

Using catchment models to bring the community and councils together

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My brief was

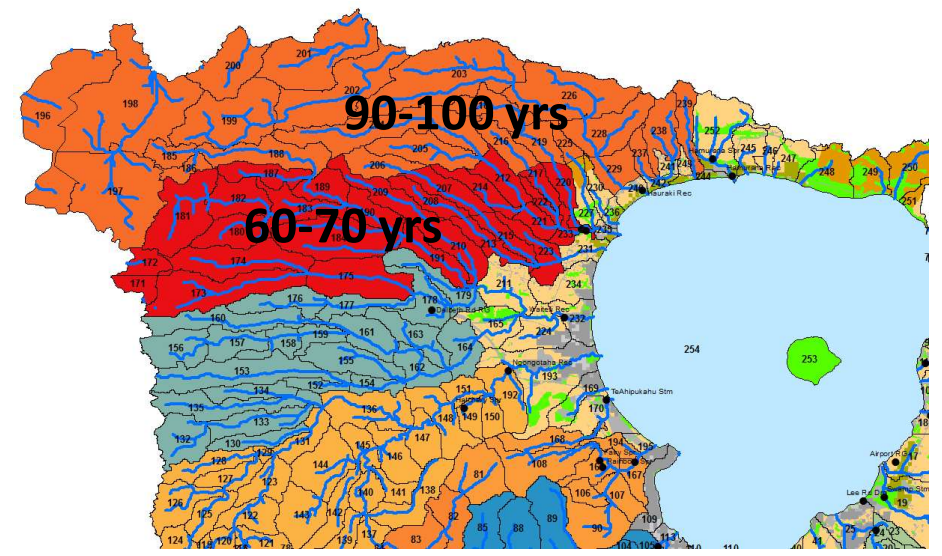
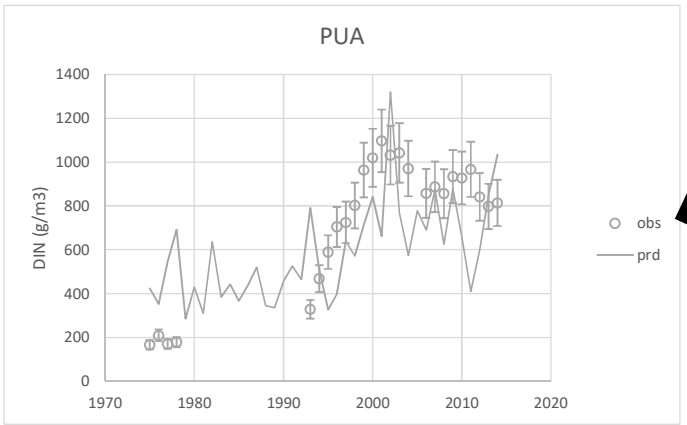
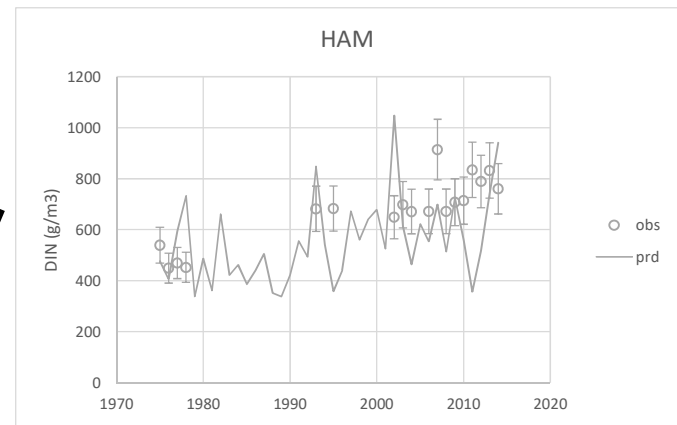
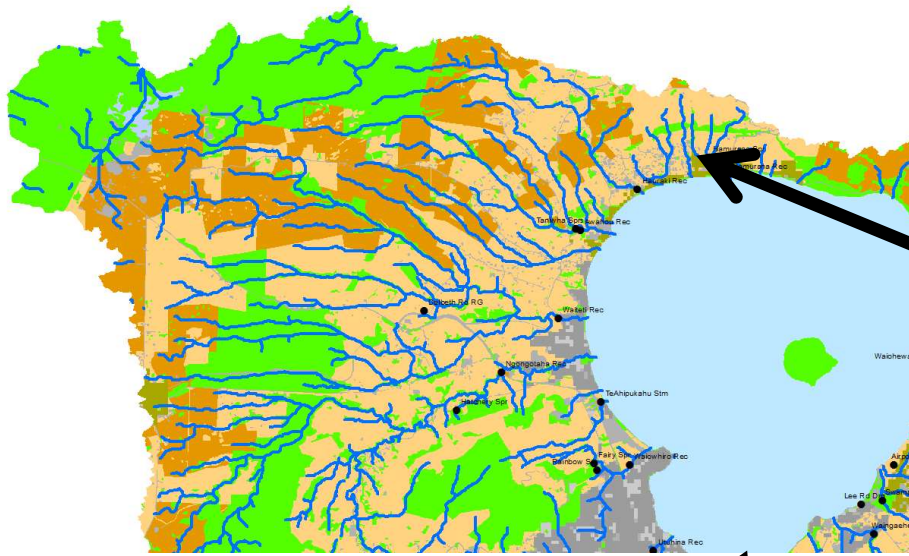
Catchment management

1. Biggest obstacles
2. Improving the pace of change
3. Bringing actors on the journey

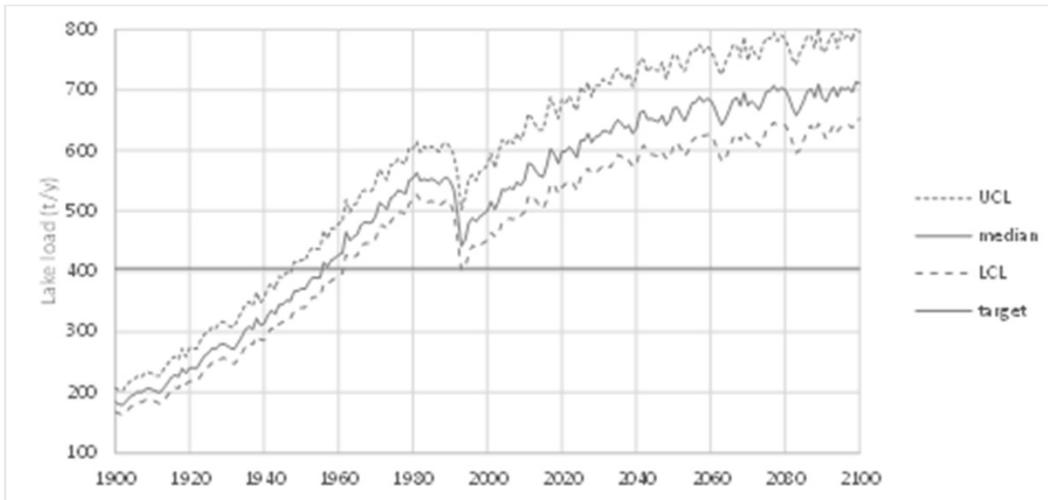
Given – we want

- Good water quality, ecosystem & cultural health
- Viable forestry & farming economies
- Thriving communities

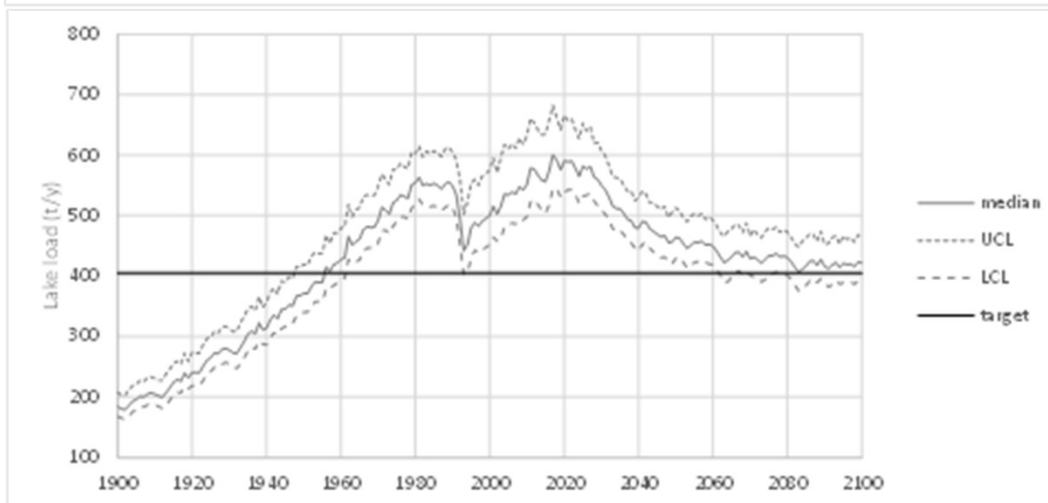
Where does modelling fit in?



Predicted annual lake load



Current land use



Staged reductions

Obstacle 1. Choosing an appropriate model

There are lots of models: SPASMO, OVERSEER, APSIM, CLUES, SWAT...

Choice depends on:

Availability of information

Capability of council staff versus consulting firms

Community understanding & trust

Examples

Taupo & Rotorua – nitrogen load to the lake

Rotorua – N losses (OVERSEER) + groundwater lags (ROTAN)

Taupo – N losses from farms (OVERSEER) + allowance for 'load to come'

More challenging = ecosystem health
(nuisance growths, oxygen/pH, clarity, insects, fish)

NPS-FW standards
Te mana o te wai

We know a healthy system when we see/measure it
We have an understanding of the effects of land use & climate change
But we don't yet have mechanistic models for ecosystem health

We can model some drivers (eg flow & temperature)
Currently we tend to rely on correlations

Obstacle 2: Uncertainty and Trust

All models make simplifying assumptions

Most models are still complicated – stakeholders may not trust them

Have strengths & weaknesses – often not articulated to stakeholders

Predictions have uncertainties – risk/uncertainty is seldom handled well

Improvements require trade offs

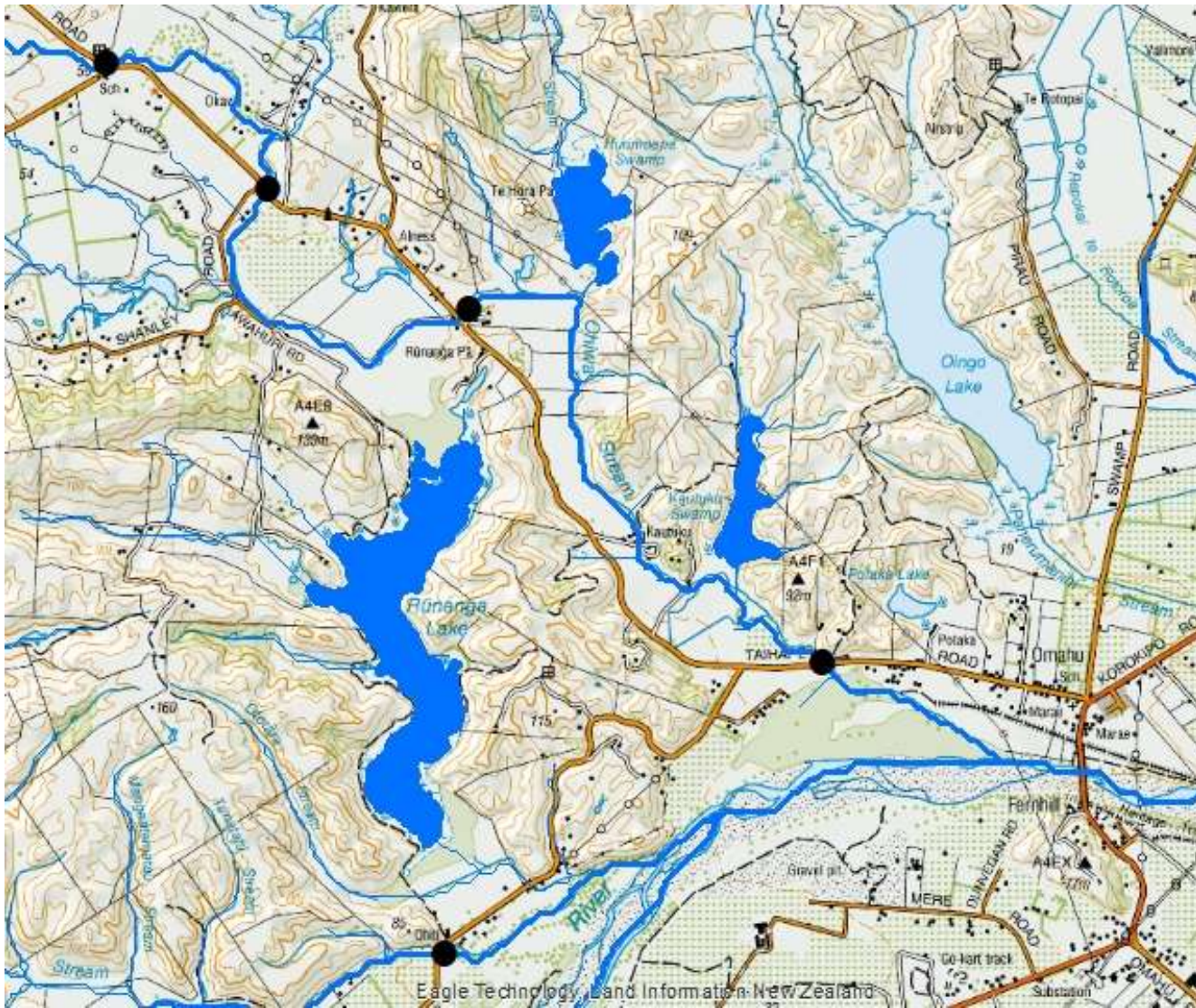
Easier to make if stakeholders have understanding & trust (& subsidies)

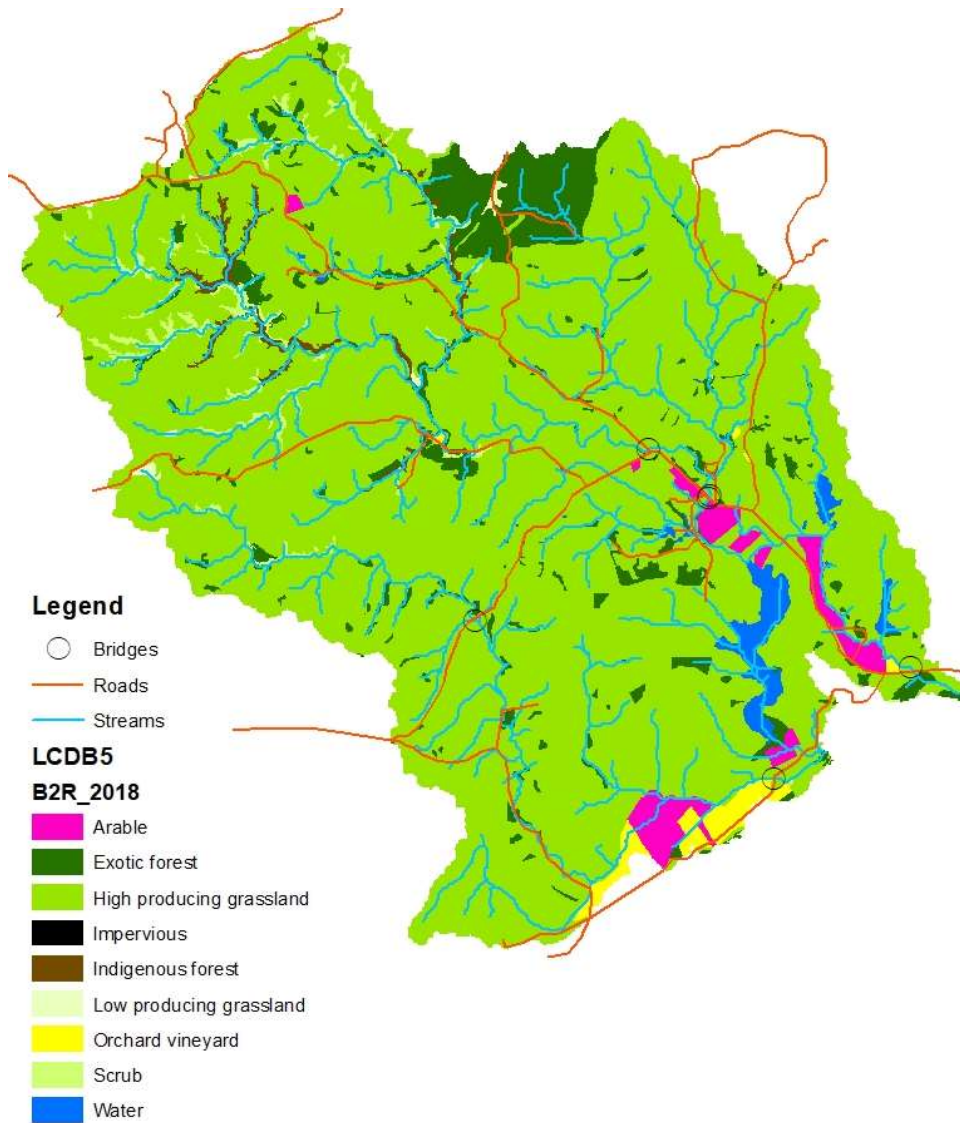
Obstacle 3: Communications

Stakeholders need to be kept informed about, and feel they have a say in, what's being planned

Without good communications stakeholders lose trust, become suspicious/cynical. This adversely affects community wellbeing and leads to litigation.

Community Catchment Groups are well placed to: discuss issues & share information amongst the community, and pressure local & central government...but





Pre-cyclone

Several times in recent years

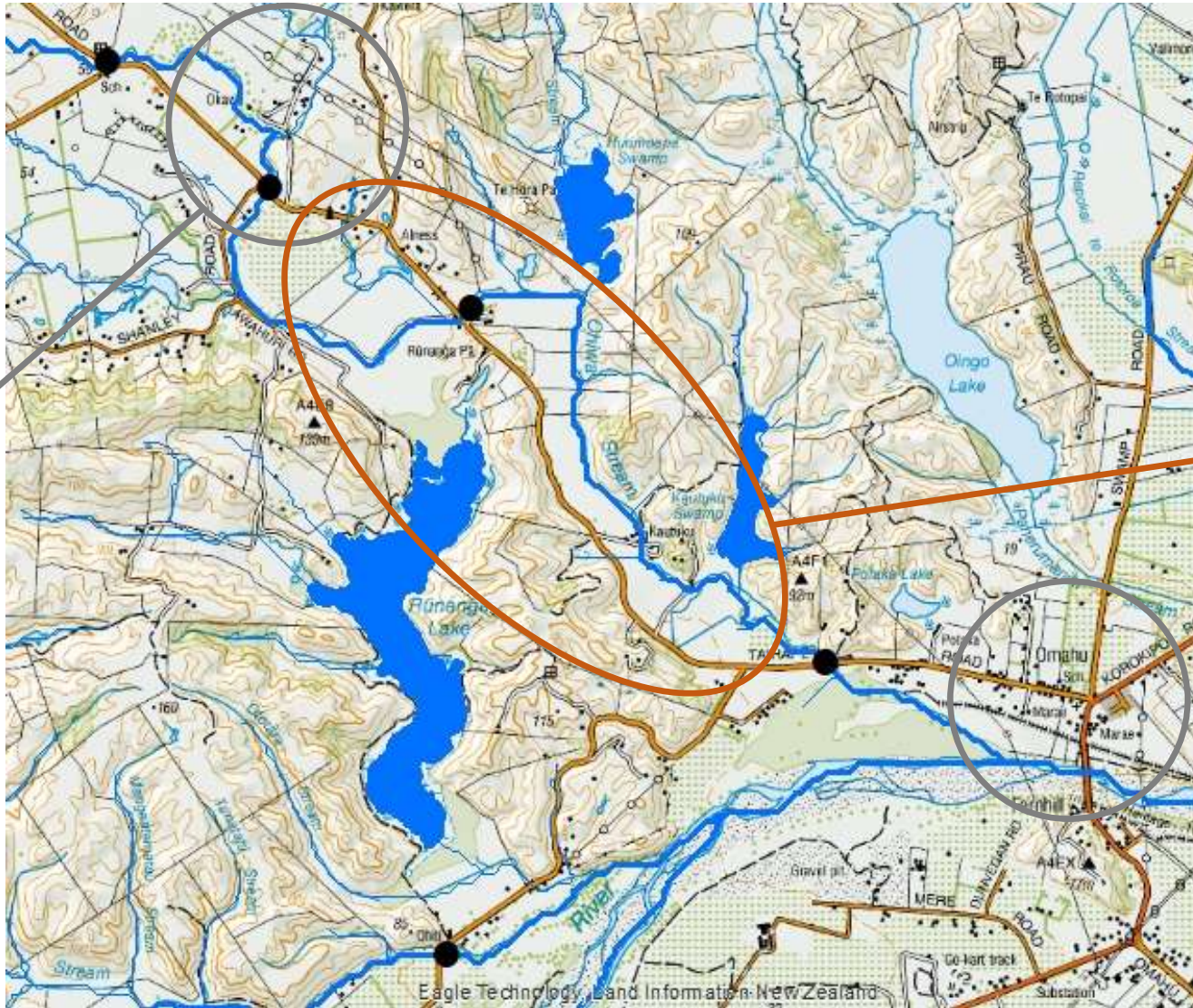
- road closed by flooding
 - sole route in/out
- pasture, crops & orchards flooded

Ecosystem health

- Fine sediment
- High nutrients -> nuisance plant growth
- High temperature – low shade
- Low MCI – fair

Cyclone

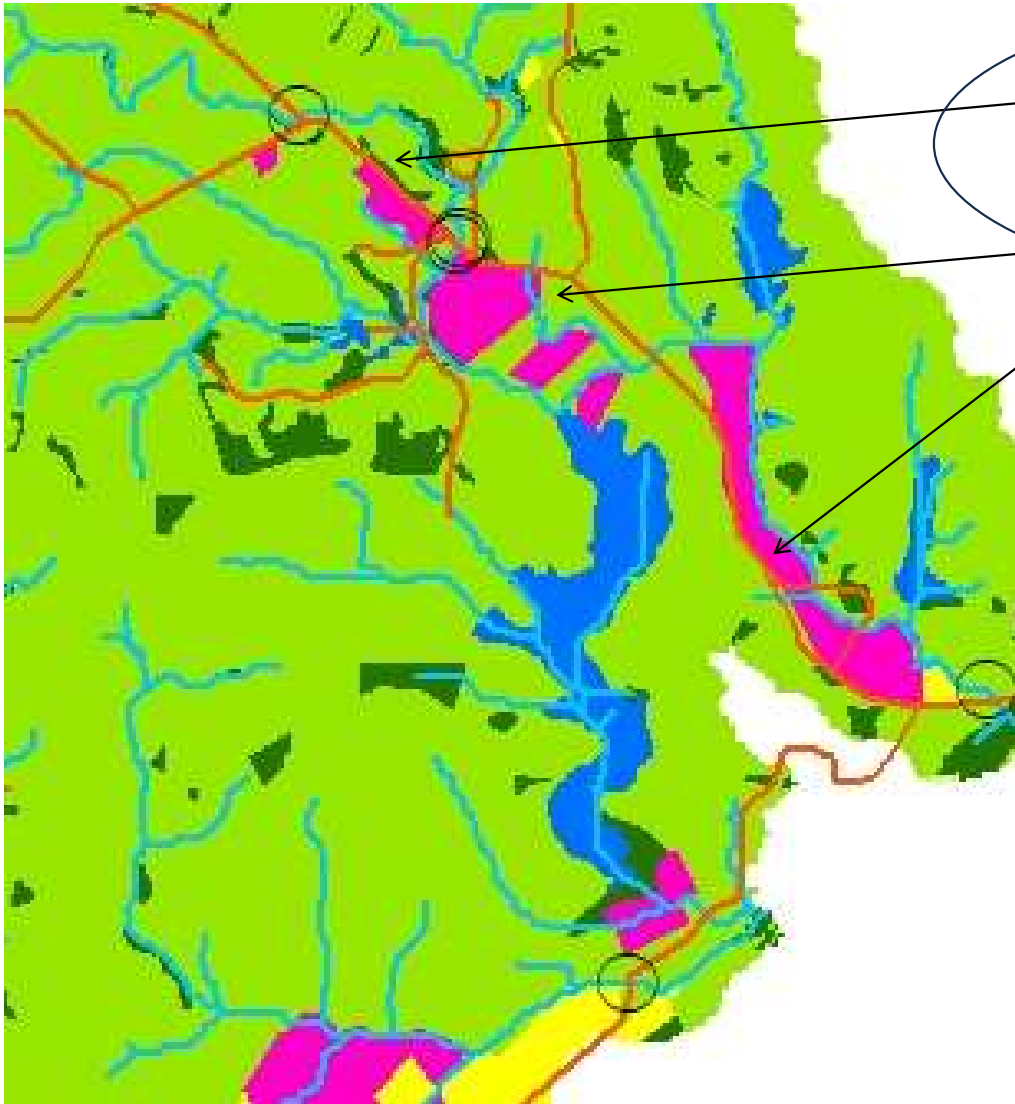
silt
deposition



bridges damaged
slips along roads

pasture innundated
maize destroyed
orchards damaged

Omahu
village
devastated



Silt removal
from pasture

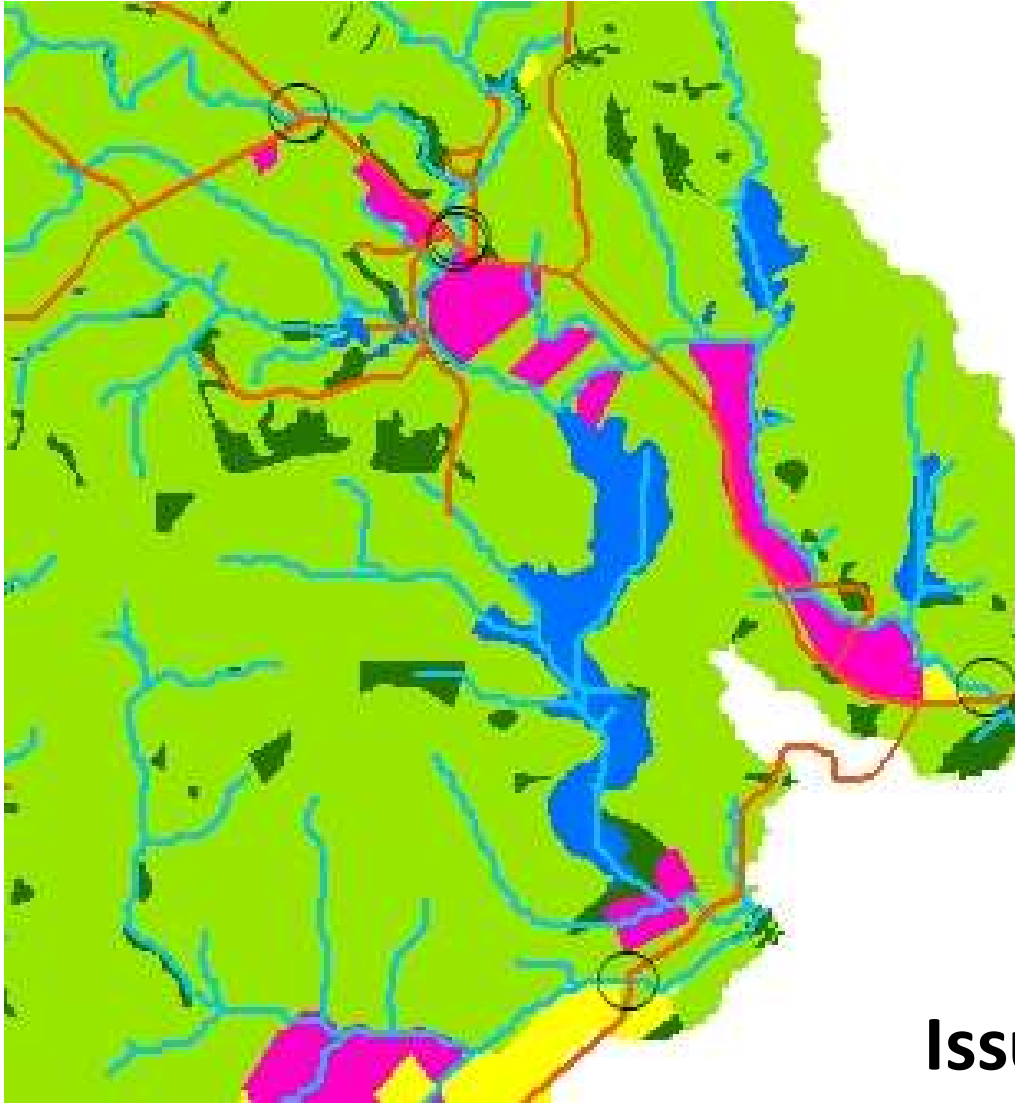
Some channel
clearance

Land recontoured
maize replanted

Some bridge & road
repairs often temporary

Many houses still unoccupied
Mobile/temporary housing

Immediate response

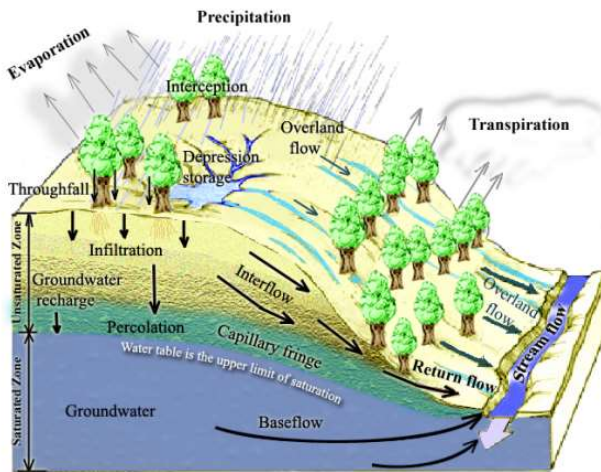


Individual actions
No coordination
Unintended consequences

Under resourcing
Delay
Communication

Climate change
Risks to financial viability
Risks to community viability

Issues raised



B2R

- a. Has established a Strategy Group of local landowners
- b. Is contracting a hydrologist to advise the SG (\$2.7K)
- c. Is seeking funding to develop of flow model (\$270K)
- d. Is looking to involve district & regional council
- e. is not prepared to wait 3-5 years for councils to act

Once we have a model we can ask ‘...if THIS then what will happen to THAT...’

THIS = climate change, more/fewer trees, deeper/shallower soils, more/fewer wetlands, wider flood plains, more ponding areas....

THAT = maximum flood flow and duration, where does flooding occur, damage to stream banks, stream beds, bridges, roads...financial losses

Biggest obstacles

- I want to do something but I don't know what/how
- I think I know what to do -> unintended outcomes
- I don't need to do anything – until I'm forced to
- I can't or don't want to pay – someone else should

Bringing actors on the journey & improving the pace of change

- Better communications
- Improved understanding
- Breaking down the 'them and us'
- Informed pressure
- Combating cynicism – feeling of doing something

Community Catchment Groups have a big role