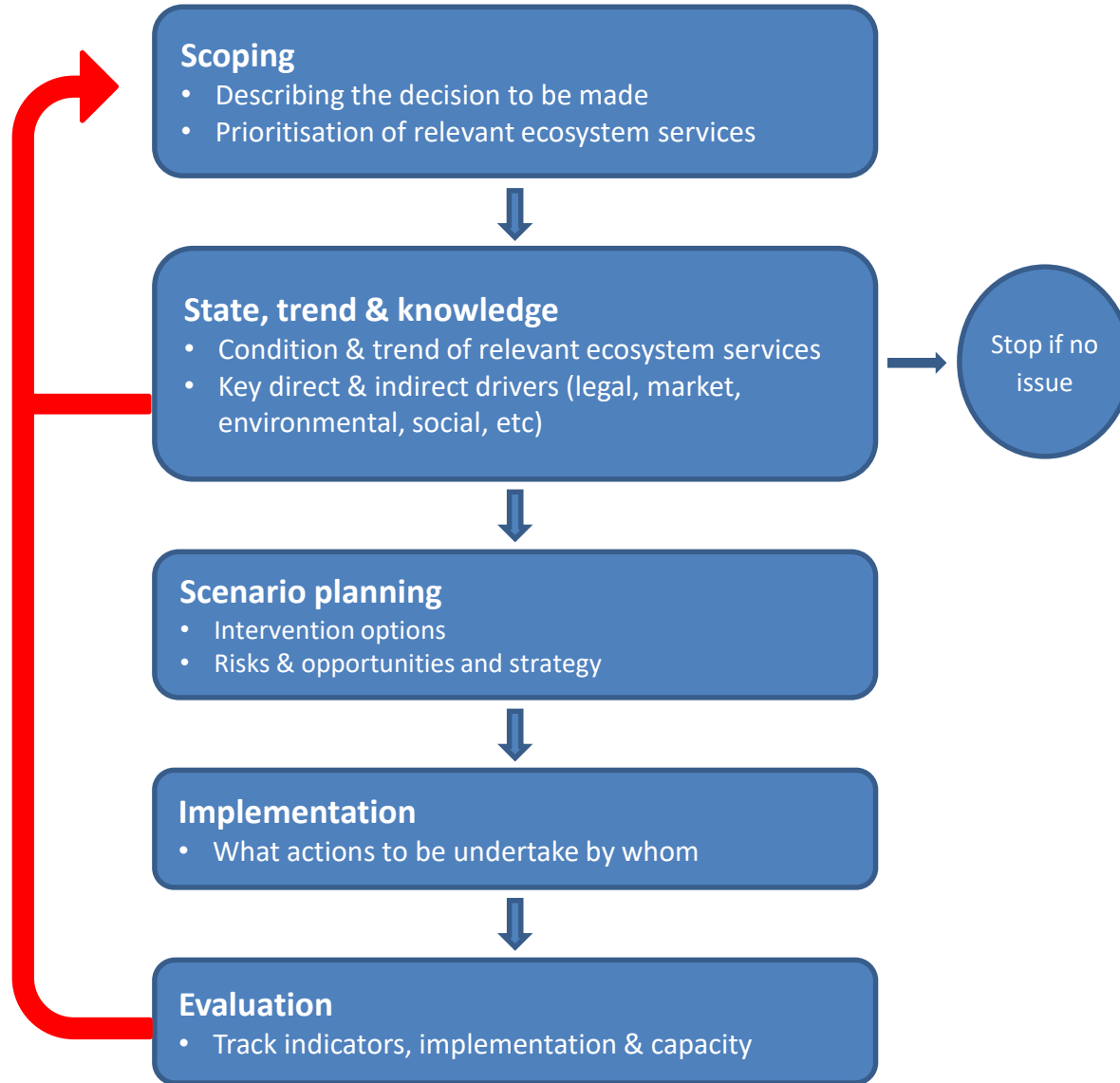**Rangitaiki catchment BOP**

Ecosystem Services in Decision-making ~ Learnings from 2 catchments ~

Suzie Greenhalgh, Robyn Simcock, Estelle Dominati, Fraser Morgan, Alec Mackay, Ben Wiercinski
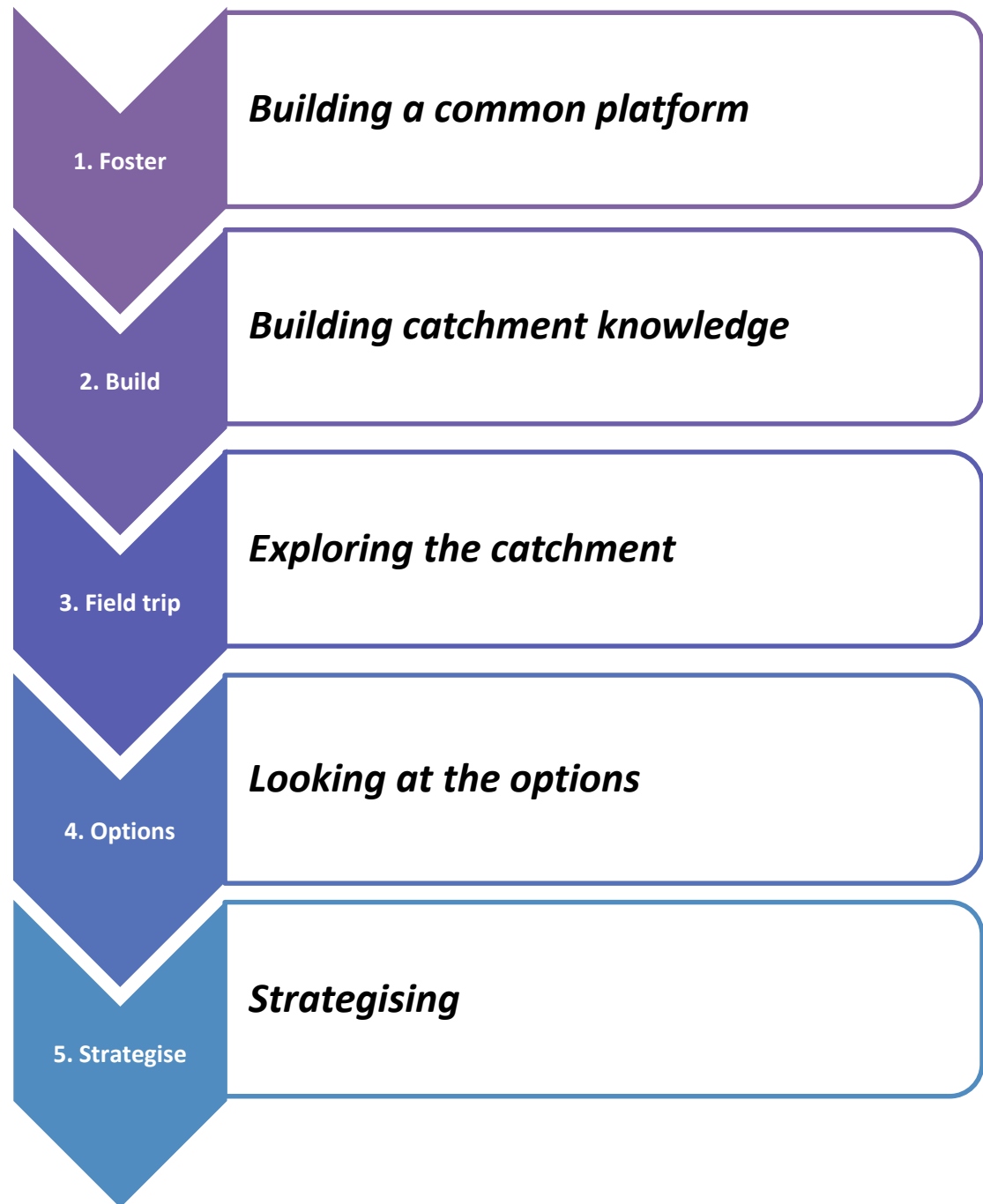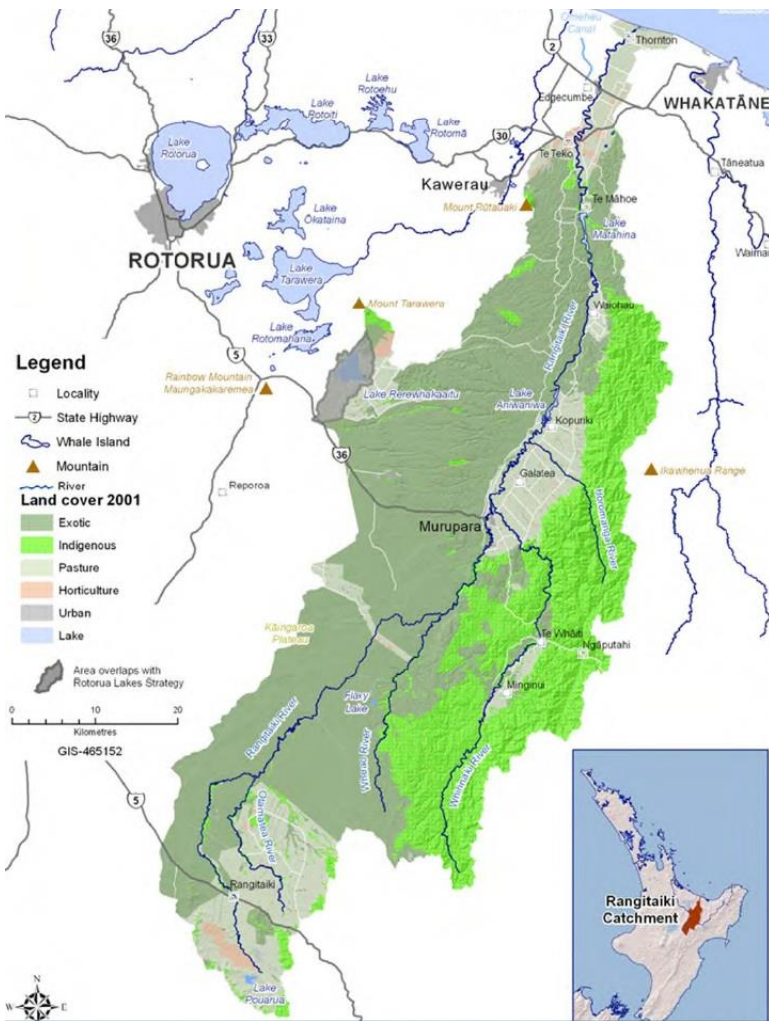
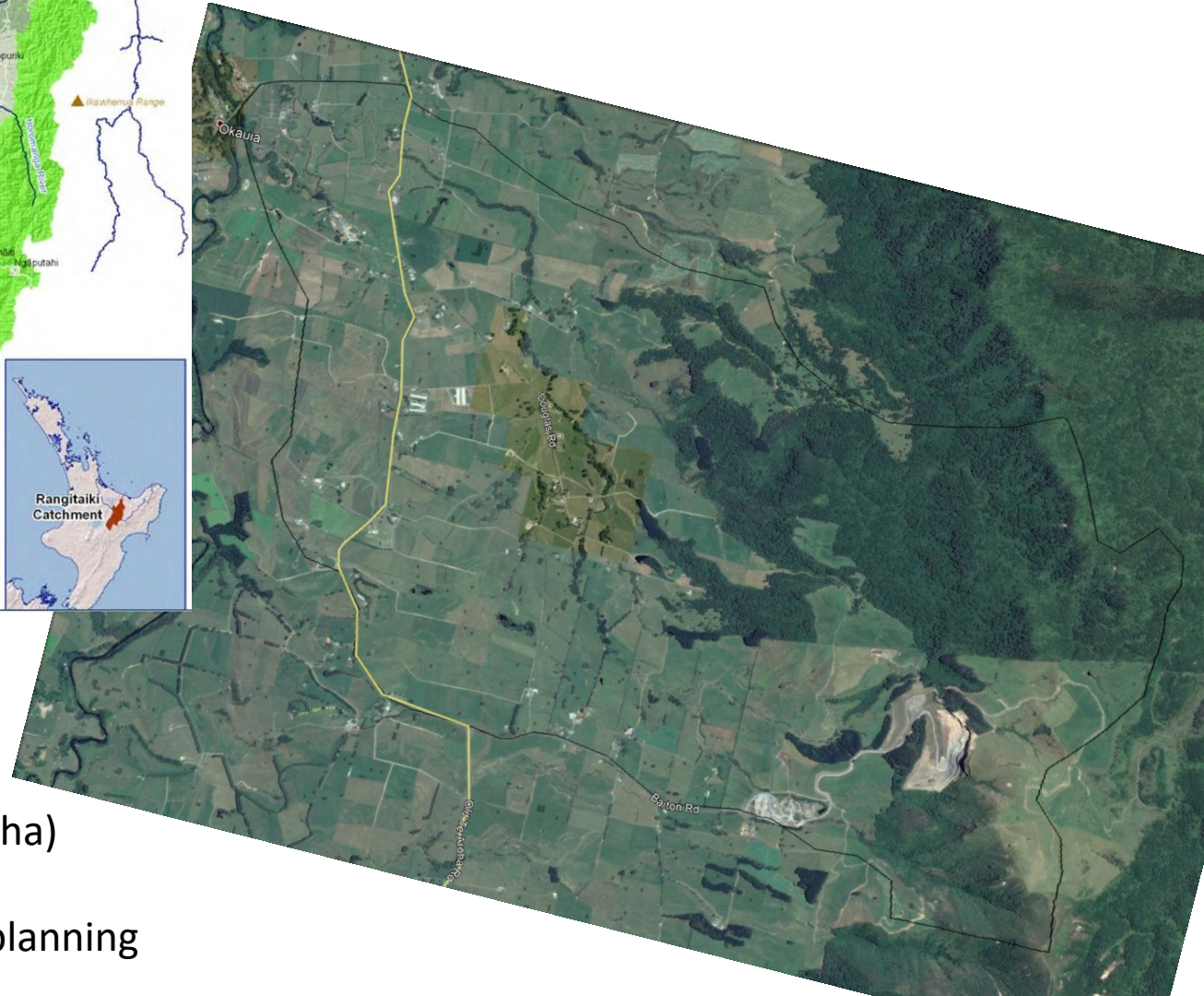**Mangapiko catchment Waikato**

BEST Decision-making Framework

Scoping
- Describing the decision to be made
- Prioritisation of relevant ecosystem services

State, trend & knowledge
- Condition & trend of relevant ecosystem services
- Key direct & indirect drivers (legal, market, environmental, social, etc)

Stop if no issue

Scenario planning
- Intervention options
- Risks & opportunities and strategy

Implementation
- What actions to be undertake by whom

Evaluation
- Track indicators, implementation & capacity

The process steps

1. Foster — *Building a common platform*

2. Build — *Building catchment knowledge*

3. Field trip — *Exploring the catchment*

4. Options — *Looking at the options*

5. Strategise — *Strategising*

Rangitaiki catchment

- Large catchment (~300,000ha)
- Large tracts of forest
- Implications of land use change

Mangapiko catchment

- Small catchment (<2,000ha)
- Mostly pasture
- Biodiversity restoration planning
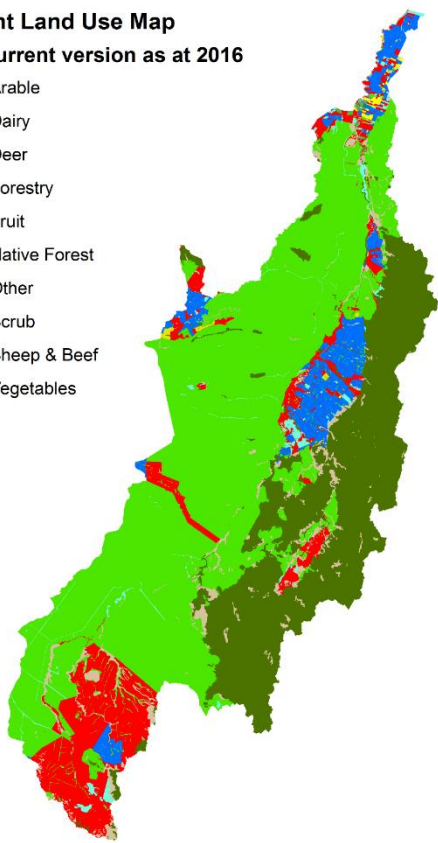
Analysis
~ Rangitaiki ~

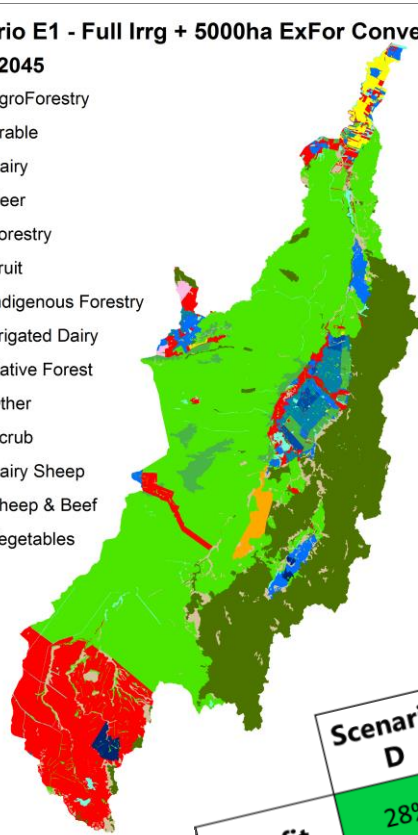- LU scenarios
- Agent-based modelling
- ES assessment

Current Land Use Map
Best current version as at 2016

- Arable
- Dairy
- Deer
- Forestry
- Fruit
- Native Forest
- Other
- Scrub
- Sheep & Beef
- Vegetables

Scenario E1 - Full Irrg + 5000ha ExFor Convert
Out to 2045

- AgroForestry
- Arable
- Dairy
- Deer
- Forestry
- Fruit
- Indigenous Forestry
- Irrigated Dairy
- Native Forest
- Other
- Scrub
- Dairy Sheep
- Sheep & Beef
- Vegetables

Scenarios	D	E1	WN, LS	NN,NS	SN, NS
Air quality reg: pollen	↑↑↑	↑↑↑	↓	↓	↓
Climate reg	↓↓	↓↓	↑	↑	↑
Water reg: flow		↑↑↑	↓		↓
Erosion control	—	↓	↑	↑	↑
Water purification & waste treatment N	↓	↓↓	—	↓	↓
Water purification & waste treatment P	—	—	↑↑	↑	↑
Biological control					
Disease regulation	↑↑	↑↑	↑↑↑	↑↑↑	↑↑↑
Pollination					
Natural hazard reg					

	Scenario D	Scenario E1	Weak network Low succession	Normal network Normal succession	Strong network Normal succession
Profit	28%	30.5%	14.7%	18.4%	20.9%
Net GHG Emissions	-5.8%	-10.4%	8.5%	8.9%	8.8%
N Leaching	2.7%	7.4%	-0.9%	7.6%	9.8%
P Loss	1.0%	0.9%	-24.7%	-13.3%	-10.1%
Sediment	0.7%	1.2%	-6.1%	-5.9%	-6.1%
E.coli	-13.7%	-13.4%	-29%	-30%	-27%
Labour*	~182%	~186%	~49%	~46%	~51%

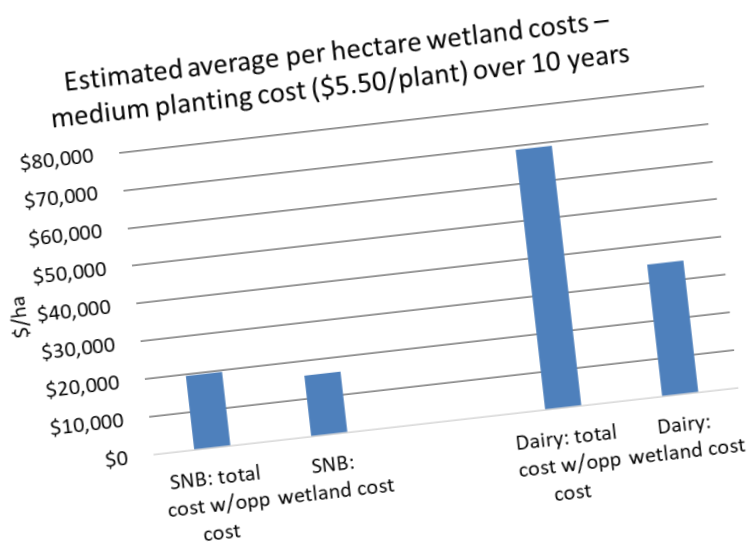# Example Analysis

~ Mangapiko ~

- Options
- Cost-benefit analysis
- ES assessment

Wetland location	area (hectares)
SNB	1.6
Dairy	8.3
Total	**9.9**

Estimated average per hectare wetland costs – medium planting cost ($5.50/plant) over 10 years

Breakdown of wetland establishment costs (yr 1) - medium plant cost

- Plants 28%
- pre spot 2%
- Fence 68%
- Release 3%
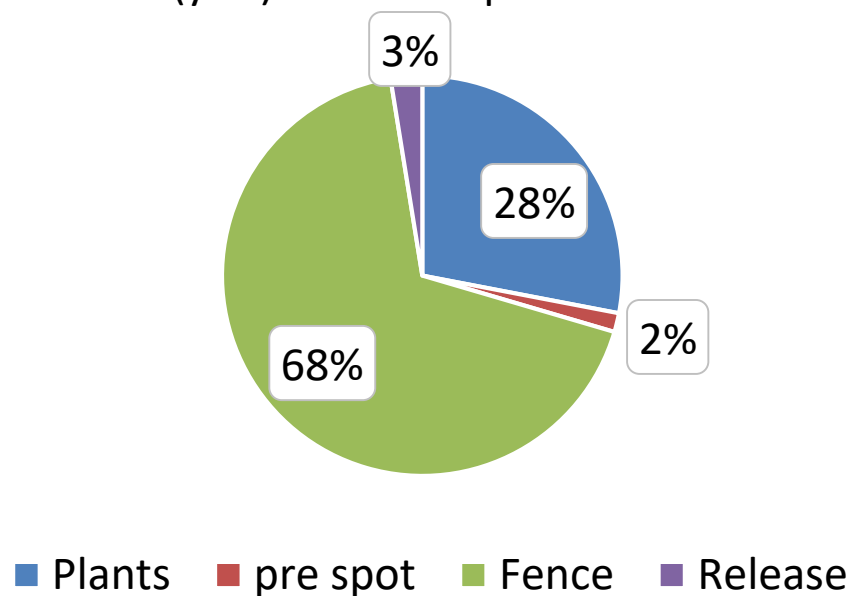
What are the hard bits?

- Building trust
- Language & communication
- Meaningfully understanding cultural values
- Getting the balance right in options/scenarios
- Choice of indicators & availability of knowledge
- Use in decision-making
- Achieving on-the-ground impact

Landscape decisions

Some take homes

Process
- Social capital is key
- Clear messaging throughout the process
- Usefulness of building up the modelling to tell the story with the group
- Maintain process flexibility to ensure meets your & participant needs
- People want to be engaged and are open to sharing knowledge and their experiences

Research
- A process can give you the mandate to engage differently with other groups

Impacts
- Ecosystem service approaches enable us to identify the key benefits and where they lie
- Best results are often local (farm or location specific)
- A good lunch goes a long way!