



Impacts of land use scenarios on river nutrient loads

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DairyNZ

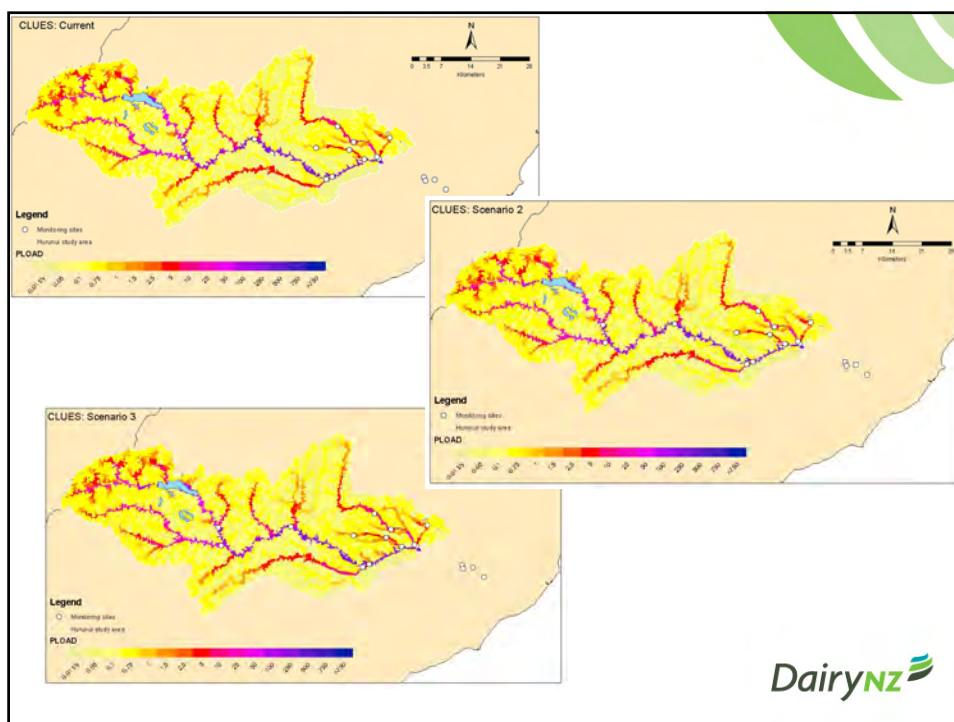
Content

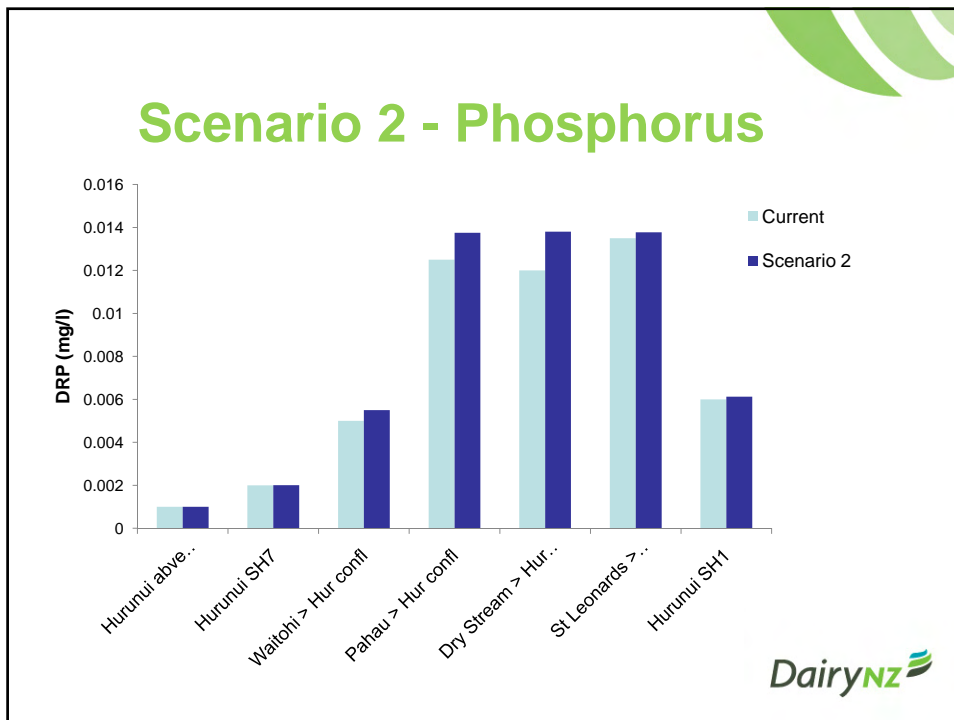
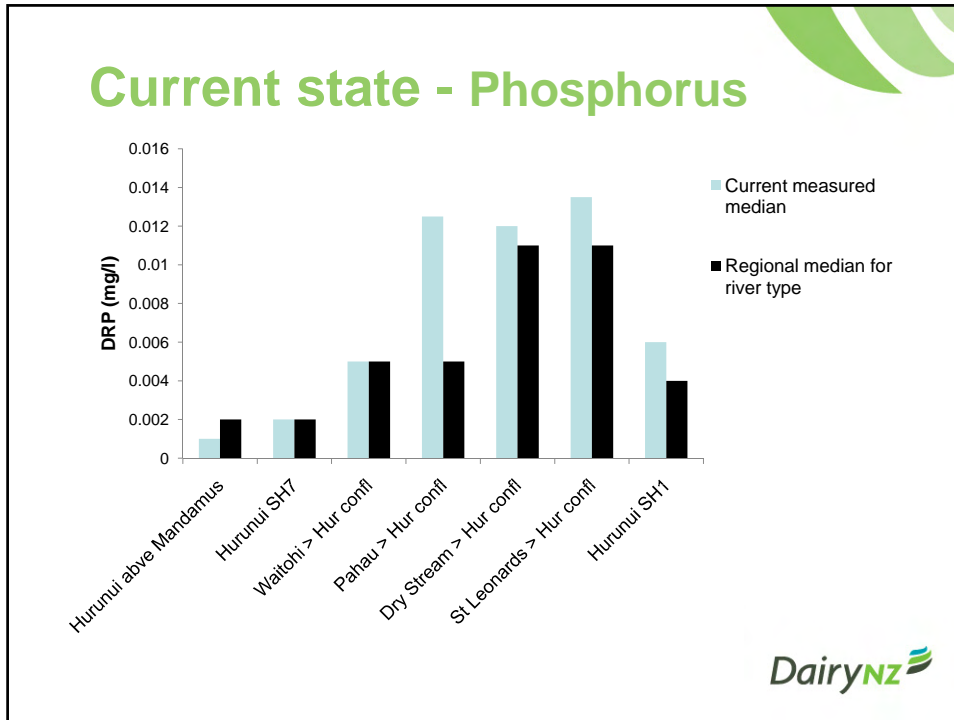
- Modelled changes in nutrient loads
- What does that mean for 'water quality'
 - Change in nutrient concentrations
 - Where science can help understand impacts on values affected by nutrients

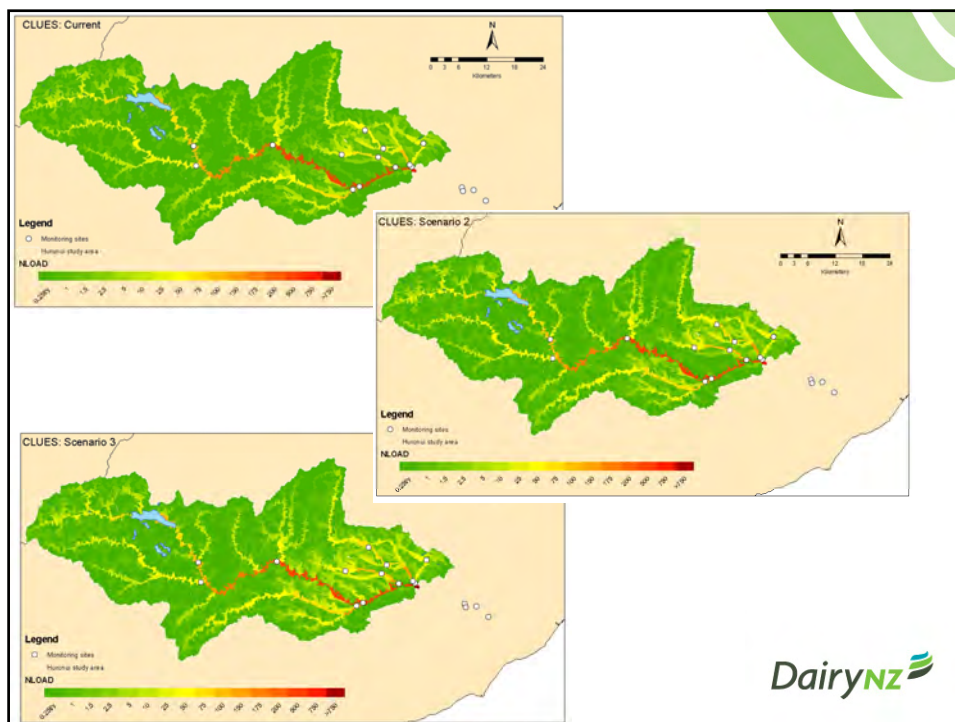
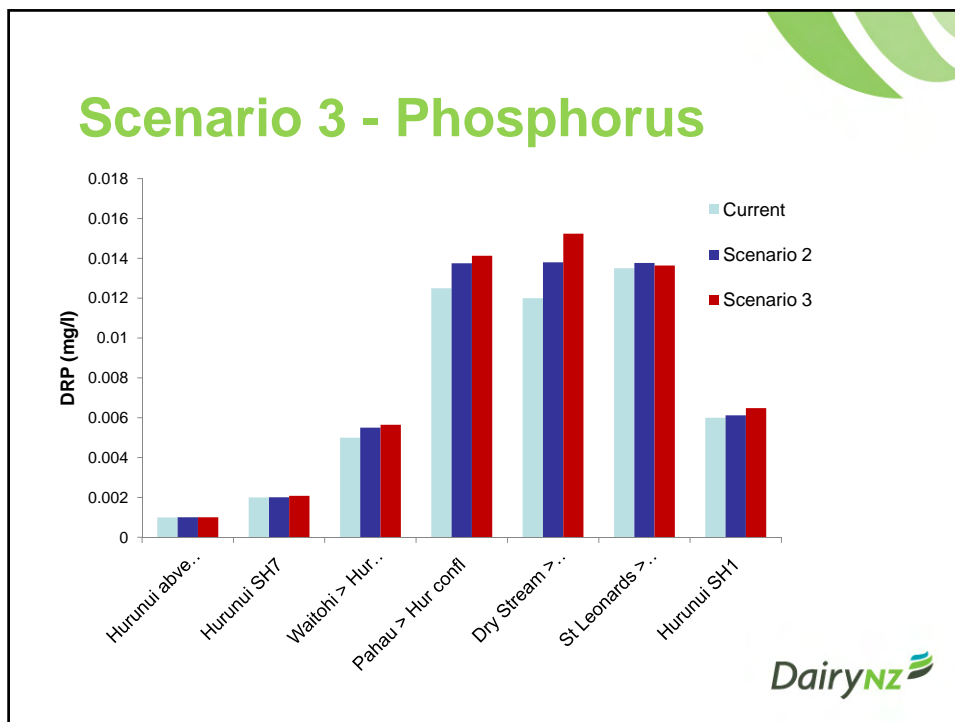


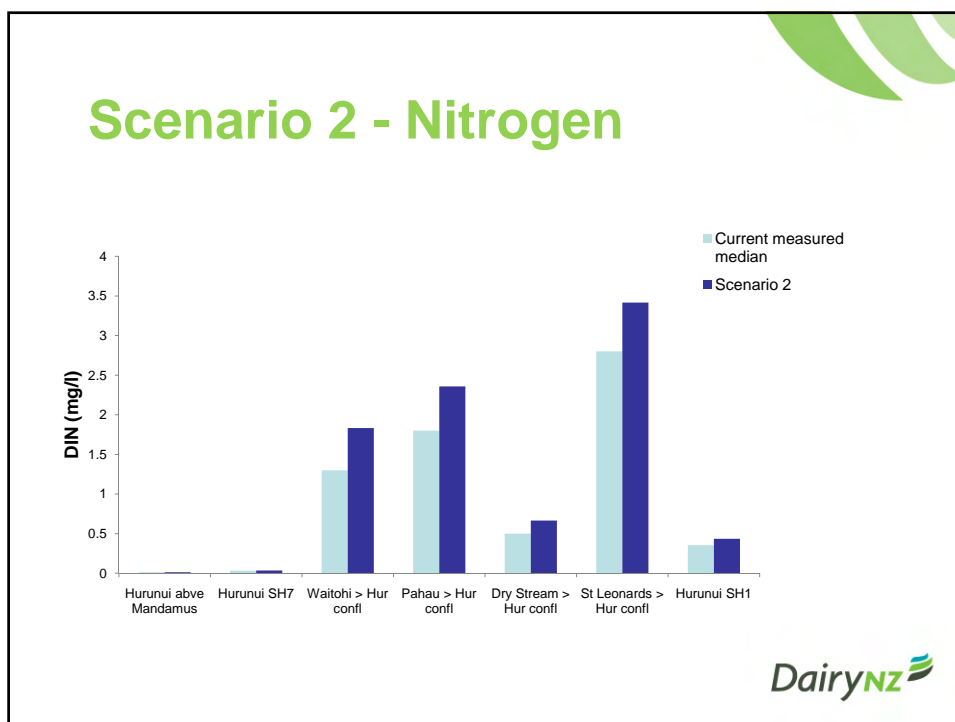
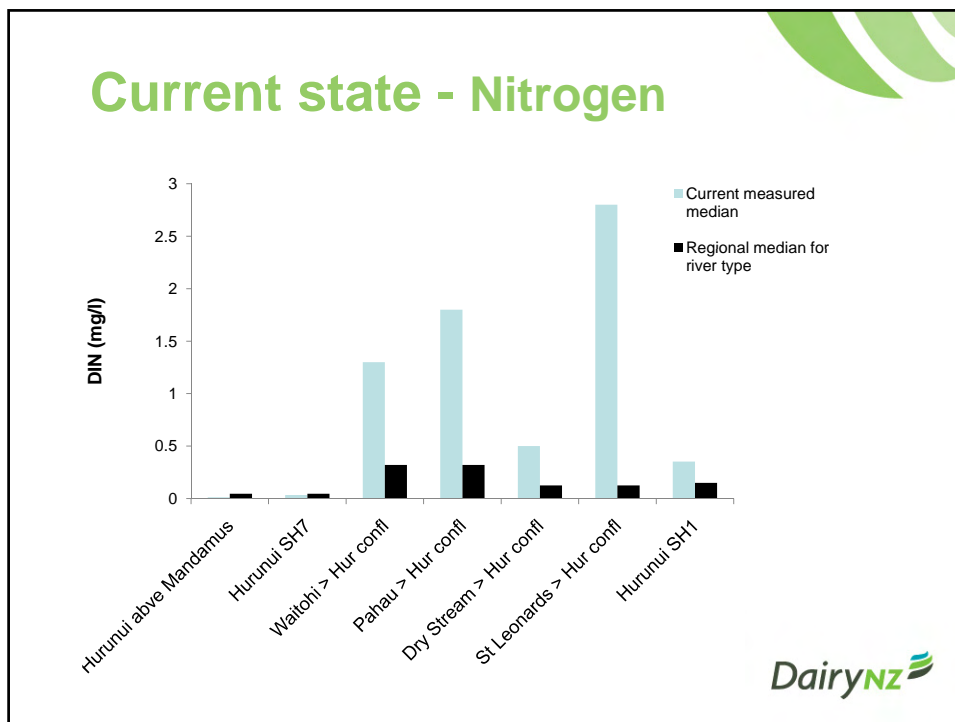
Catchment Land use for Environmental Sustainability – CLUES model

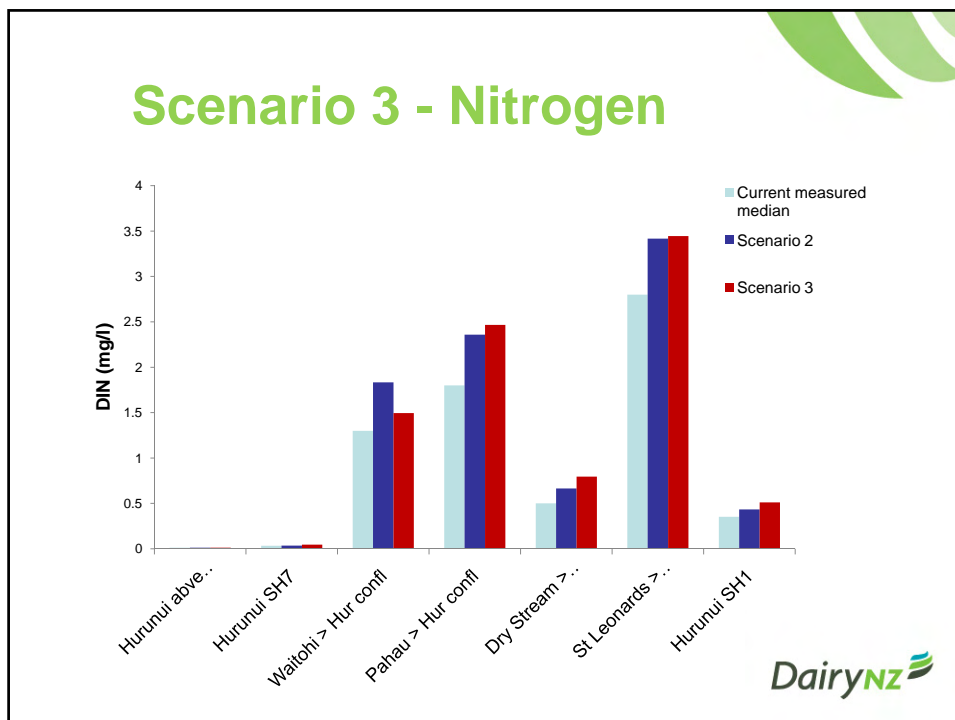
- Models loads and concentrations of nutrients into rivers and streams under different land use scenarios
- Assumes current land management practices and unconstrained by policy or community values











- ### Nutrient effects in waterways
- Periphyton (algae) on the stream bed
 - Floating algae (phytoplankton) in lakes and ponds
 - Aquatic weeds (macrophytes)
 - Toxic algae (eg *Phormidium*)
 - Toxicity of nitrate and ammonia to aquatic organisms
- DairyNZ**

Nutrient effects in waterways – why are we interested?

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Visual impact

Native fish health

Drainage

Livestock drinking water

Taste/odour

Trout and salmon health

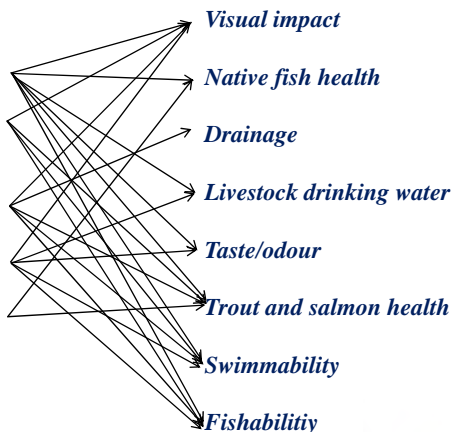
Swimmability

Fishability



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- *Swimmability*
- *Fishability*

Periphyton – Hurunui River

- Phosphorus limited system – periphyton growth likely to respond to increase in P rather than increase in N
- 2-8% increase in phosphorus concentration ⇒ increase in annual average periphyton biomass up to 5%
- In many summers the change in periphyton may be small, but in particularly dry years, an increase in nutrients increases the likelihood of nuisance levels



Other impacts

- Nitrogen
 - increases in groundwater nitrates expected
 - increased risk of nitrate toxicity thresholds exceeded in some groundwater fed streams

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Thank you
and questions

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