Land use & water quality

Realising the opportunities while addressing the challenges

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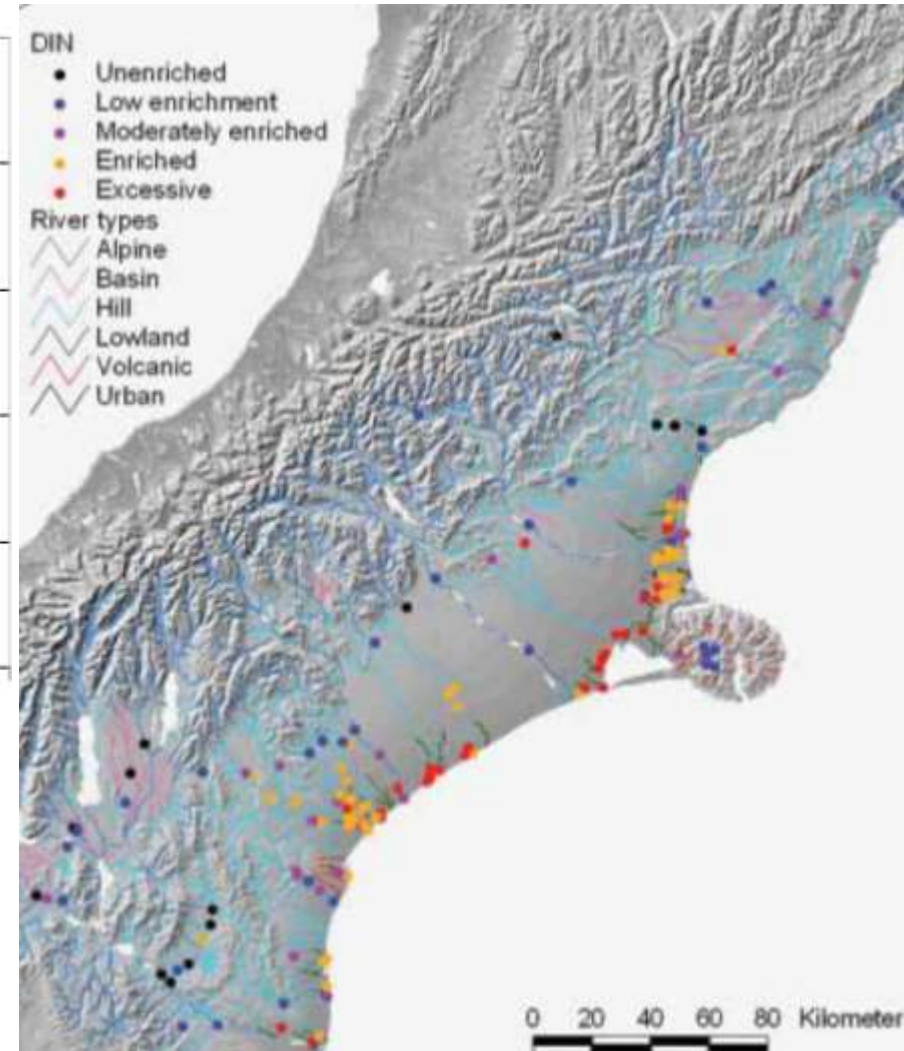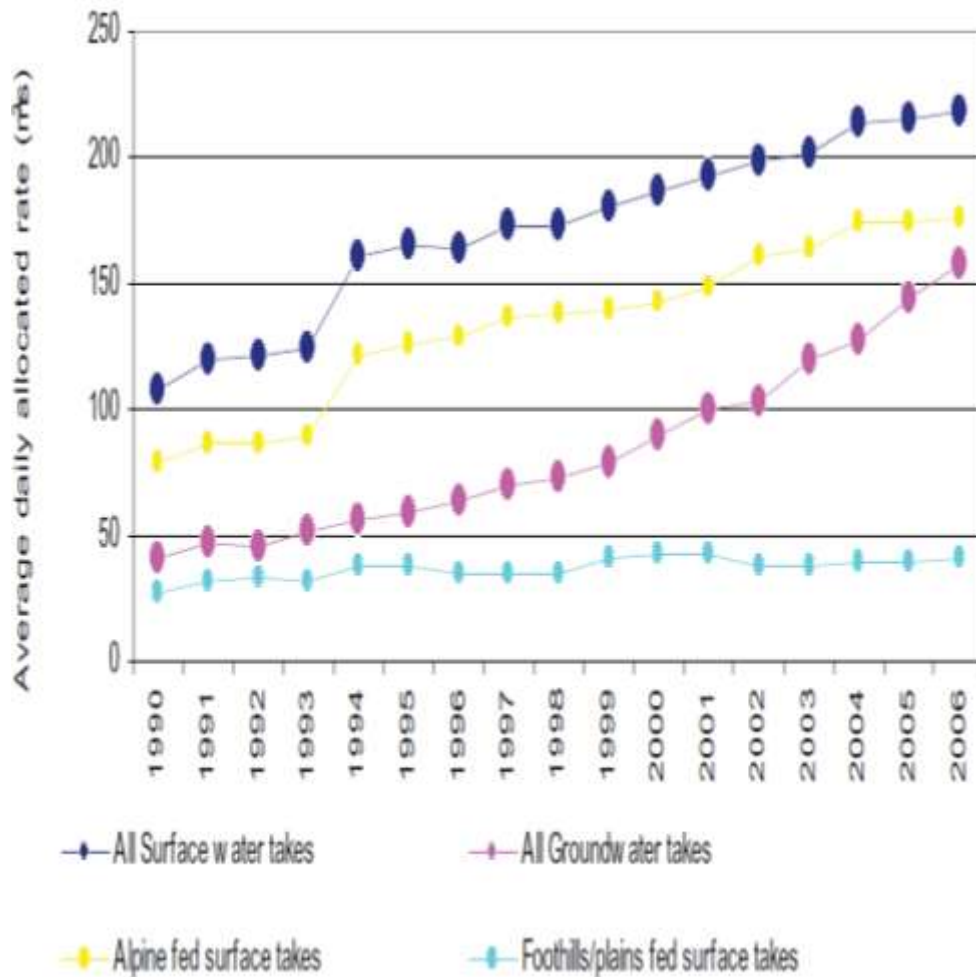
[1] Environment Canterbury
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Talk outline

- The 'Preferred Approach'

- The issues

- Implications for farmers

- Lessons learned

State of the Canterbury environment

Source: Environment Canterbury, 2008

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Opportunities and challenge

Opportunities
– **Improved environmental outcomes**
– **New water, more irrigated land, new developments**

Challenge
How to realise the opportunities that additional development provides while meeting community agreed environmental outcomes for water quality
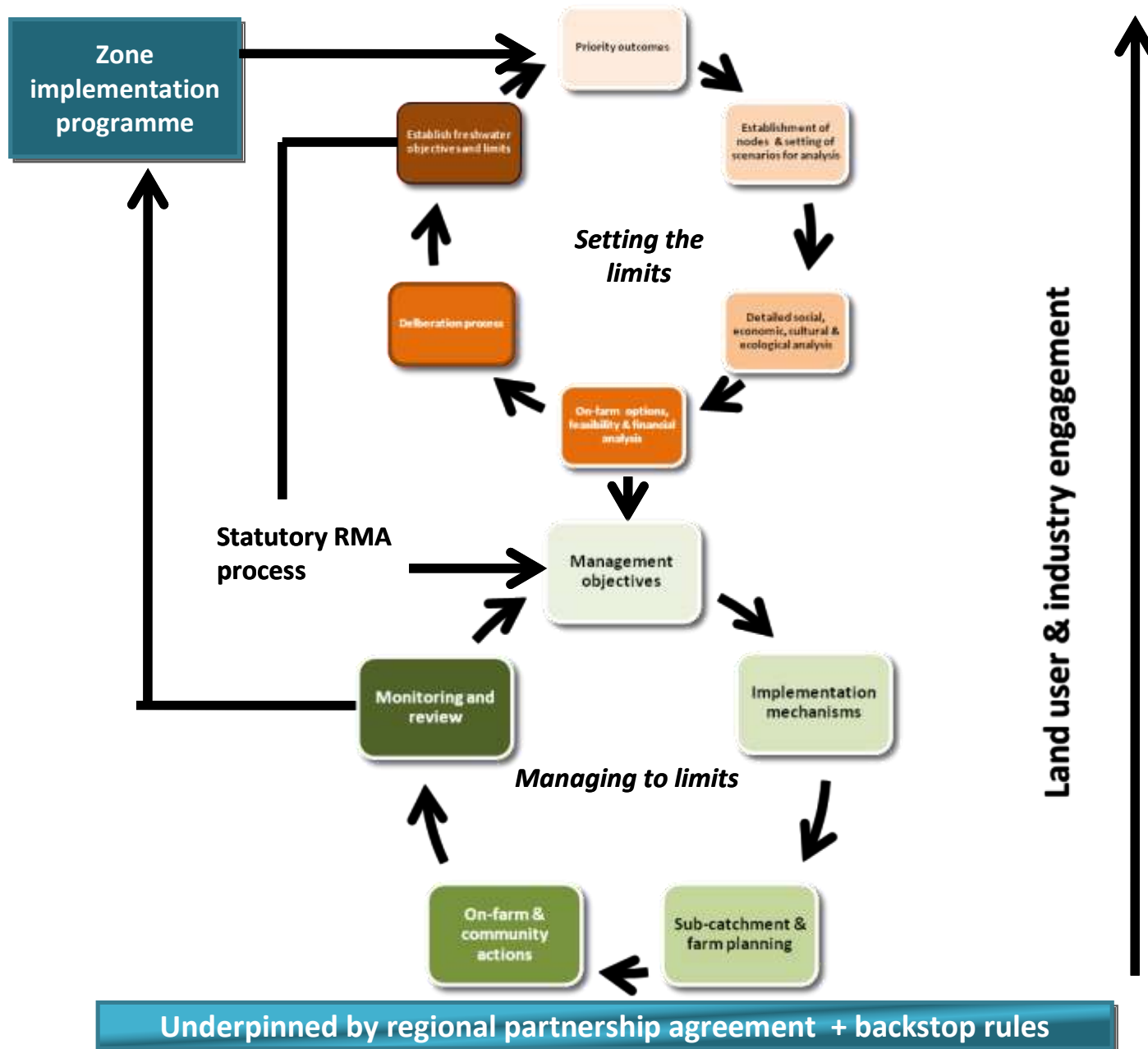
Hurunui case study area

- The intention of the pilot was to:

  – develop a technical approach to assess cumulative effects

  – use stakeholders and communities to make recommendations on preferred outcomes

  – build a framework for managing those cumulative effects

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Zone implementation programme

Priority outcomes

Establishment of nodes & setting of scenarios for analysis

Establish freshwater objectives and limits

Setting the limits

Detailed social, economic, cultural & ecological analysis

Deliberation process

On-farm options, feasibility & financial analysis

Statutory RMA process

Management objectives

Implementation mechanisms

Monitoring and review

Managing to limits

On-farm & community actions

Sub-catchment & farm planning

Land user & industry engagement

Underpinned by regional partnership agreement + backstop rules

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Preferred approach – setting limits

- Iterative process

- Steps

  - Understanding stakeholder values

  - Scenario setting

  - Analysis – environmental, economic, social, cultural & on-farm

  - Deliberation process

  - Recommendations on preferred freshwater objectives

  - Development of limits

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Preferred approach – managing to limits Fundamental approach

- Two possibilities
  - Obligations on land managers are set and imposed by regional council
  - High level of responsibility retained by land managers and industry operating within agreed framework

- Preferred approach described as a collaborative self management approach whereby industry & others work within an agreed regulatory framework to achieve desired outcomes.

The preferred approach –a soft option?

- The preferred approach is <u>not</u> a soft option

- Underpinned by strong regulatory framework

- Regional partnership agreement

- Expectation that most farms will be under an audited self management scheme

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The issues

- Who is the community?

- What is the starting point?

- How do you deal with uncertainty and risk

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Managing with risk & uncertainty

Risk-base approach – likelihood of meeting various instream values for each scenario

Hurunui R at SH1

Lower Pahau River

Hurunui R at SH1

VALUES AND ASSESSMENT CRITERIA ACHIEVED FOR EACH SCENARIO...	SCENARIOS				
	A (Conservative modelled)	B (1990-1995 data)	1 (Current - 2005-2009 data)	2 (Business as usual)	3 (Extensive irrigation)
NRRP periphyton objective (120 mg/m²)	Almost certainly	Almost certainly	Probably	Possibly?	Possibly?
Visual aesthetic values (<20% algae cover)	Almost certainly	Almost certainly	Probably	Possibly?	Possibly?
Visual water clarity	Almost certainly	Almost certainly	Almost certainly	Probably	Probably
Recreation values (safety, microbiological health)	Almost certainly	Almost certainly	Probably	Possibly?	Possibly?
Benthic biodiversity (invertebrates QMCI, EPT response to algae)	Almost certainly	Almost certainly	Probably	Possibly?	Possibly?
Trout habitat & angling (based on NZ periphyton guidelines)	Almost certainly	Almost certainly	Probably	Possibly?	Possibly?
Nitrate toxicity criteria to protect 95% aquatic species biodiversity (~1.7 mg/L)	Almost certainly	Almost certainly	Almost certainly	Almost certainly	Almost certainly
Nitrate toxicity criteria to protect human drinking quality (~11.3 mg/L)	Almost certainly	Almost certainly	Almost certainly	Almost certainly	Almost certainly
Riverbed birds (with respect to maintaining aquatic food supplies only)	Almost certainly	Almost certainly	Probably	Possibly?	Possibly?

Lower Pahau River

| VALUES AND ASSESSMENT CRITERIA ACHIEVED FOR EACH SCENARIO...	Scenarios...				
	A (Conservative modelled)	B (1990-1995 data)	1 (Current - 2005-2009 data)	2 (Business as usual)	3 (Extensive irrigation)
NRRP periphyton objective (200 mg/m²)	Almost certainly	Probably	Possibly?	Possibly?	Possibly?
Visual aesthetic values (<30% algae cover)	Almost certainly	Possibly?	Possibly?	Possibly?	Possibly?
Visual water clarity	Almost certainly	Probably	Possibly?	Possibly?	Possibly?
Recreation values (safety, microbiological health)	Almost certainly	Possibly?	Possibly?	Possibly?	Possibly?
Benthic biodiversity (invertebrates QMCI, EPT response to algae)	Almost certainly	Possibly?	Possibly?	Possibly?	Unlikely
Trout habitat & angling (based on NZ periphyton guidelines)	Almost certainly	Possibly?	Possibly?	Possibly?	Possibly?
Nitrate toxicity criteria to protect 95% aquatic species biodiversity (~1.7 mg/L)	Almost certainly	Probably	Unlikely	Unlikely	Unlikely
Nitrate toxicity criteria to protect human drinking quality (~11.3 mg/L)	Almost certainly	Almost certainly	Almost certainly	Almost certainly	Almost certainly

The issues

- Who is the community?

- What is the starting point?

- How do you deal with uncertainty and risk

- Is all this effort worth it?

- Is good practice enough?

- What about lag times?

- Resourcing

Range in N leaching losses – Hurunui case study
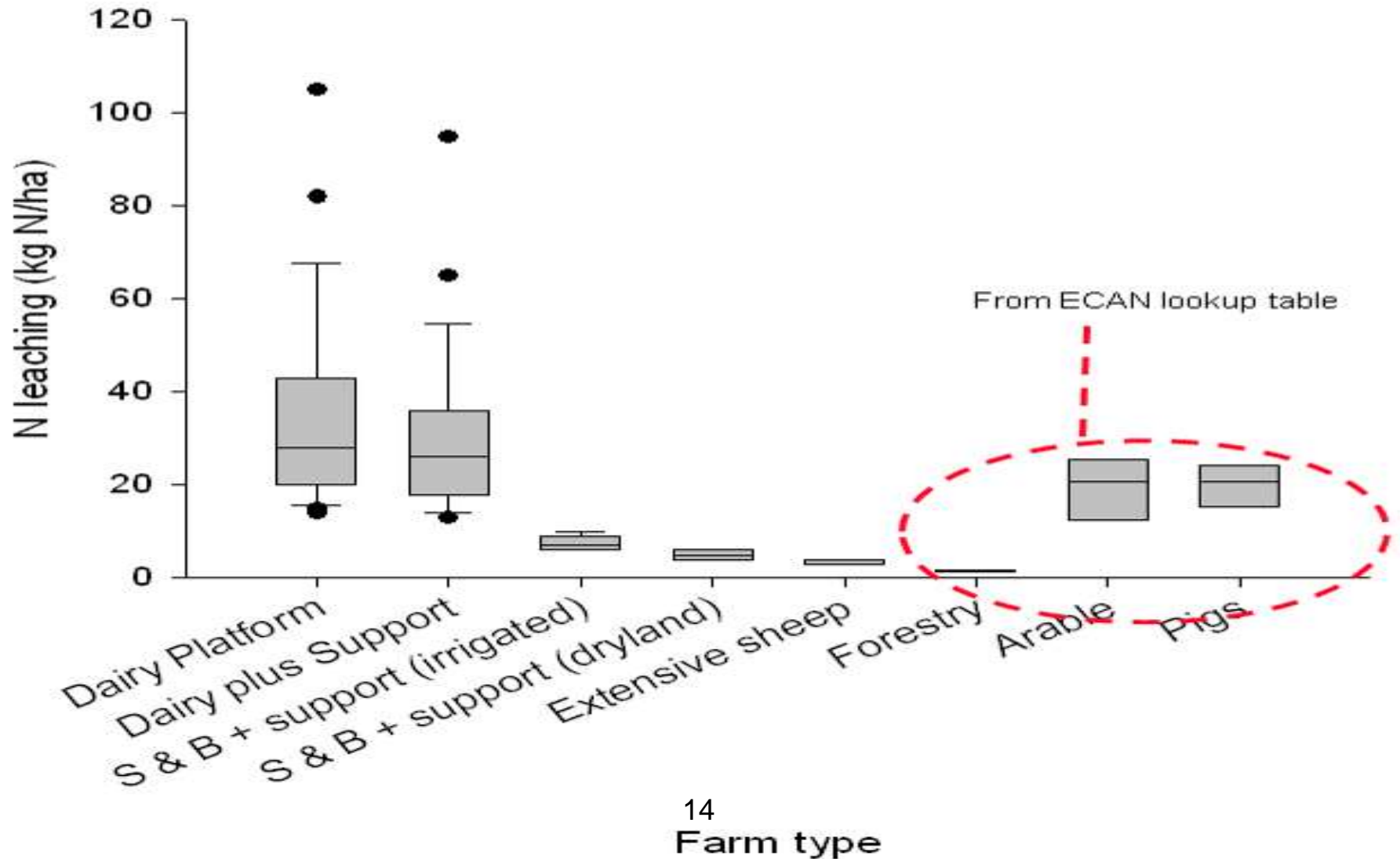
Range in P losses – Hurunui case study
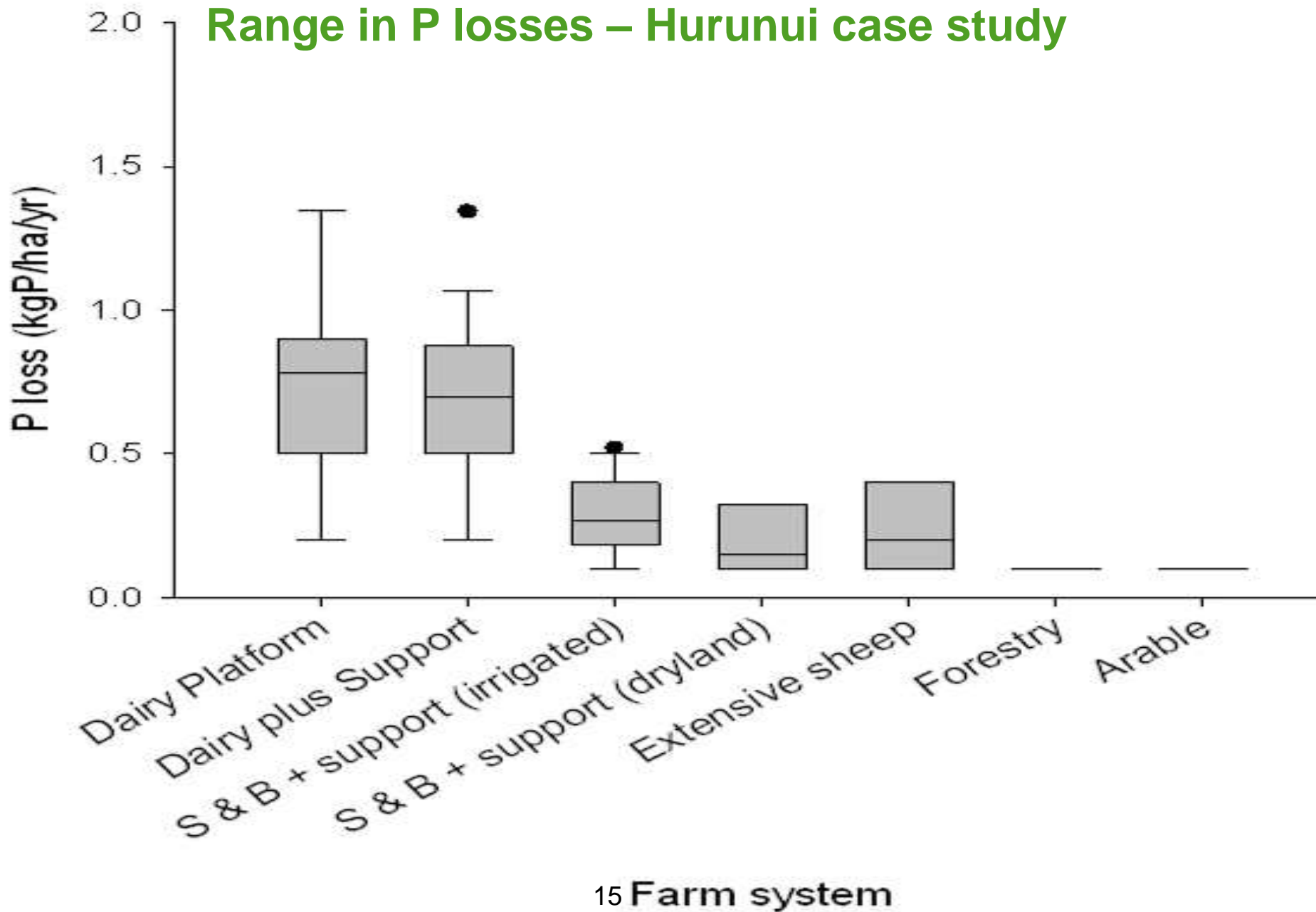
P loss (kgP/ha/yr) vs Farm system

15 Farm system

What does this mean for farmers?

"Sustainable land management is not business as usual but a whole new game"
(1991 International Conference on SLM)

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Lessons learned

- Quality and quantity

- An effective deliberation process

- Collaboration

- Agreed or accepted outcomes

- Decision on what to manage

- Adaptive management

- Certainty

- Clarity

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Closing

- Canterbury is on a journey
- Its about realising the opportunities but also addressing the challenges
- Land use and water quality is one of the key challenges
- The preferred approach provides a way forward

Questions?