Healthy Rivers Wai Ora PC1

Merrin Whatley (PhD)

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Adaptive
Environmental Consulting

Freshwater Ecological &
Rural Land Management Services

B+L Environment Strategy

Vision

World-leading stewards of the natural environment and sustainable communities

He kaitiakitanga mo te tai ao

CLEANER WATER

Goal: *Sheep and beef farmers actively manage their properties to improve freshwater. New Zealanders can gather food from and swim in freshwater surrounding our farms.*

CARBON NEUTRAL

Goal: *Farmers continue reducing carbon emissions, moving towards a carbon neutral sheep and beef sector by 2050.*

THRIVING BIODIVERSITY

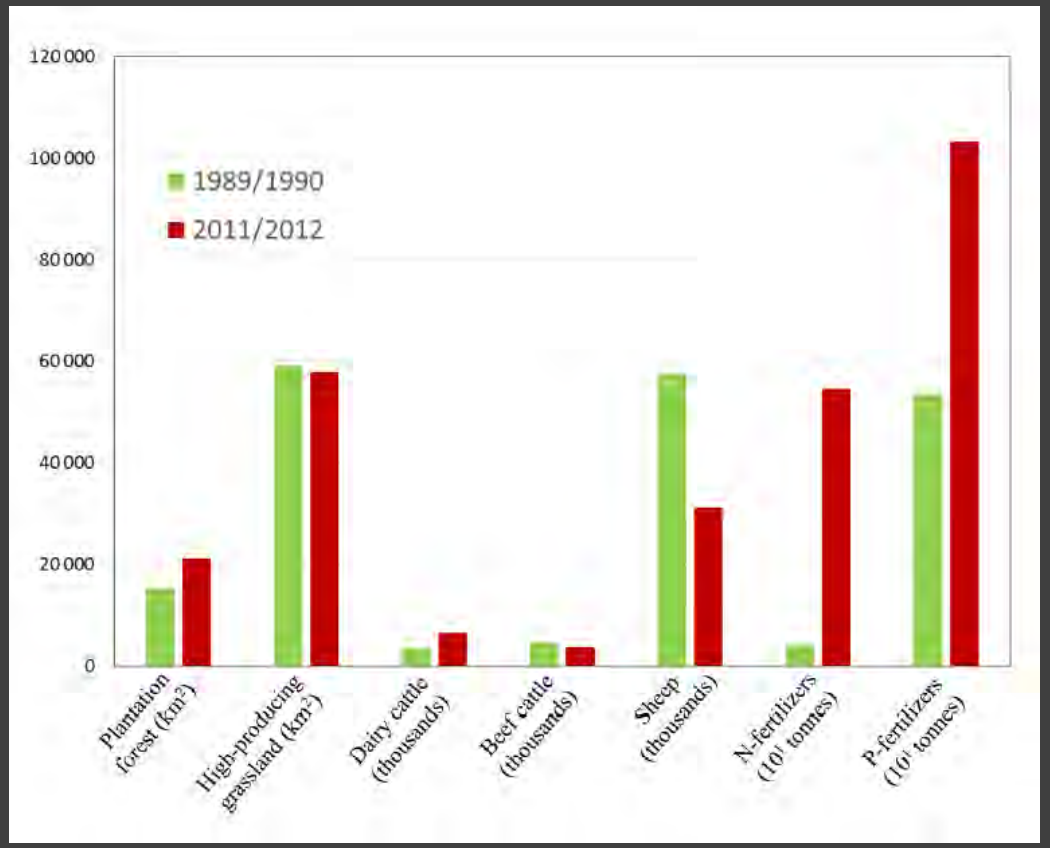
Goal: *Sheep and beef farms provide habitats that support biodiversity and protect our native species.*

HEALTHY PRODUCTIVE SOILS

Goal: *Land use is closely matched to soil potential and capability. Farmers are working to improve soil health, carbon content and productivity while minimising soil loss.*

Changes in NZ River Water Quality Over 26 Years (1989 – 2014)

- New Zealand has had one of the highest rates of agricultural land intensification globally over recent decades.
- Water Clarity was best predicted inversely by areal coverage of intensively managed pastures.
- Cattle density was the primary predictor for all four nutrient variables (TN, No_x, TP, DRP).
- NZ farmers have been incentivised by previous policy to increase productivity



Block 2

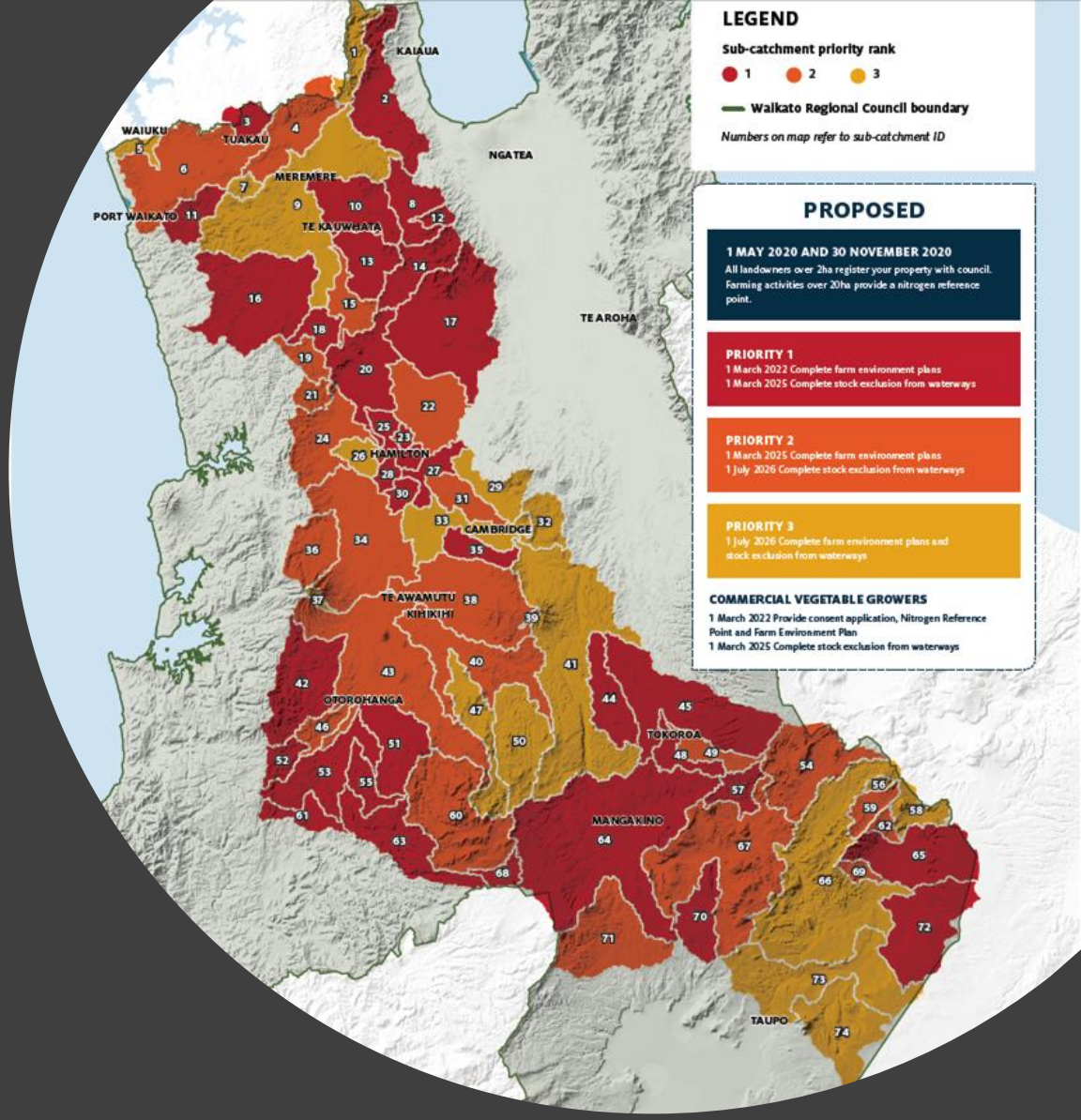
nutrient management and the nutrient reference point, stock exclusion, cultivation, and land use change

Key Considerations for PC1

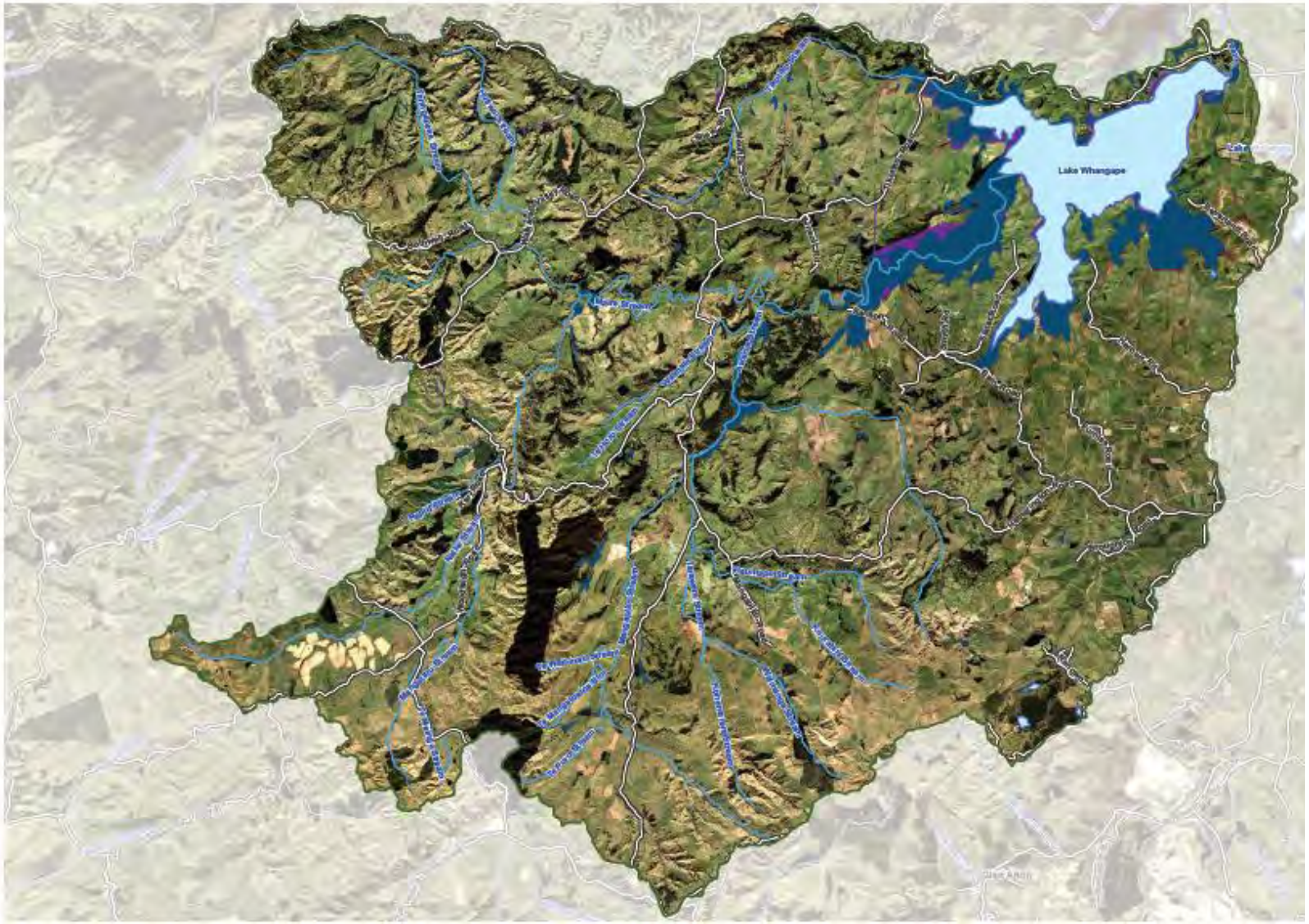
- Achievement of the 80 year aspirations could require conversion from farming to forestry
- Restrictions on Land Use Change
- Nitrogen management adopts a ‘grandparenting’ approach
- Reducing contaminant losses from farms
- Stock exclusion from waterbodies
- Farm Management Plans
- Subcatchment Planning, an integrated approach

Farmer Concerns and Feedback on PC1

- Support individual approaches for stock exclusion and nitrogen management, not blanket rules for all irrespective of farm system and environmental risk
- I wish that we had the freedom to change our farming systems rather than being locked in at current state
- Why can’t PC1 help increase our farm productivity and profitability?
- I wonder what will my community look like after 10, 25, 50, 80 years. Will there be a community?
- I wish that PC1 did not adopt a one size fits all approach and instead was effects based



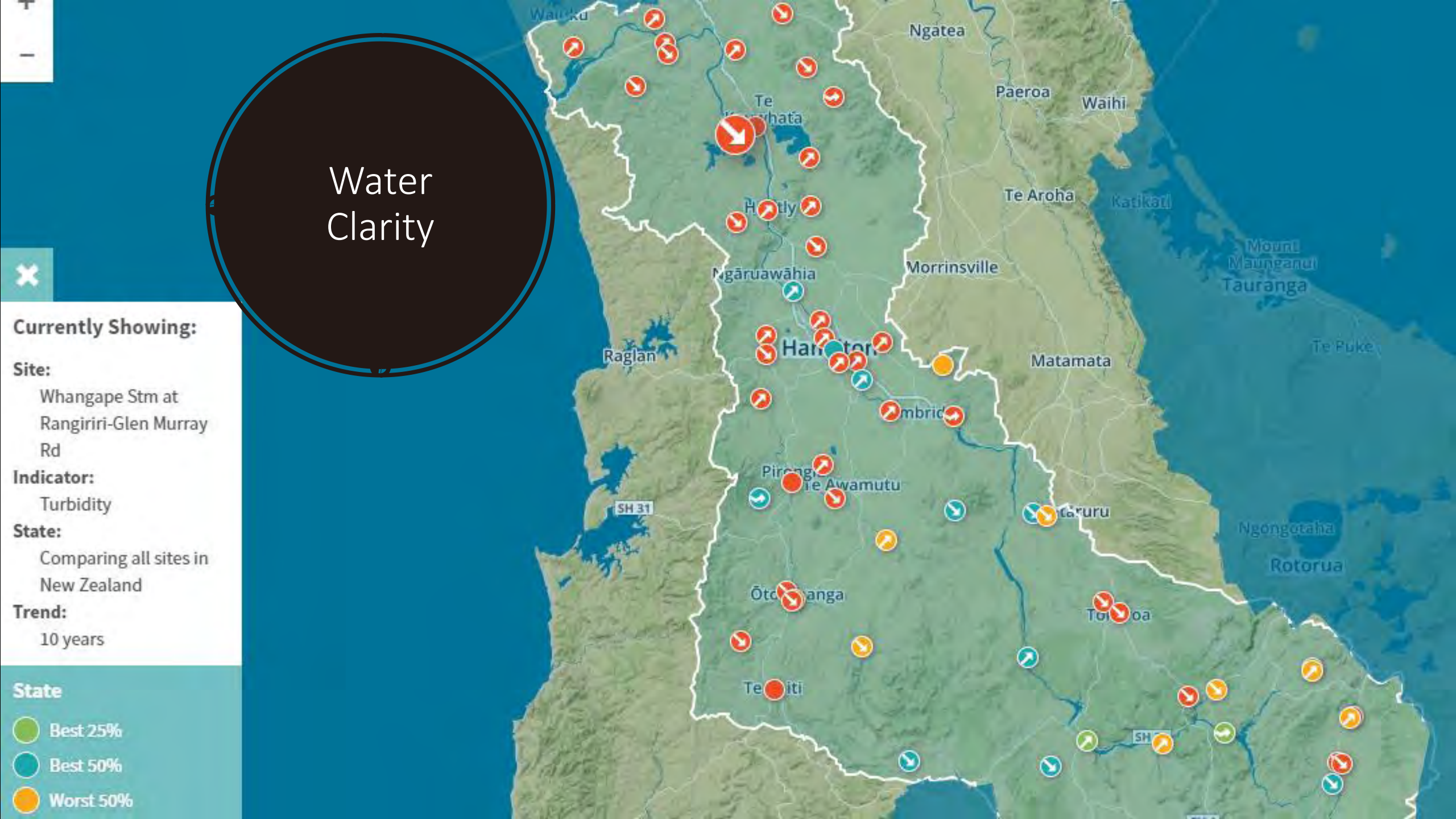
The Whangape catchment

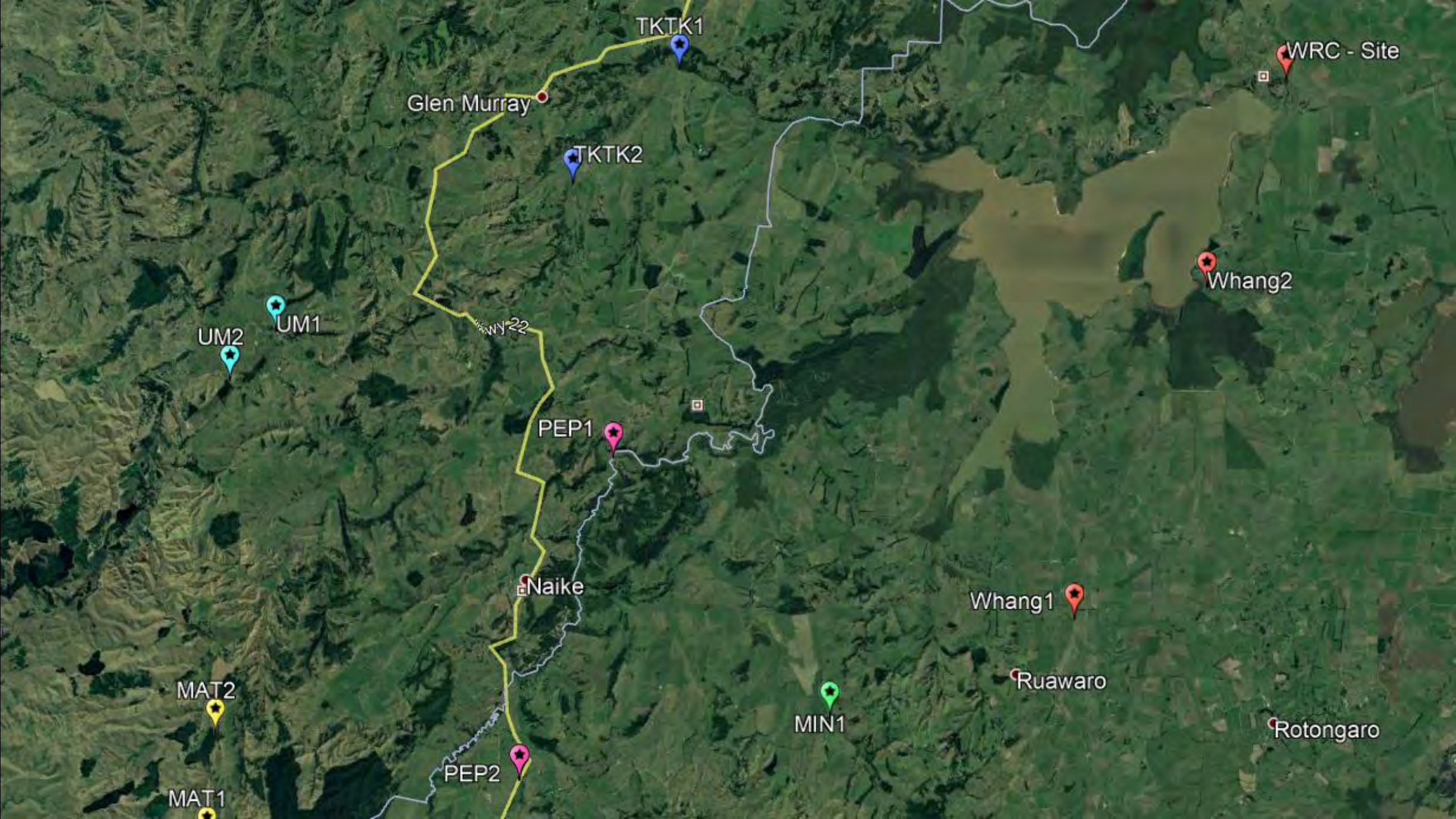


KEY ISSUES

- Sedimentation and nutrient loading has contributed to the decline in water quality and habitat condition of the lake, over the past 40 years.
- The lake experiences periodic cyanobacteria blooms that regularly exceed the Waikato Regional Council's standards for safe recreational use.
- The lake margin contains some of the largest infestations of alligator weed in the region and has been declared a restricted place under the Biosecurity Act to prevent the plant spreading throughout the region.
- There is high inter-annual variability of chlorophyll a and nutrient (TP and TN) concentrations which are consistently higher than the national bottom line values.

Water Clarity




TKTK1
WRC - Site
Glen Murray
TKTK2
Whang2
UM1
UM2
PEP1
Naike
Whang1
Ruawaro
MAT2
MIN1
Rotongaro
PEP2
MAT1

Livestock impacts on streambank structure

Once stream banks have become incised how do you stop the erosion process?


We use to take the kids swimming
there and collected koura together

Koi carp first became evident in the catchment 20-25 years ago


If our performance (on-farm) is measured against the lake perhaps we should just drain in?!

It is as if the land has lost its ability to hold water

There are less eels now

Lake Whangape was a real asset to the community, it’s sad to think we’ve lost it that…..

During floods the river flows into the lake causing flooding, during summer floodwaters drown pasture, which then rots down adding more nutrients to the lake, these summer floods are particularly damaging to the health of the lake.

Streams are disconnected from their floodplains

Considerations

- Catchments function as interconnected systems
- Stock exclusion does not target all critical source areas
- Overseer is not built to model all relevant dynamic process
- N reference point targets are not motivational for farmers, they are motivated by understanding the problem and certainty that their efforts to improve practices will be acknowledged and rewarded

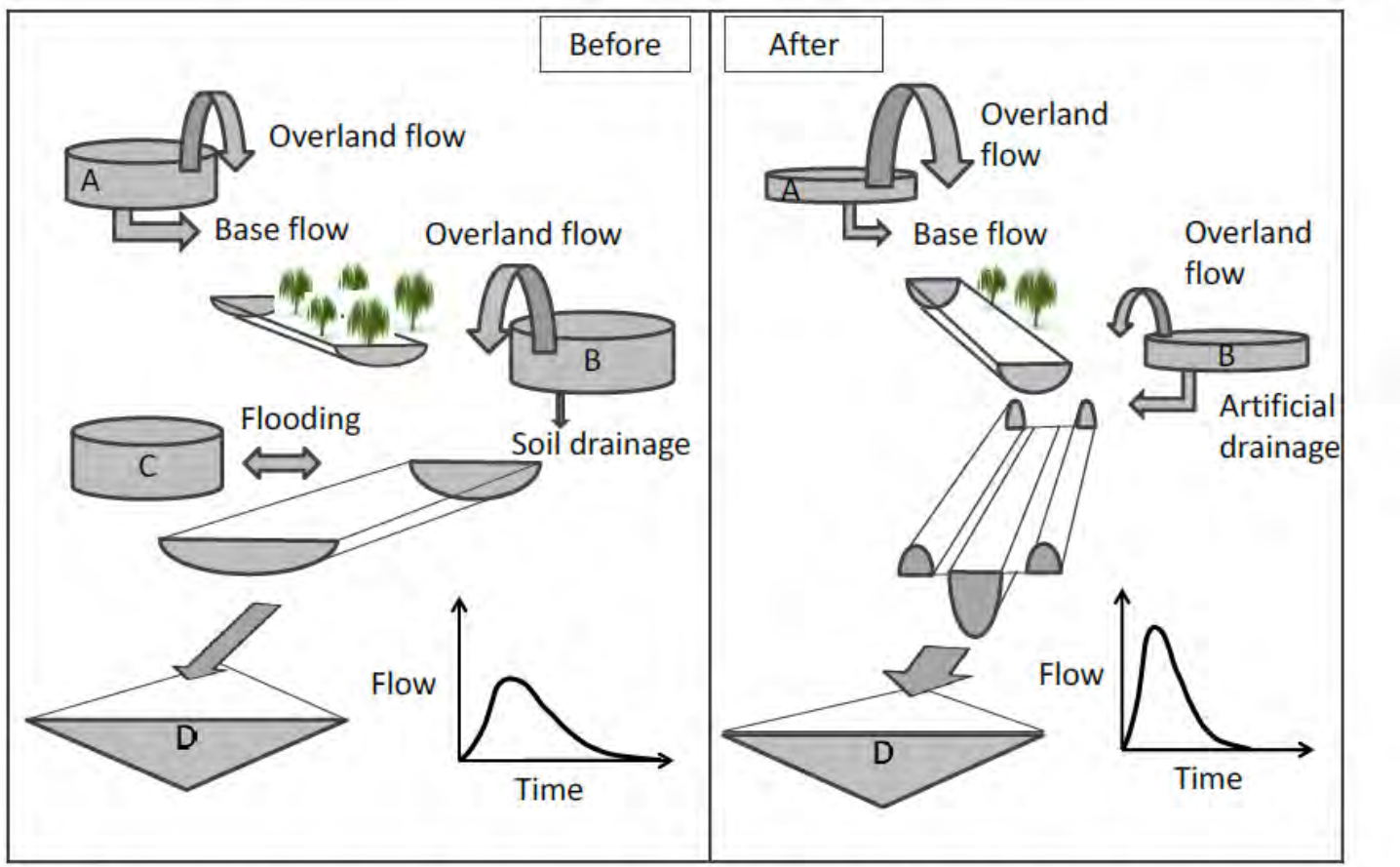


Figure 5: Schematic diagram of conceptual alterations to the hydrology of most Murihiku/Southland catchments (except for the Waiau, which has experienced flow diversion and regulation). Symbology: A and B represent, respectively, catchment water storage capacity in the uplands (alpine and hill country); C represents flood plain storage and D is an estuary. BEFORE (left): streams are generally wide, with low gradient and choked with willows (*Salix spp.*); AFTER (right): streams are steepened, trees are removed and the flood plain in is disconnected from the stream by stopbanks.

Recommendations

- Abandon approaches that facilitate blame.
- Foster an appreciation that catchments are socio-ecosystems with complex behaviour.
- Support development of broad scale systems objectives – such as a resilient society with desirable living standards.
- Encourage ‘social and cultural learning’, adaptive management and other frameworks for achieving effective long-term socio-economic outcomes built on healthy ecosystems and sustainable use of them.
- Simultaneously develop systems thinking and adaptive management within regional and central governments and within community engagement processes.
- Acknowledge and appreciate that critical aspects of the above are manifest within iwi cultural practices and beliefs.

Thank You