

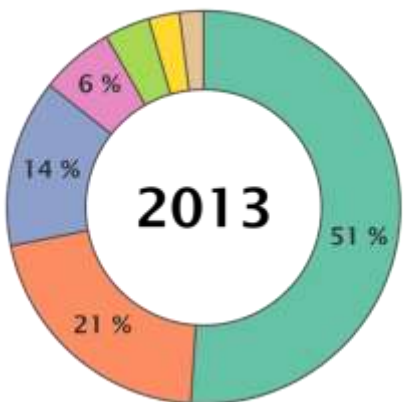
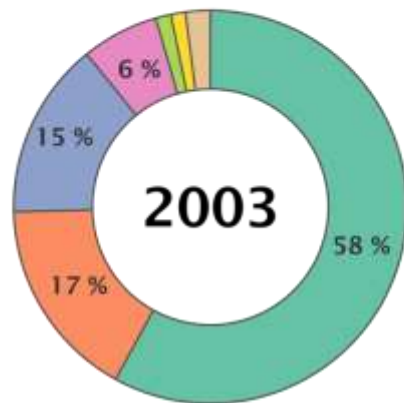
Te Waihora/ Lake Ellesmere State of the Lake 2013

Land use and land cover

Kirsty Johnston, Ian Brown

What we know

Notable changes in rural land use in the Selwyn Waihora Catchment



Notable changes in land cover in the Selwyn Waihora District

Between 1996/97 and 2007/08

Increases:

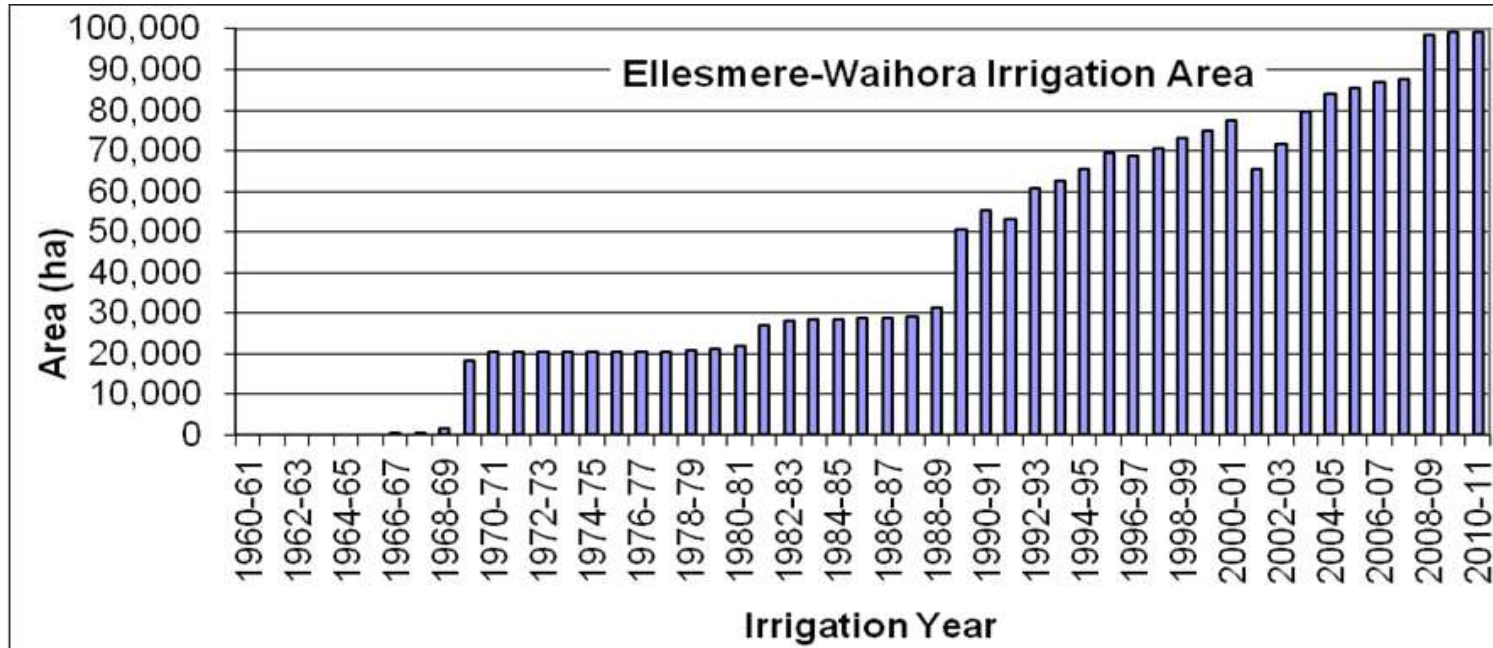
- forest harvested (1343%)
- built up area (38%)
- transport infrastructure (11%).

Decreases:

- Mixed exotic shrubland (-33%)
- Orchard, vineyard and other perennial crops (-29%).

Source: Land Cover Database1&3

What we know (cont.)



Source: Environment Canterbury 2011

Looking forward: What responses?



What responses (cont.)?

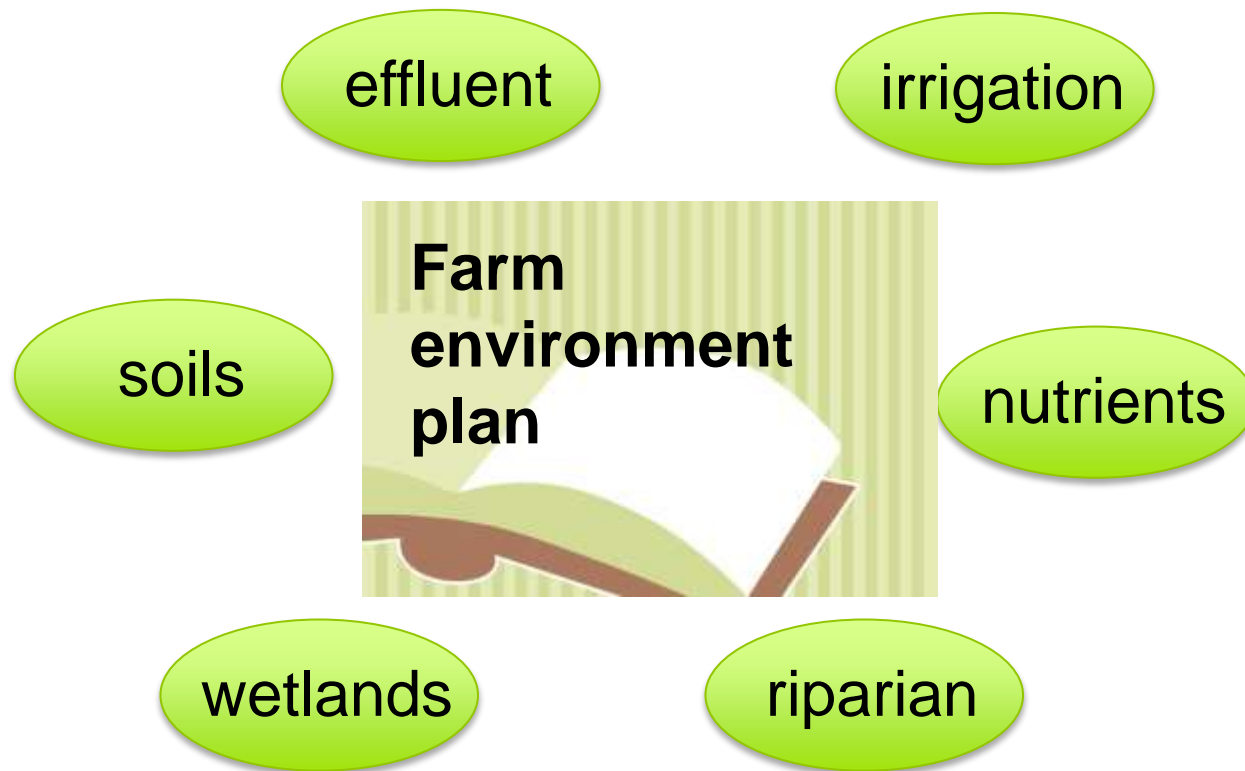


- setting water allocation limits
- setting catchment nutrient load limits
- excluding stock from waterways
- farm environmental plans
- providing for ecological flows in waterways
- establishing riparian buffer margins
- lake interventions (eg openings)
- restoring/ protecting native vegetation and biodiversity.

Land indicators: What should be measured?

Driving forces	State	Pressures	Responses
<ul style="list-style-type: none"> • population change • economic growth • commodity prices • primary production/ sectorial trends • people's values : <ul style="list-style-type: none"> <input type="checkbox"/>land <input type="checkbox"/>the lake 	<ul style="list-style-type: none"> • land cover change: <ul style="list-style-type: none"> <input type="checkbox"/>lake shore <input type="checkbox"/>catchment <input type="checkbox"/>district <input type="checkbox"/>CWMS zone 	<ul style="list-style-type: none"> • land use change: <ul style="list-style-type: none"> <input type="checkbox"/>lake shore <input type="checkbox"/>catchment <input type="checkbox"/>district <input type="checkbox"/>CWMS zone • livestock numbers • irrigated land area 	<ul style="list-style-type: none"> • farm plans • riparian buffers: <ul style="list-style-type: none"> <input type="checkbox"/>waterways <input type="checkbox"/>lake shore • land protected/ restored: <ul style="list-style-type: none"> <input type="checkbox"/>lake shore <input type="checkbox"/>tributary streams

Recording on farm progress



Answering 5 simple questions

Future reporting should answer:

1. Have we done what we said we would do?
2. Have we achieved our expected outcomes?
3. How do we know if our actions led to the outcomes observed?
4. Have we achieved the outcomes at reasonable cost?
5. Are we focussed on the right issues?

