management







**WRIGHT'S CUT WILL  
BE ENOUGH TO HOLD  
THE WAIMAKARIRI.  
MR JAS. STEWART SAYS  
LOWER CUT NOT NEEDED.**

Work above White's Bridge, and especially the proposed cut through Wright's property, is regarded as absolutely essential in connection with Waimakariri River protection by Mr James Stewart, whose views on the subject are based on a life-long knowledge of the stream and its vagaries. But Mr Stewart is opposed to work below the railway bridge. A cut lower down is unnecessary, in his opinion, for several reasons, the principal one being that from Stewart's Gully to the river there has not been a flood for many years that has done any damage whatever.



Flood management  
and channelization;  
eg: Wright's cut





# Flooding control and bank formation

- Top: Bank construction from 1930's
- Flooding throughout northern Christchurch in 1957





# Manawhenua

## Te Herenga Ora

A significant stand of [tī kōuka](#) (cabbage trees) grows proudly in the grounds of Burnside High School near the corner of Memorial Avenue and Greers Road.

This cluster of trees was known to early Waitaha and Ngāi Tahu as Te Herenga Ora and was used as a landmark by Māori travellers to help guide them from [Rāpaki](#) and [Te Waihora](#) through treacherous swampland to the Ngāi Tahu pā of [Kaiapoi](#).



Travellers often used the area around these trees as a resting place.

A tapu character became attached to the site on account of sacred rites being performed there to ensure travellers a safe journey.

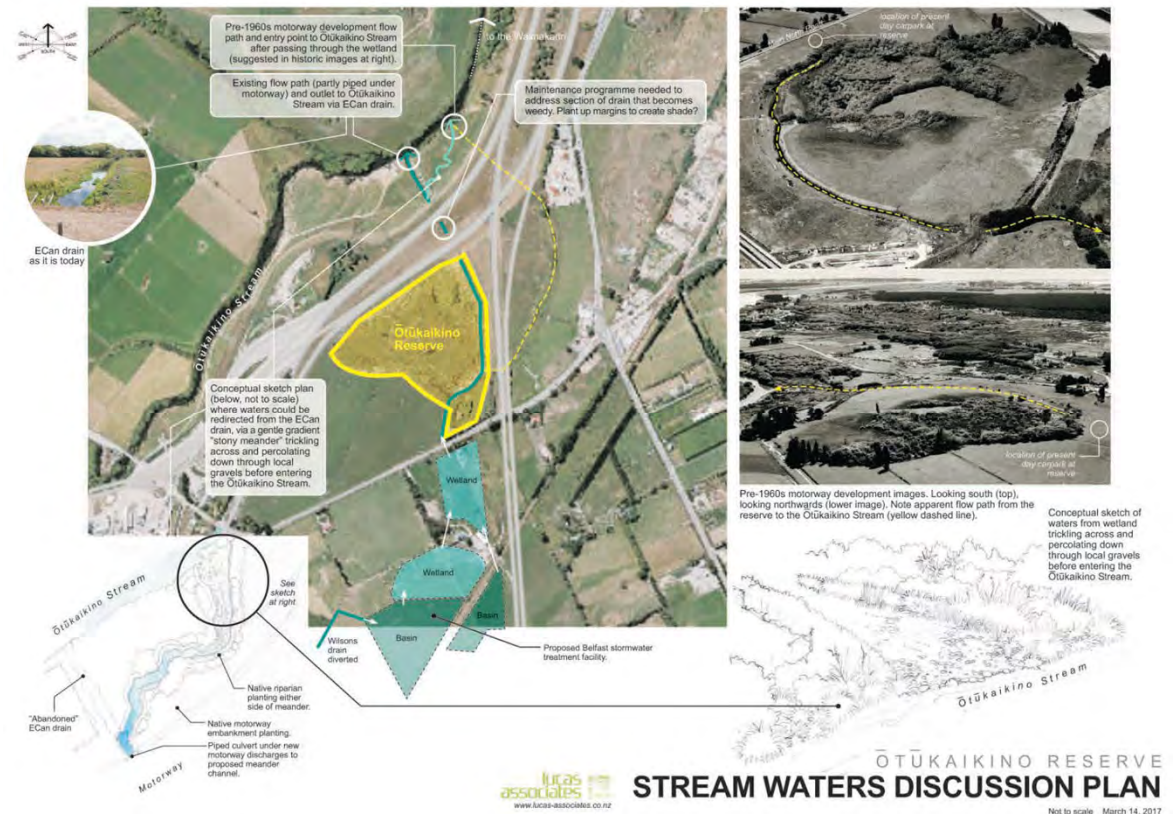
Te Herenga Ora was carefully fenced by an early European settler who had learnt from Māori of the trees' significance. European settlers making their way westward in the early 1850s also relied on the cabbage trees to fix their position.

Although the original trunks of the cabbage trees died long ago new trees have sprouted in their place. The 12 metre tall trees are now a focal point for Burnside High School. As well as being the school's motif they inspired the school motto: Recte sic dirige cursum meaning Along this path direct your journey correctly.

The resilient cabbage trees remain a signpost for those who pass their way.

## Sources

- [Walk Christchurch : 60 short walks that explore your city](#) edited by Mark Pickering, compiled by Kjesten Nilsson, Karen Theobald and Lesley Symington. Published: [Christchurch, N.Z.] Leisure Unit, Christchurch City Council, 1998
- W.A. Taylor, [Lore and History of the South Island Māori](#), Bascands, Christchurch, NZ, 1952



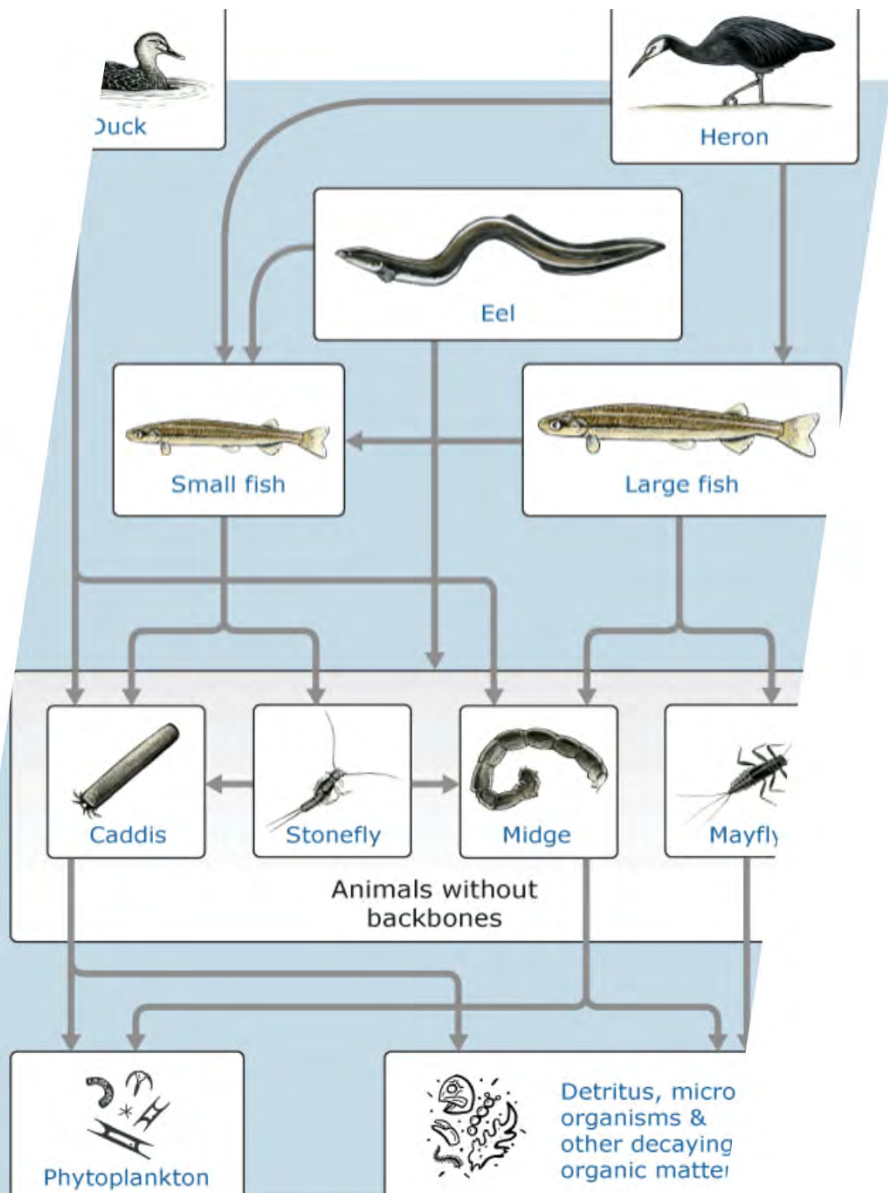
*“Ōtukaikino is significant for Te Rūnanga o Ngāi Tahu and especially appropriate for a living memorial. This wetland was once used for burial preparation and is a designated Wahi Tapu site”.*



# Mauri tu, mauri ora

*“Mauri also establishes the inter-relatedness of all living things. The linkages between all living things within the ecosystem are based on the whakapapa or genealogies of creation. This establishes the basis for the holistic view of the environment and our ecosystem held by the Tangata Whenua.”(Morgan, 2004, p5)*

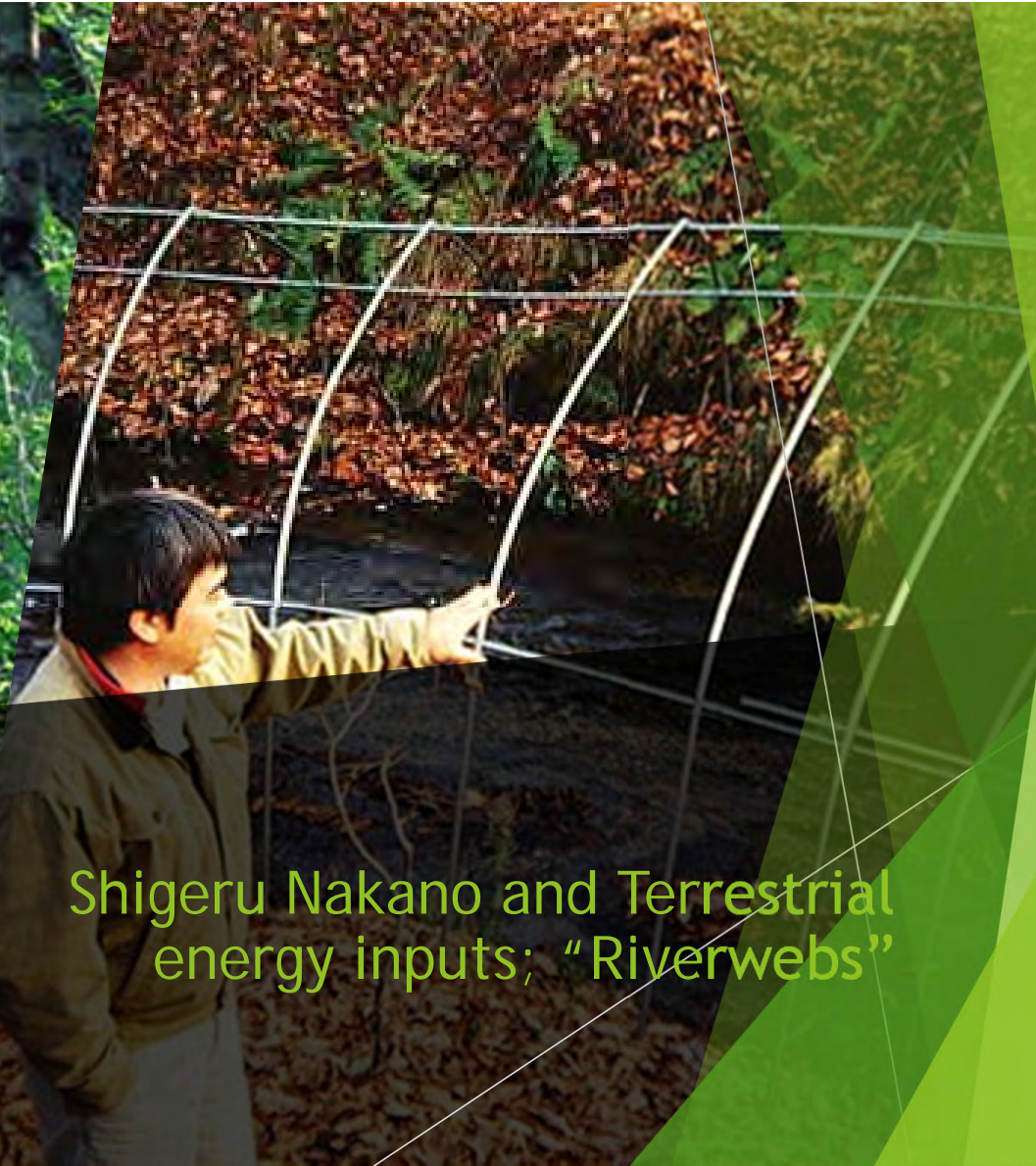




# Mauri

- Binds wairua
- Objects, creatures, ecosystems, social groups
- Can increase and decrease
- Expires





Shigeru Nakano and Terrestrial  
energy inputs; "Riverwebs"





## Ex-stream studies, Jay Piggot

The [ExStream](#), or Experimental Stream Mesocosm System, comprises 128 miniature circular streams. It has a 20 metre long, 5 metre high and 5 metre wide scaffold structure, and about 10,000 individual pieces of piping and other bits of plumbing paraphernalia that connect to a pump submerged in the nearby Kauru River, a relatively pristine river running through farmland in North Otago. Jay developed the system during his PhD studies, and laughingly says that “on successful completion of my PhD I informed everyone that I am now officially a plumbing and hose doctor.”



# Braided river aquatic habitats



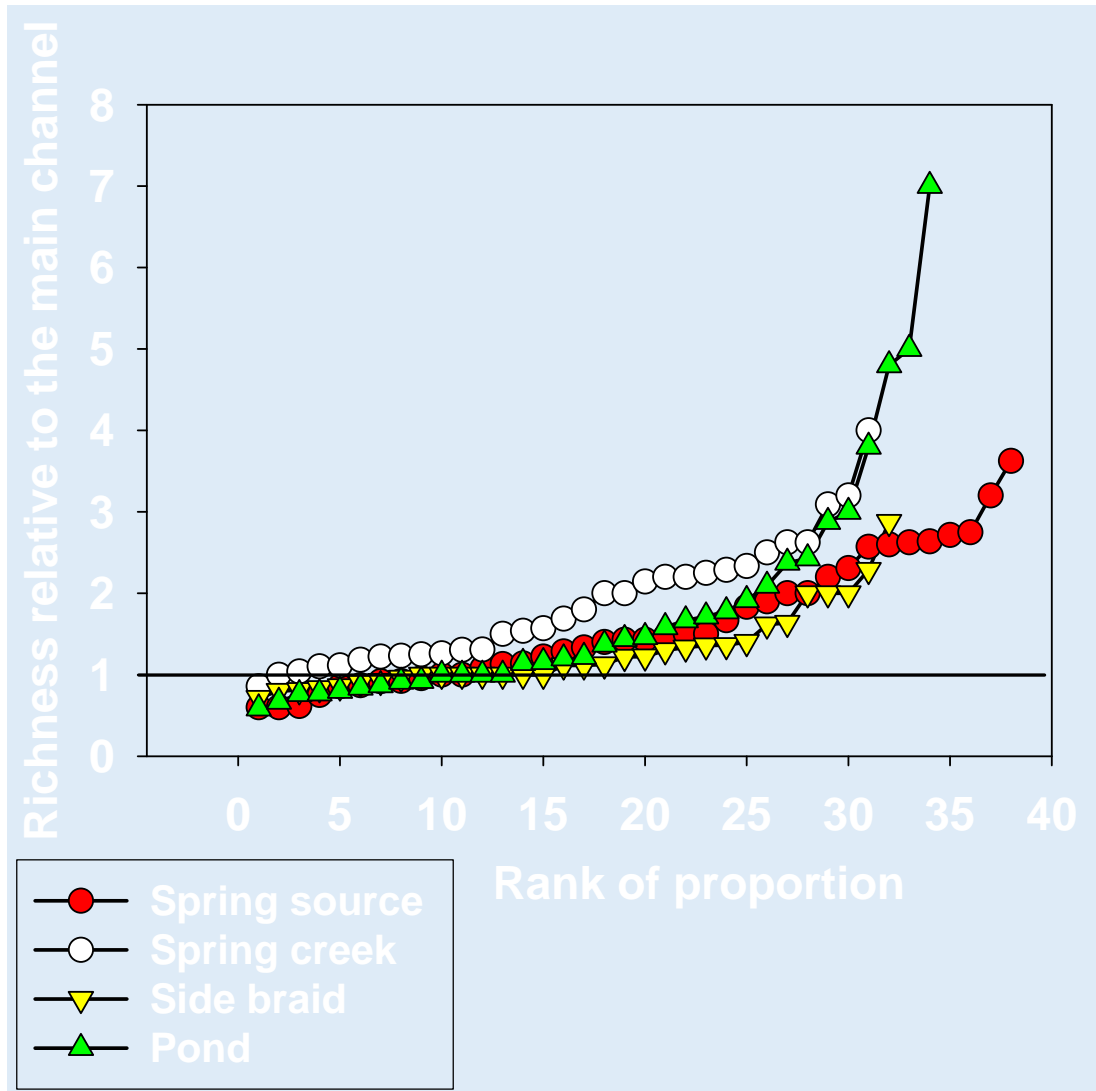


Overlooked values.

*"At the habitat scale, lateral floodplain habitats, particularly spring creeks, consistently had greater richness and abundance than did the adjacent main channel habitats"*

*"...we found that >75% and >73% of lateral habitats contained greater richness and abundance, respectively, than did their associated main channels. In terms of conservation of biodiversity, the value of these lateral habitats cannot be overstated."*

- Gray & Harding 2009.





# Flood protection Infrastructure



# High-light, High-disturbance Modified Braided River Berms















# How do we manage a range of values and interests in the modified lower reaches?

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Rivers' section needs

Increasing multi-value management alongside Flood protection





How to work with an infestation?





# Braided River Revival

Rakahuri hāpua, Te aka-aka





Braided River Revival Strategies

Special Interest Groups

Papatipu Rūnanga operations

Inter-agency alignment

Internal project alignment

Active braid clearance

Braided river bird protection

Berm transition & Scour bay

Marginal and remnant habitat

# Braided River Revival

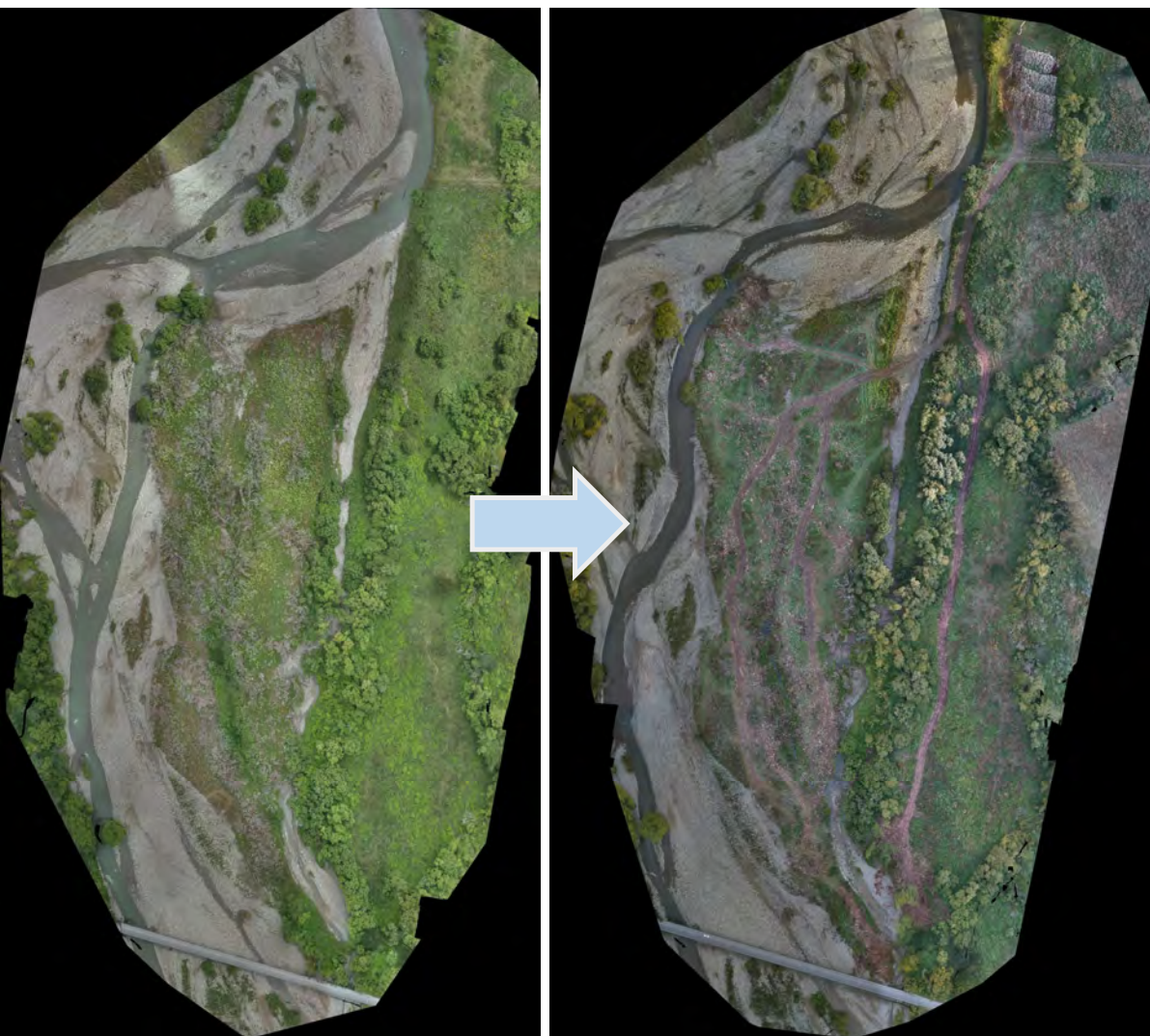


# Active Braid clearance

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**4.5Ha island cleared above Birch Hill road bridge**







Planning for enhancement

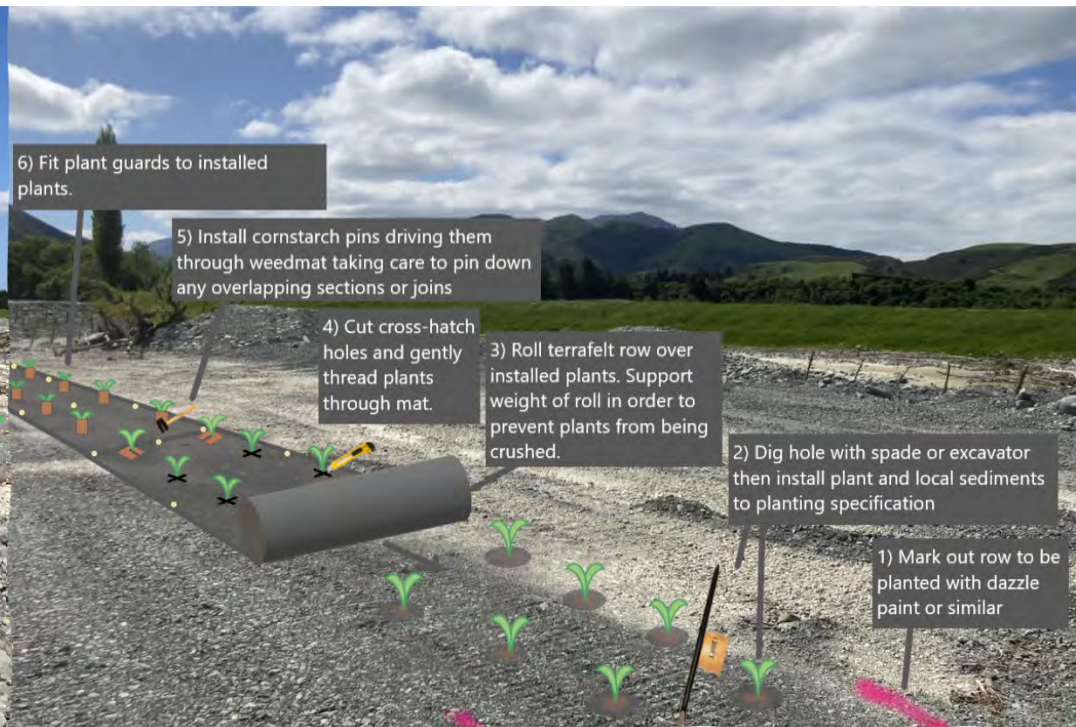
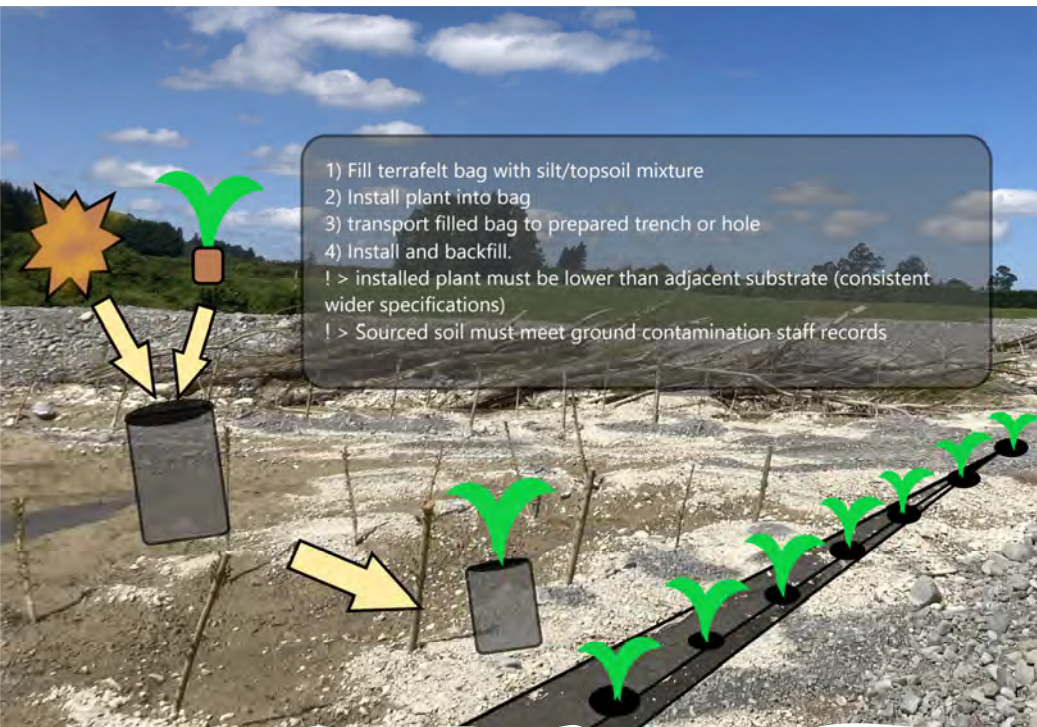
Marginal values, backwaters, braid-wetlands, areas of Remnant native vegetation.

Collaboration on-ground, multi-value on-site. Separation of reaches into areas of coarse and fine work.

## Sub-canopy planting.







## Work in the lower reaches

“Terrafelt” / raw wool / Hemp - Bags and nodes



## Work in the lower reaches

- Kanuka Scrapes,
  - Removal of soil, within approx. 20m of adult Kānuka, >2m away from adult.
  - Weeding of scrapes needed only once or twice p.a. as conditions generally arid (around 700mm rainfall p.a.)

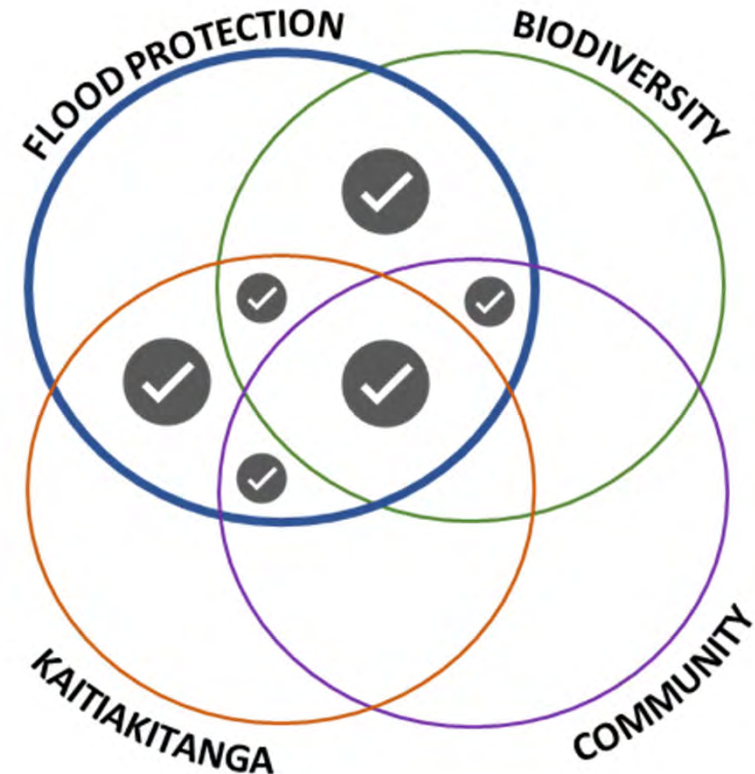




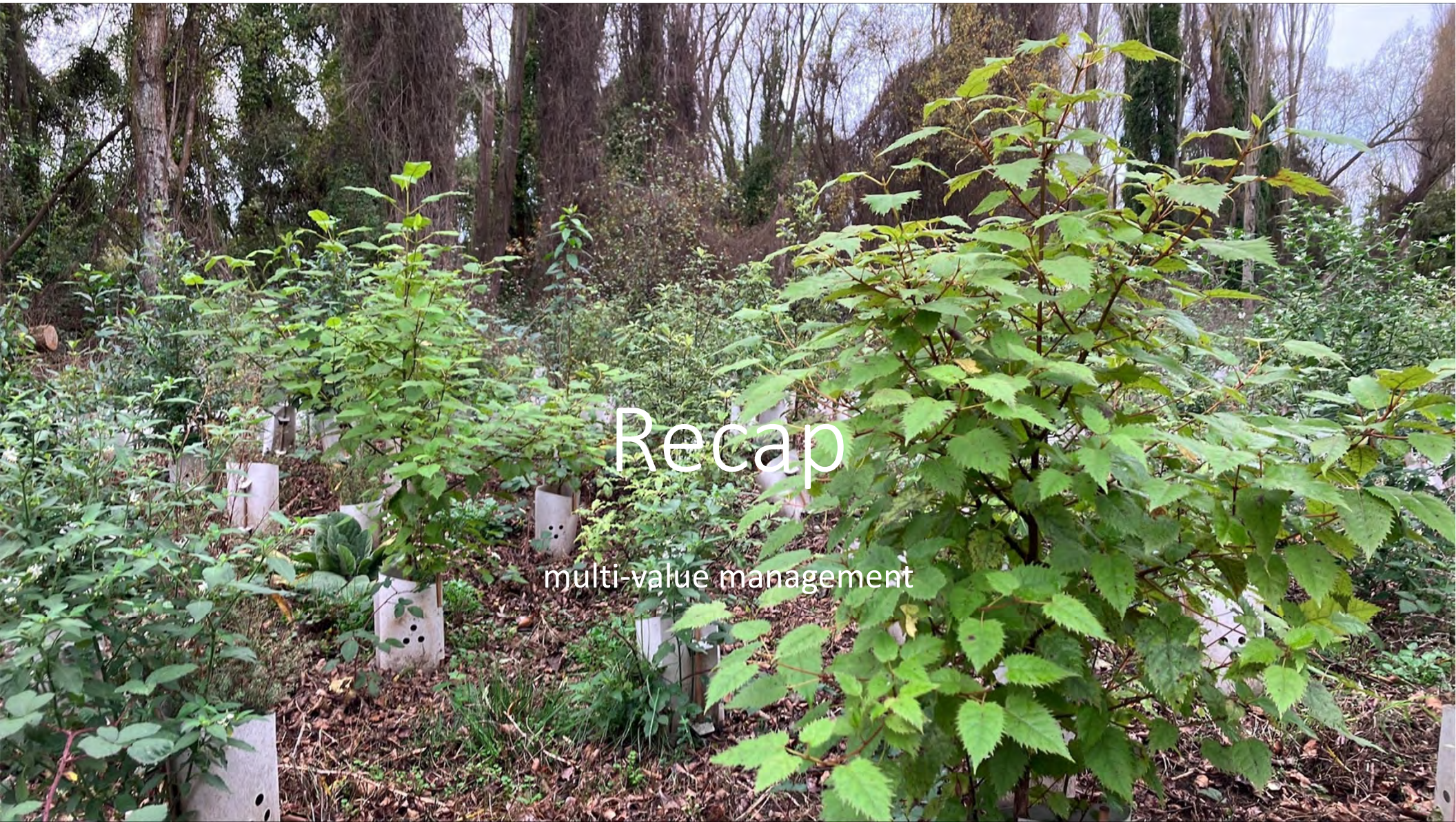
# Future. What next?

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- Climate change predictions;
  - Increased frequency of events = increased stressors?
  - Increased plant disease?
  - Decreased public appetite for non-repair/triage works?
- Strategic approaches.
  - Can we stabilize areas of berm in terms of boom-and-bust weed cycles?
  - Will planted native assemblages be as dynamic and responsive to flood-shaping as their predecessors?
- Will weed infestations get worse?
  - Public opinion on herbicide use
- Room for river;
  - Increased corridor = increased management area?







# Recap

multi-value management





END – Greg



An aerial photograph showing a wide river flowing through a landscape. The river is surrounded by green fields and some trees. In the foreground, there are some white pipes or structures on the grass. The sky is overcast.

# Room for the River Successes, Challenges & Opportunities Shaun McCracken



























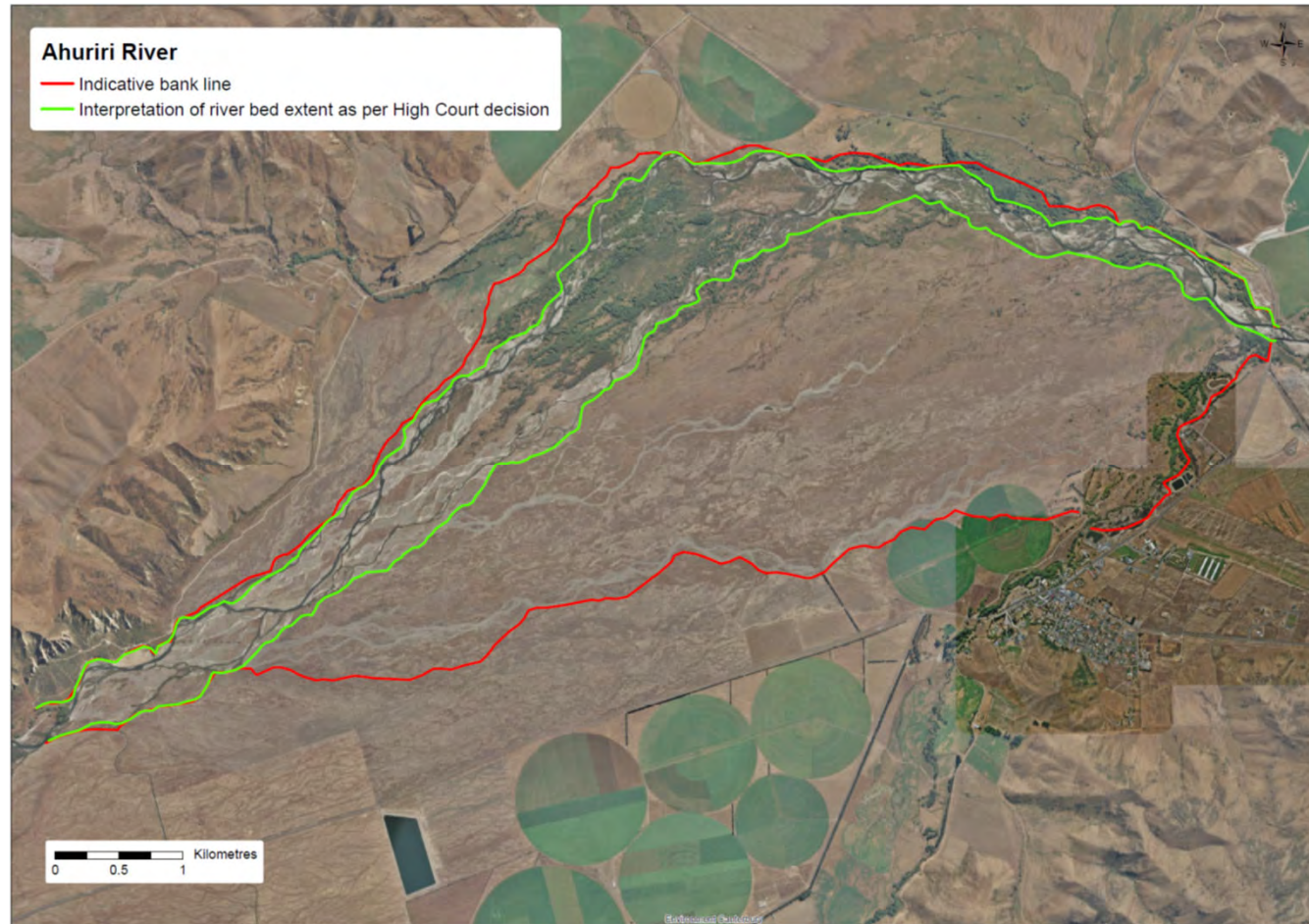


- Compensation paid: ~ \$30,000 (\$43k / ha)
- Option B: ~ \$270,000 compensation
- Option C: ~ \$990,000 compensation



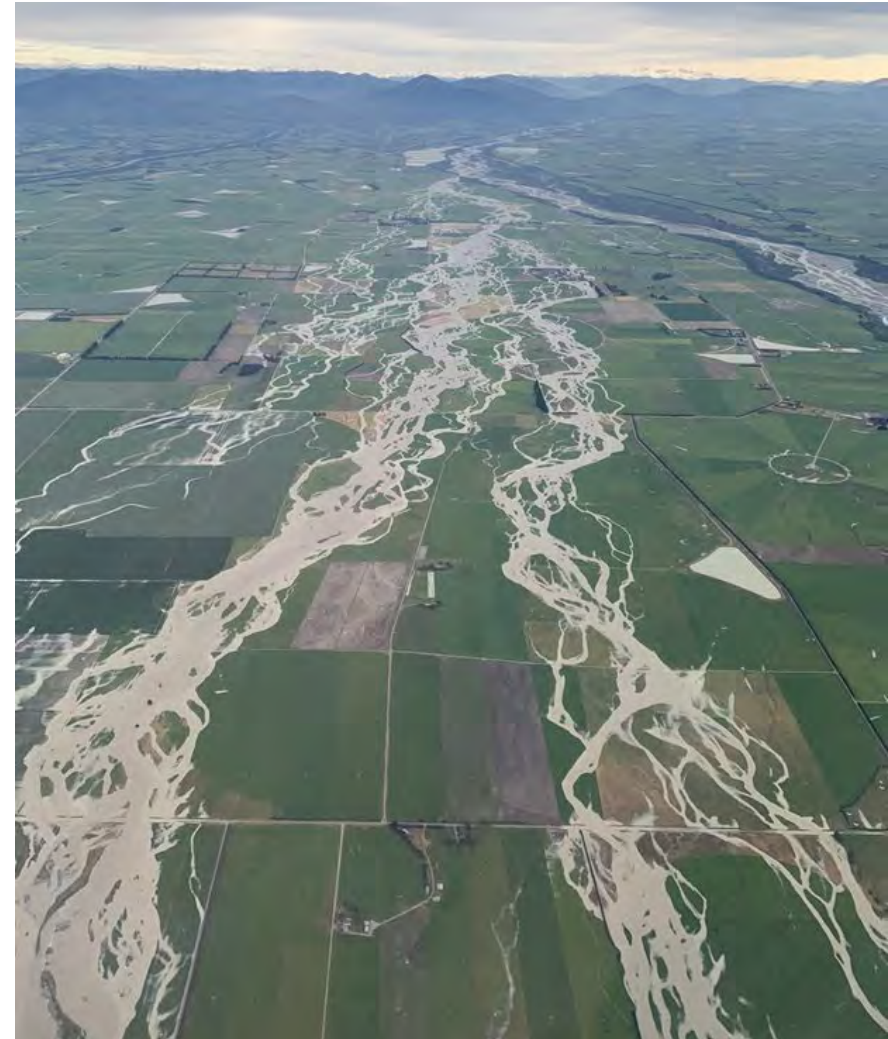
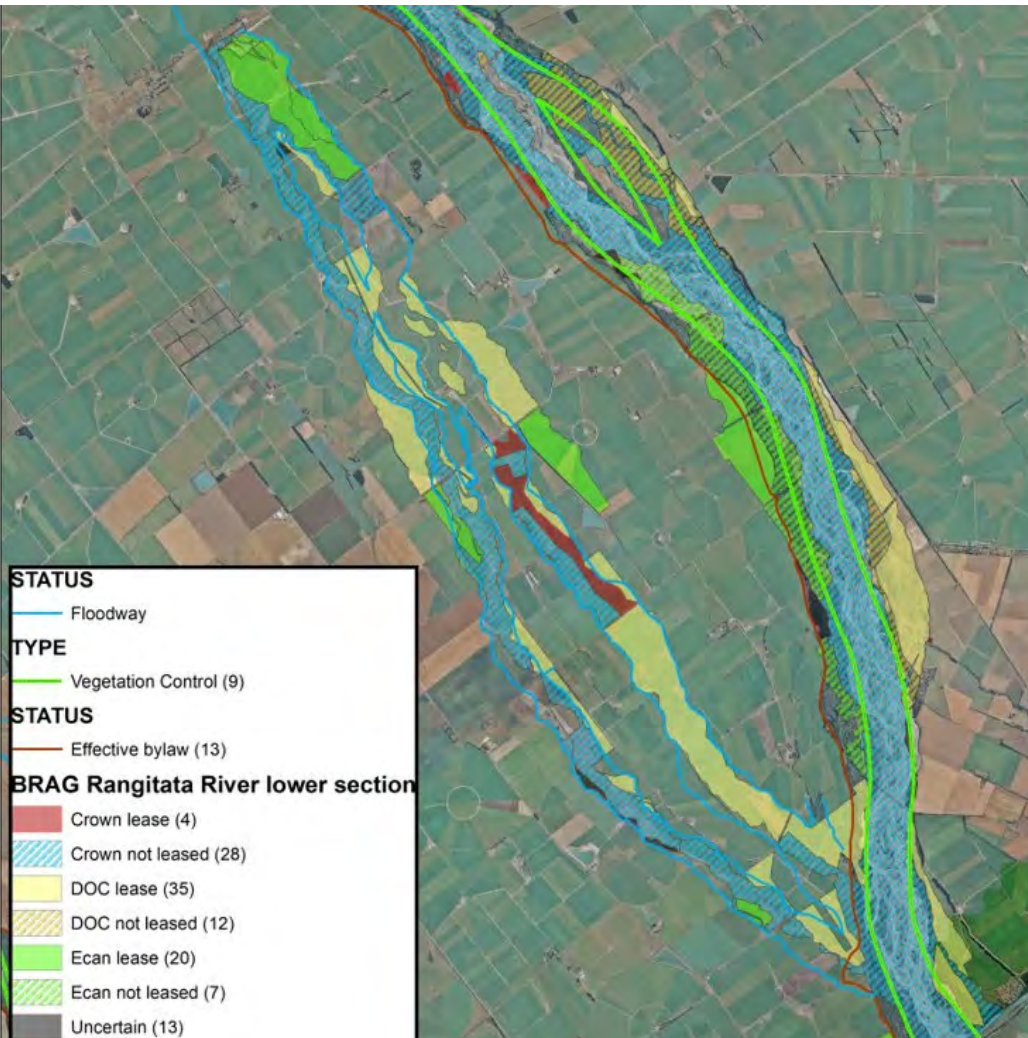


# Challenge 1: RMA riverbed definition



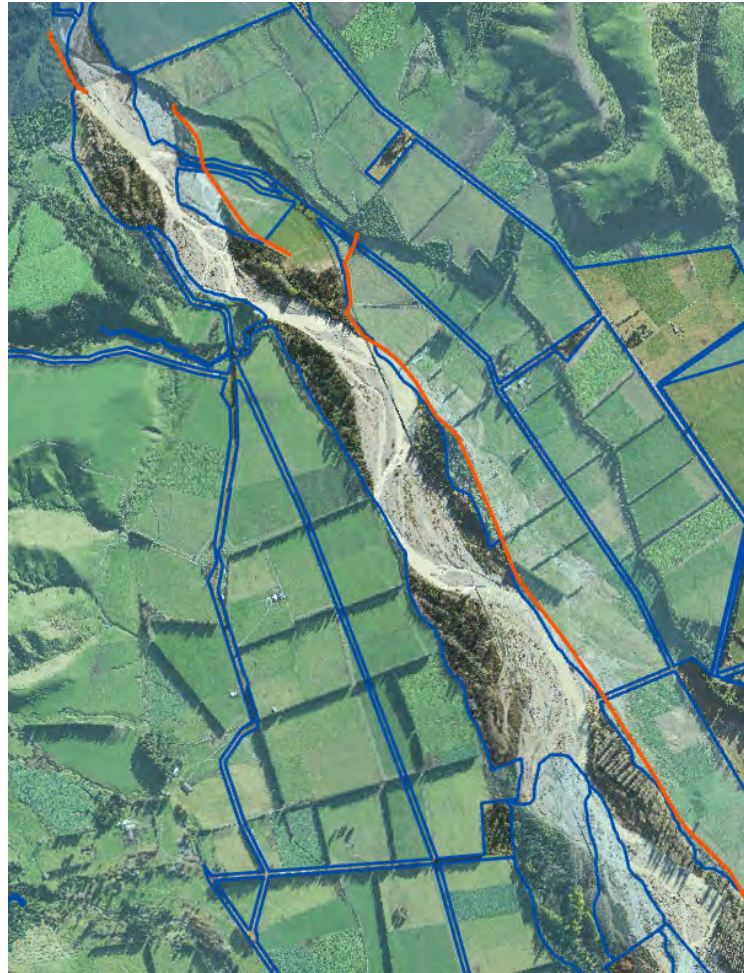


## Challenge 2: Crown Land 'Ownership'



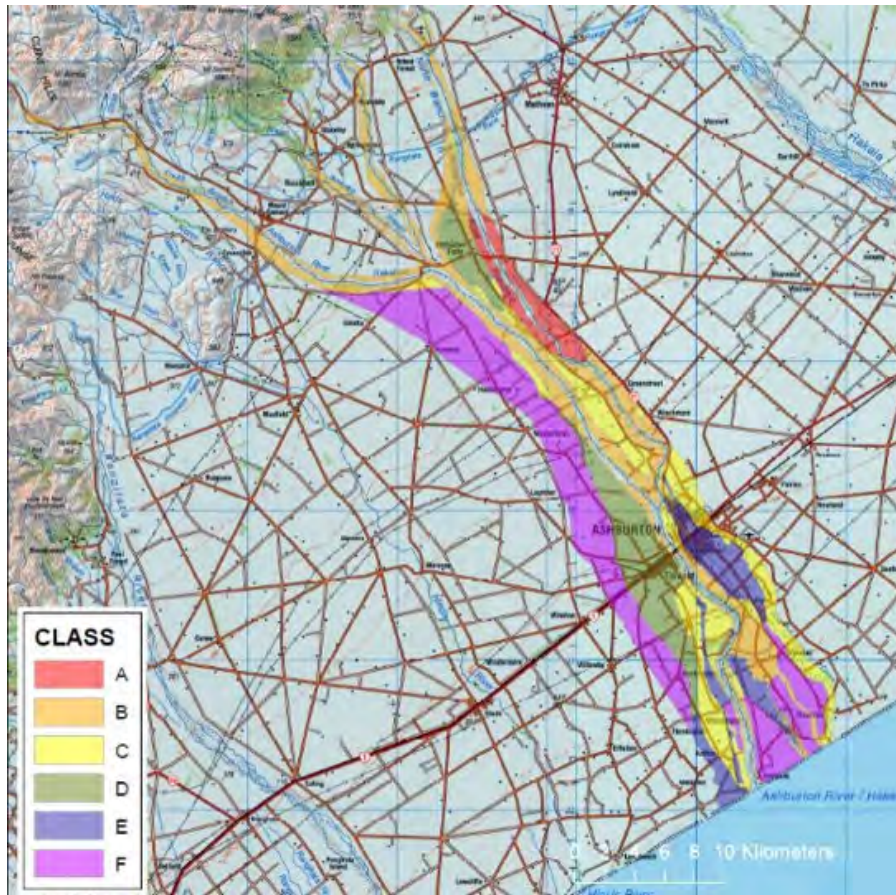


## Challenge 3: Private Land 'Ownership'





# Challenge 4: Financial Affordability



Stuff ≡

environment

**Flood protection short by \$150m per year as councils grapple with climate change impact.**

Jono Galuszka · 15:00, Apr 06 2022





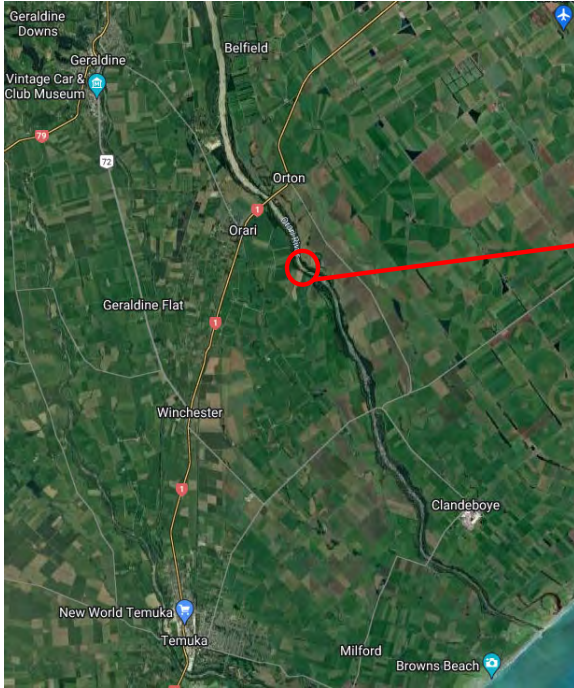
# Biggest Challenge: Community Acceptance





# Future Opportunity – Social Expectation Change

## Orari at Stewart Road Example





## Orari River TRB at Stewart Stopbank Flood Damage

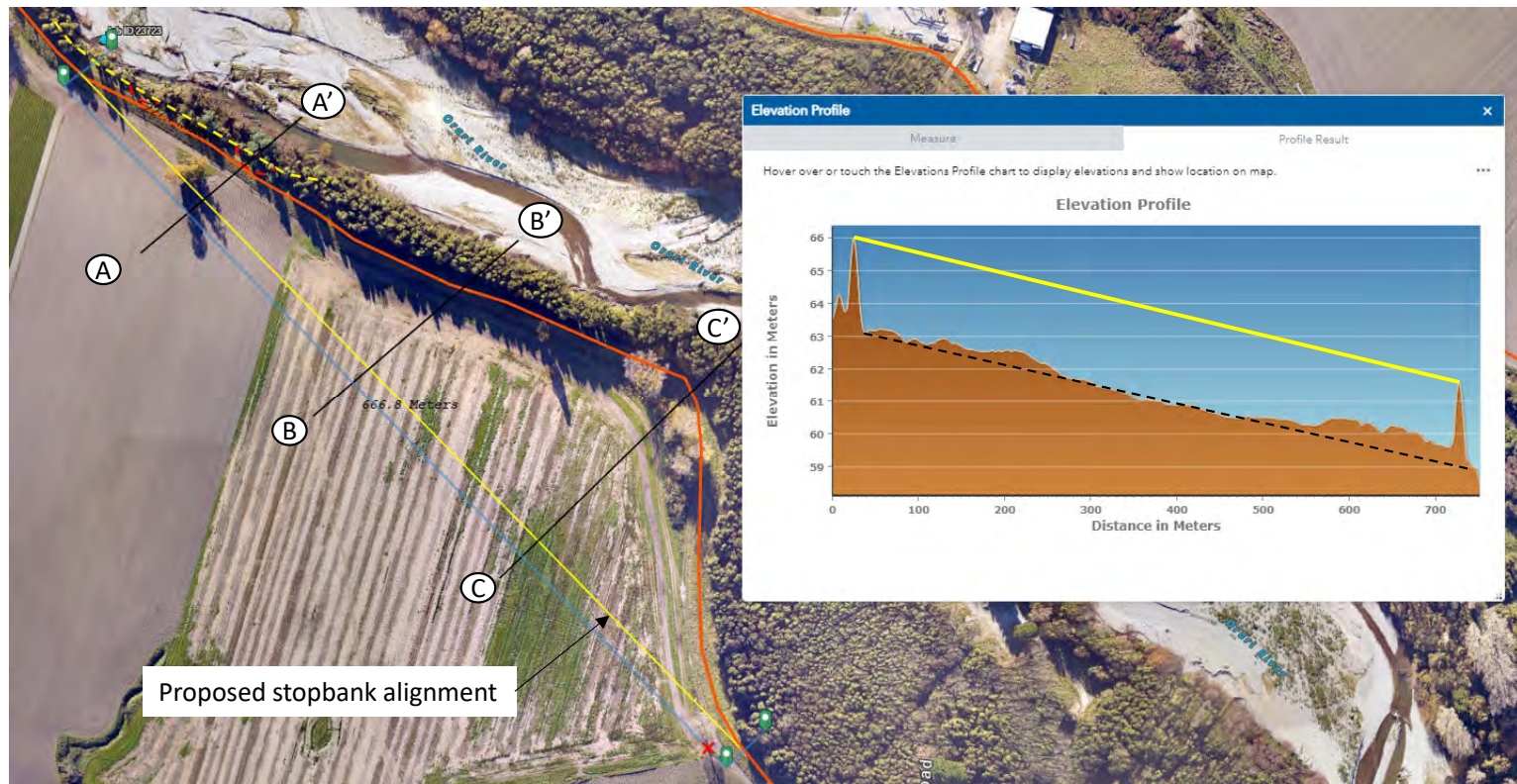


**Damage:**  
Extensive scour of berm over distance of 230m  
Bad scour of stopbank at 2 locations (A & B)



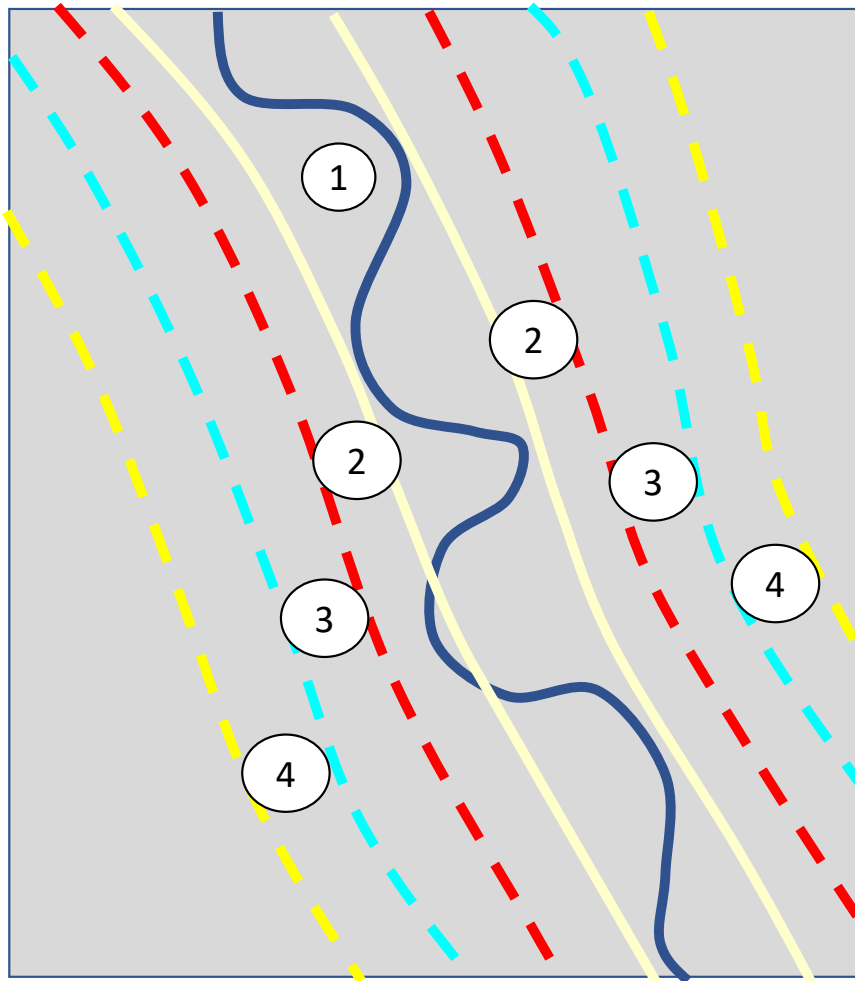


# Orari River TRB at Stewart Option 4: Realign stopbank





# 'River Management - Action Zones'



Zone 1 – Fairway. Active Clearance

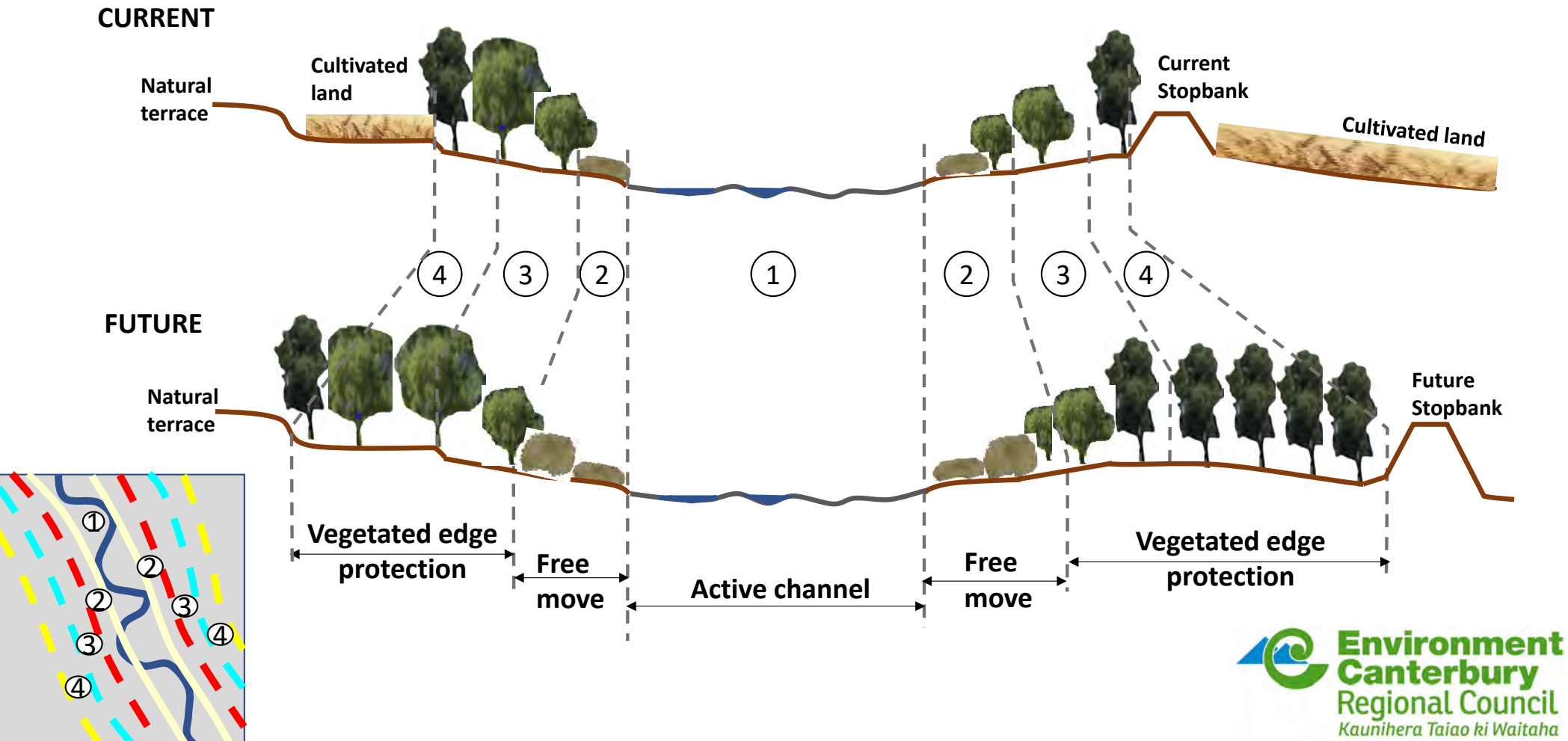
Zone 2 – Free movement zone. No action to restrict erosion or braid movement

Zone 3 – Vegetation Buffer Zone. Attempt to maintain vegetation but allow for some erosion to occur before starting work

Zone 4 – Critical Vegetation Zone. Take action immediately if erosion is occurring here.

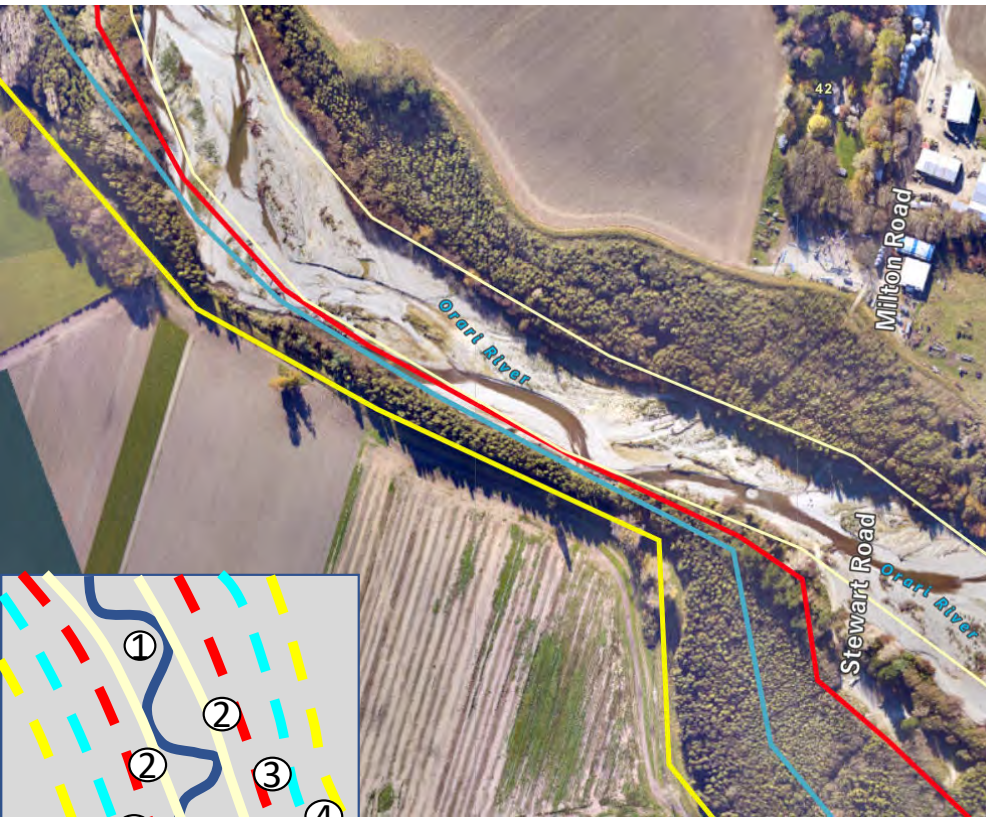


# Shifting from Current to Future River Management

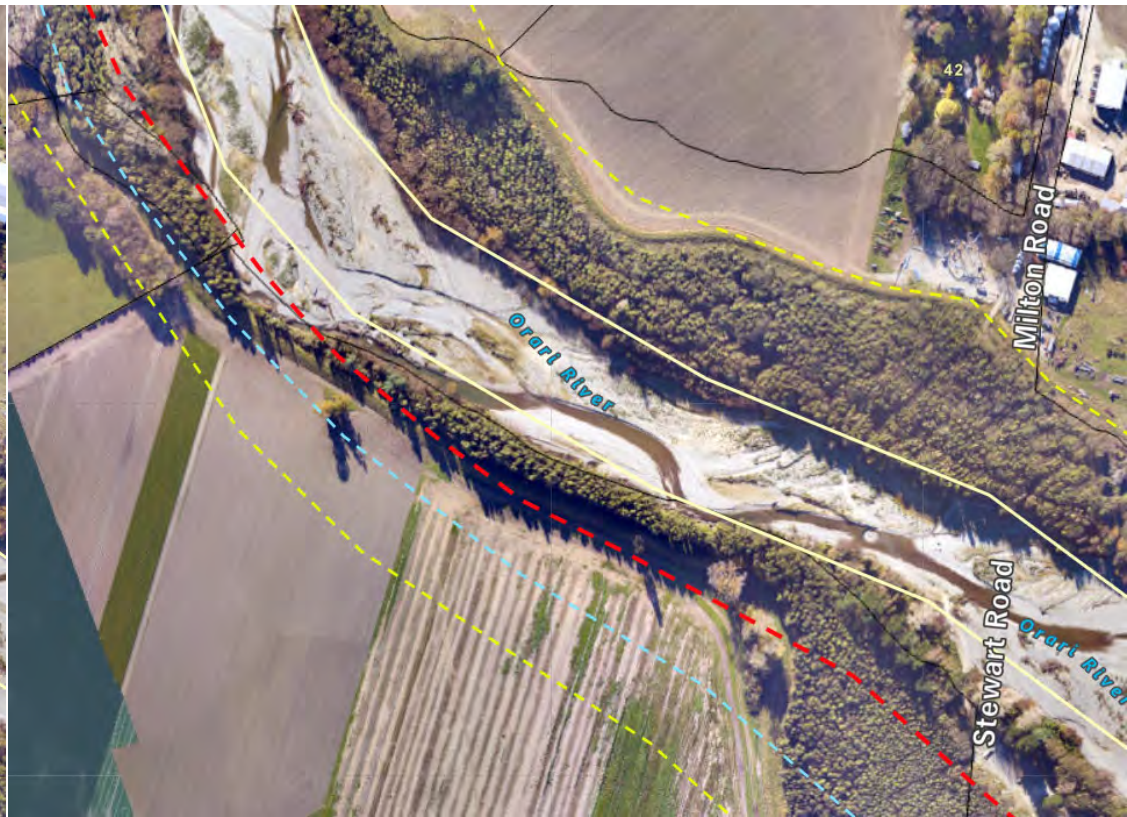




# Current Reality



# Future Vision











# What's our future, Canterbury?



# We need to talk about our future

We want your feedback and thoughts on air, water, land, the coast, the built environment, and climate change. Do we have the balance right? Are we doing too much or not enough?

**Share your visions for freshwater and outcomes for our environment and community wellbeing now.**

Go to **[ecan.govt.nz/ourfuture](https://ecan.govt.nz/ourfuture)** for more information

- Fill out online feedback form
- Join a webinar or
- Visit us at a drop-in

*Consultation closes 27 August 2023.*





END – Shaun