



Landcare Research
Manaaki Whenua

Guidelines for Monitoring Land Fragmentation

Envirolink Tools Project 2013-2014



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Land Monitoring Forum Workshop
Wellington, 15 February 2013




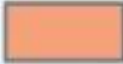


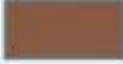



Today's Agenda

- Land Fragmentation Background: Why do we care?
- Introduction to the Envirolink Guidelines for Monitoring Land Fragmentation Tools Project
- Overview of Stage One: update on the review of current knowledge and issues
- Discussion

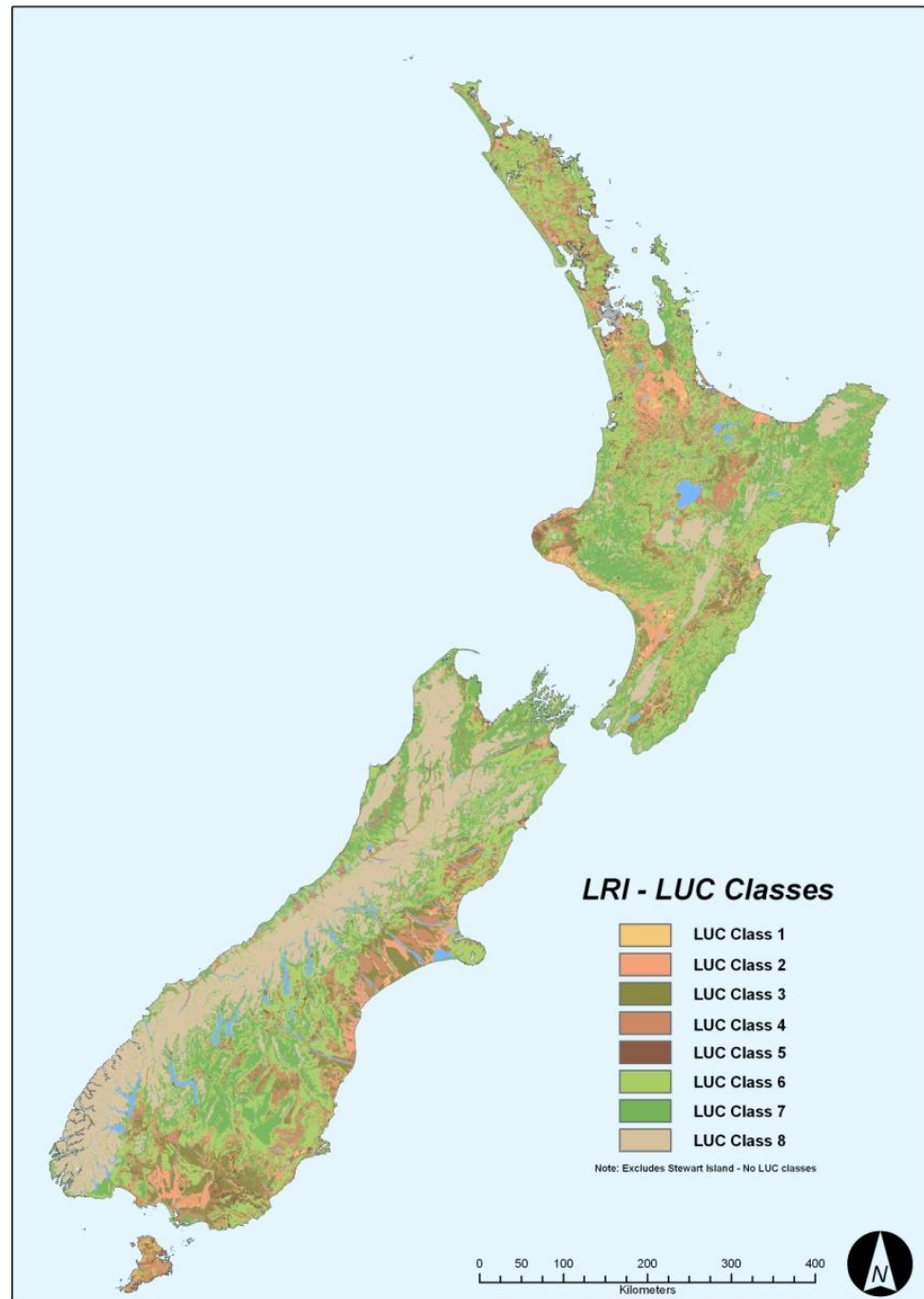
Land Fragmentation Background:

Why do we care?

- Land and soils are a finite resource both globally and within New Zealand

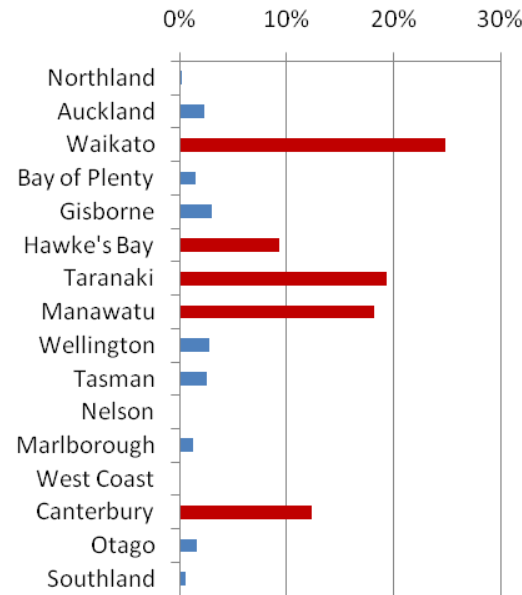
LRI Class	Area (1,000 ha)	Total Area (%)	Cumulative Area (%)
 LUC Class 1	186.91	0.7	0.7
 LUC Class 2	1,199.77	4.5	5.2
 LUC Class 3	2,438.94	9.2	14.4
 LUC Class 4	2,771.92	10.5	24.9
 LUC Class 5	209.07	0.8	25.7
 LUC Class 6	7,452.62	28.1	53.8
 LUC Class 7	5,673.07	21.4	75.2
 LUC Class 8	5,781.63	21.8	77.0
Other*	774.74	2.9	99.9

Distribution of
soil resources
across New
Zealand is
heterogeneous

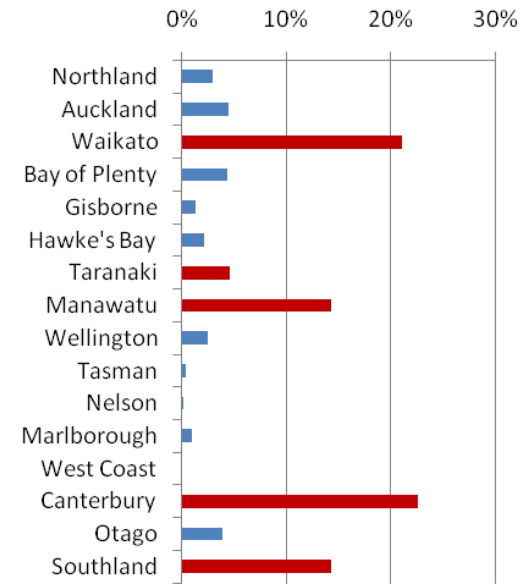


High class/quality soils occur primarily in Waikato, Taranaki, Manawatu, Canterbury, Otago, and Southland

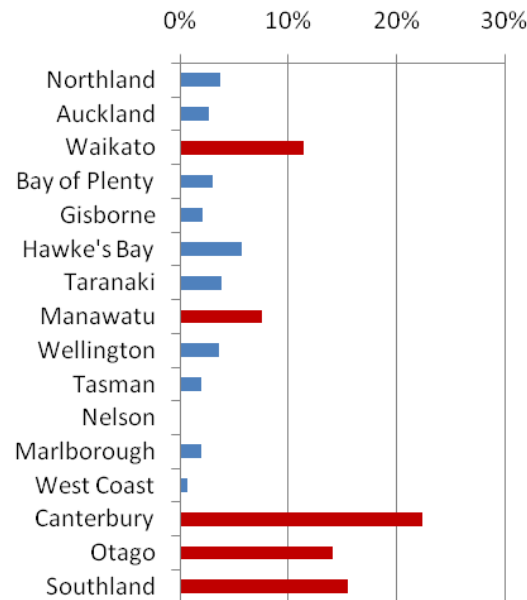
LUC 1



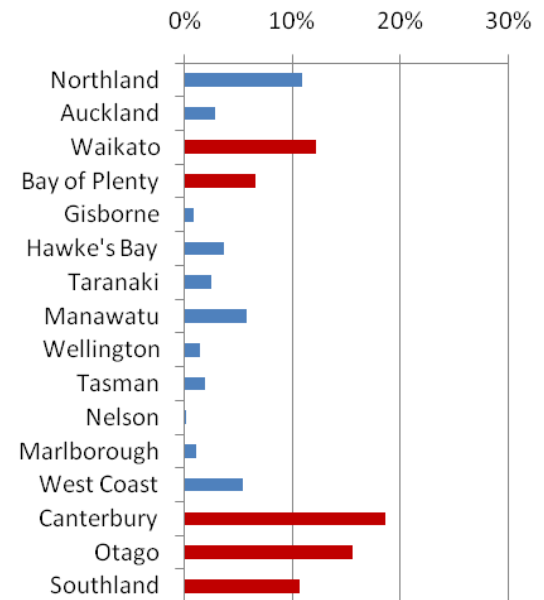
LUC 2



LUC 3



LUC 4



Land Fragmentation Background: Why do we care?

- Conversion to urban and (rural) residential land uses reduces the potential available stock of productive land

	TO (% Converted from Original Area)					
FROM	LUCAS Settlements 1990	LCDB1 Urban 1996/1997	LCDB2 Urban 2001/2002	LUCAS Settlements 2008	Agribase Lifestyle Blocks 2008	Total Agribase + LCDB2
LUC 1	2.2	1.6	2.3	2.2	3.3	5.6
LUC 2	1.5	0.9	1.7	1.6	2.2	4.0
LUC 3	0.9	0.5	1.0	0.9	1.4	2.4
LUC 4	0.5	0.3	0.7	0.5	1.0	1.7
LUC 5	0.4	0.2	0.4	0.4	0.9	1.3
LUC 6	0.2	0.1	0.2	0.2	0.5	0.7
LUC 7	0.1	0.1	0.1	0.1	0.2	0.3
LUC 8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

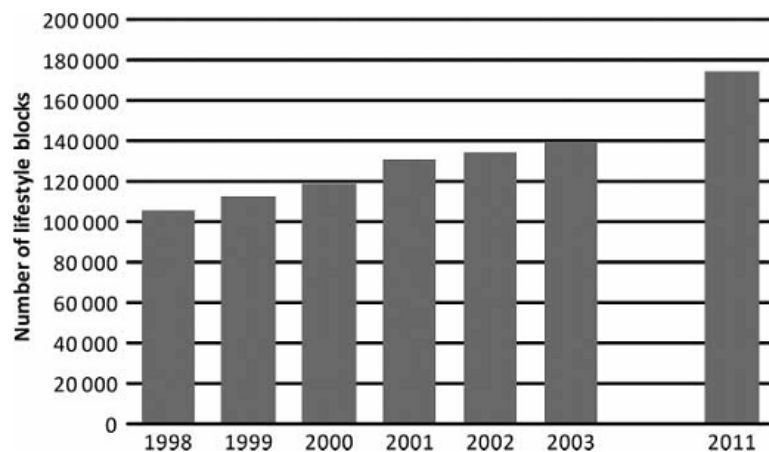


Figure 1 Number of lifestyle properties indicated by the national property valuation database (Sanson et al. 2004; Terralink).

Table 2 Areas occupied by new urban areas between 1990 and 2008, by region.

Region	Total high-class land (kha)	% High-class land occupied by new urbanisation	% New urbanisation on high-class land
Northland	27.8	0.5%	27%
Auckland	62.9	4.1%	35%
Waikato	287	0.4%	36%
Bay of Plenty	37.1	1.0%	27%
Taranaki	87.1	0.1%	18%
Manawatū/ Wanganui	148.2	0.1%	11%
Gisborne	40.6	0%	0%
Hawke's Bay	92.5	0.1%	49%
Wellington	36.3	0.4%	7%
Tasman	16	1.0%	17%
Nelson	0.3	1.11%	17%
Marlborough	37.7	0.5%	59%
West Coast	0.3	0%	0%
Canterbury	319.5	1.5%	34%
Otago	87.8	0.4%	21%
Southland	183.6	<0.1%	9%
New Zealand	1464.8	0.50%	29%

Trends in Housing Density in Meshblocks with No Urban Area or Lifestyle Blocks

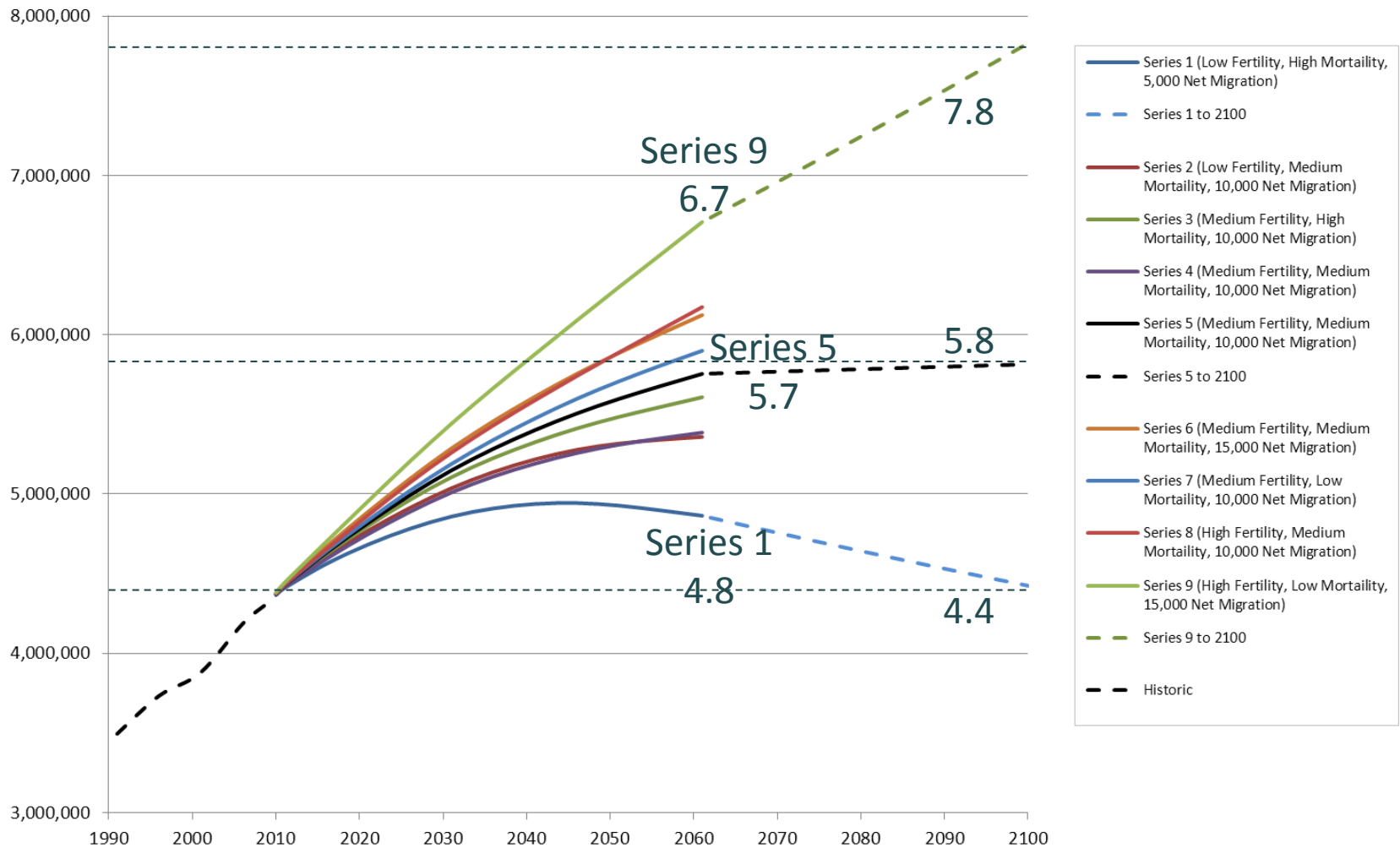
LUC Class	Year	Count of Meshblocks by Dwelling Density Class (dwellings/ha)							
		0	0.00001-0.001	0.00101-0.01	0.01001-0.1	0.10001-1.0	1.00001-5	5.00001-25	25.0001-387
1	1996	↓	→	→	↓	→	↗	↗	↗
	2001								
2	1996	↓	↘	→	↓	↗	↗	↗	↗
	2001								
3	1996	↓	→	→	↓	↗	↗	↗	↗
	2001								
4	1996	↓	↓	↓	↓	↗	↗	↗	↗
	2001								
5	1996	↓	→	→	→	→	↗	↗	↗
	2001								
6	1996	↓	↓	↓	↓	↗	↗	↗	↗
	2001								
7	1996	↓	↓	↓	↓	↗	↗	↗	↗
	2001								
8	1996	↓	→	→	↓	→	↗	↗	↗
	2001								
	2006	↓	→	→	↓	→	↗	↗	↗
	2006								

Land Fragmentation Key Drivers

- Increasing competition among different uses for the land
- Population growth drives urbanisation
- Increasing affluence drives both urban and rural residential development, especially close to major urban centres (Auckland, Hamilton, Tauranga, Palmerston North, Christchurch, Dunedin?)

NZ Population & Migration

New Zealand Population Projections to 2061 & 2100 - StatsNZ Base 2009



Issues & Threats

- Loss in the total stock of land & soils available for productive uses
- Fragmentation of remaining areas due to subdivision
- Long-term concern about New Zealand's productive capacity, including both internal food security and export capability
- Indirect effect of intensification on remaining productive lands

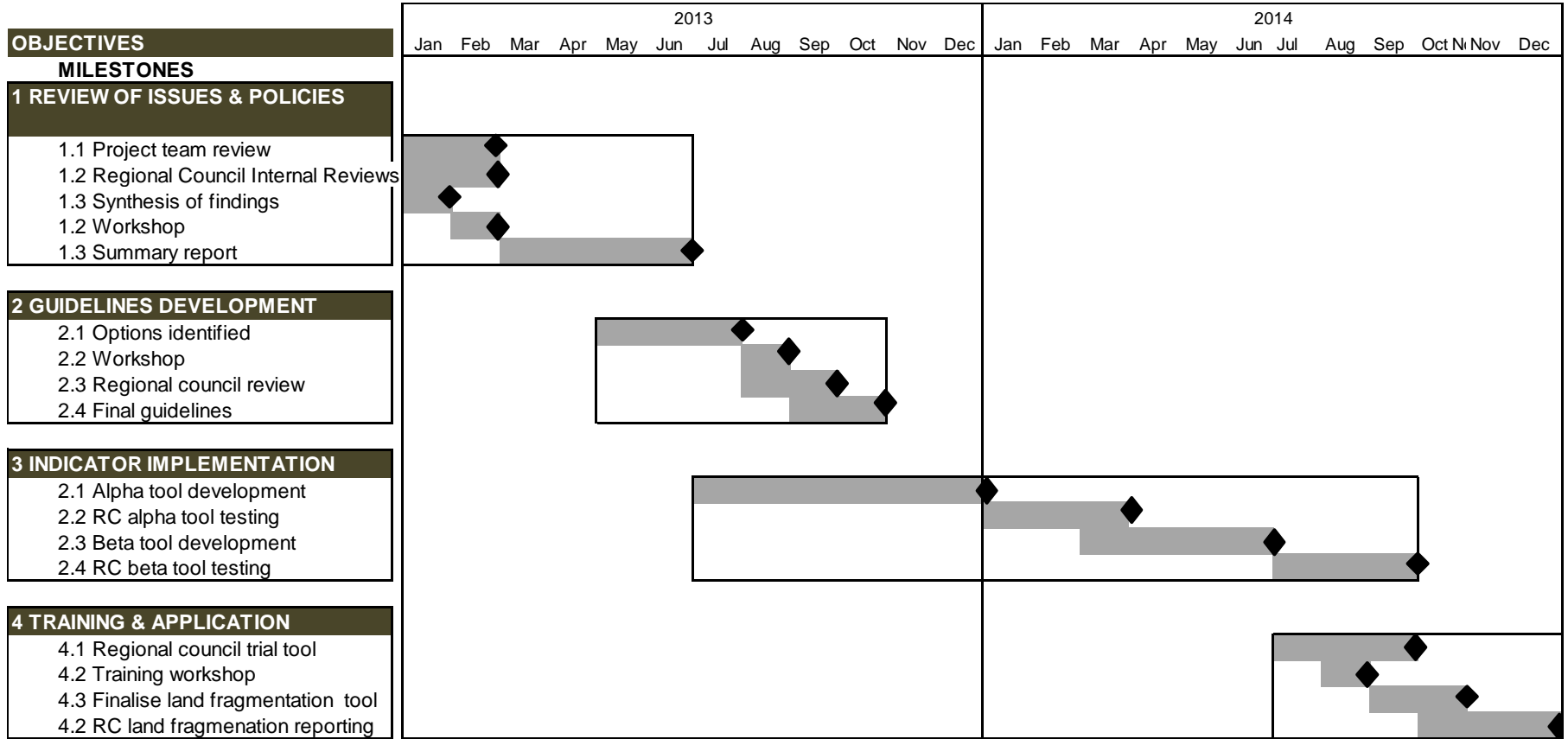
Response

- Concern regarding land fragmentation has been increasing.
- Some councils have begun developing policy and monitoring to address land fragmentation.
- Through this project Landcare Research and Regional Councils, via the Land Monitoring Forum, will co-develop consistent guidelines for measuring, monitoring and reporting on land fragmentation including guidance documents, indicators, and a tool to aid implementation and reporting

Land Fragmentation Project Overview

- Objectives
 - Develop national guidelines and methodologies for measuring land fragmentation trends over time.
 - Develop a tool to assist regional councils with processing and analysing data to monitor and report in land fragmentation trends.
 - Train regional councils in tool use and generate a set of first generation reports for each participating region.
- 2 Years (Jan 2013 – Dec 2014)
- \$210,000 + GST

Project Schedule



Objective 1:

Review of Issues and Policies

- The aim of first stage is to review the state of knowledge, policies and monitoring of land fragmentation in New Zealand.
- Knowledge Sources
 - Literature and reports
 - Additional regional and selected district/city council information
 - Land Fragmentation Questionnaire

Land Fragmentation Questionnaire: Key Themes

- Issues
- Policies, plans, rules and consenting
- Relationship between regional and district councils
- Information, data and monitoring: existing information, gaps, new research

For Discussion

- Questionnaire
- The Tool – early thoughts
- Links to other SIGs especially
 - Land Management Forum
 - Policy Forum
- Broader Engagement
 - Consider a 1-day workshop with a broader audience in conjunction with the next LMF meeting
 - Possibility for linkages to RSNZ work (Land Competition, Sustainable Carrying Capacity)