



Landcare Research
Manaaki Whenua

Guidelines for Monitoring Land Fragmentation Project - Stage 1: Review of knowledge, issues, policies, and monitoring

Georgina Hart, Daniel Rutledge, Robbie Price,
Fiona Curran-Cournane, Haydon Jones, Reece Hill, Andrew Burton

Landcare Research, Auckland Council,
Waikato Regional Council, Tasman District Council

Land Fragmentation Monitoring Workshop, 12 October 2014, Wellington



Today's presentation

- Previous studies on land fragmentation
- Why review land fragmentation?
- Review outline and methods
- Review results
- Conclusions

Previous research on land fragmentation

- Both positive and negative effects of farm subdivision (Hunter et al. 1998)
- Increasing pressure on versatile soils (MfE 2007)
- Sustainable development includes maintaining versatile soils (Statistics NZ 2008)
- 1.67%/yr rate of conversion of Class I-III land in Northland (NRC 2010)
- 2.32%/yr conversion rate Class I land in Marlborough District (Rutledge et al. 2010)

Stage one: review of land fragmentation

- Review of the state of knowledge, policies and monitoring of land fragmentation in New Zealand
- Objectives
 - State of knowledge and issues
 - Policy and planning review
 - Monitoring

Methods: Land fragmentation review

- Literature review
- Review of RPSs and plans
- Survey with all regional & unitary authorities
- Surveying territorial authorities fell outside project scope

Results: State of knowledge

- No single common term or definition
 - Key concern – loss of productive capacity of land (essentially permanent)
 - Relative importance as a regional issue varies widely
 - Most regions have local “hotspots”
 - Key driver - demand for lifestyle block living, and financial gains
-

Results: Definition

Formal Definitions of Land Fragmentation

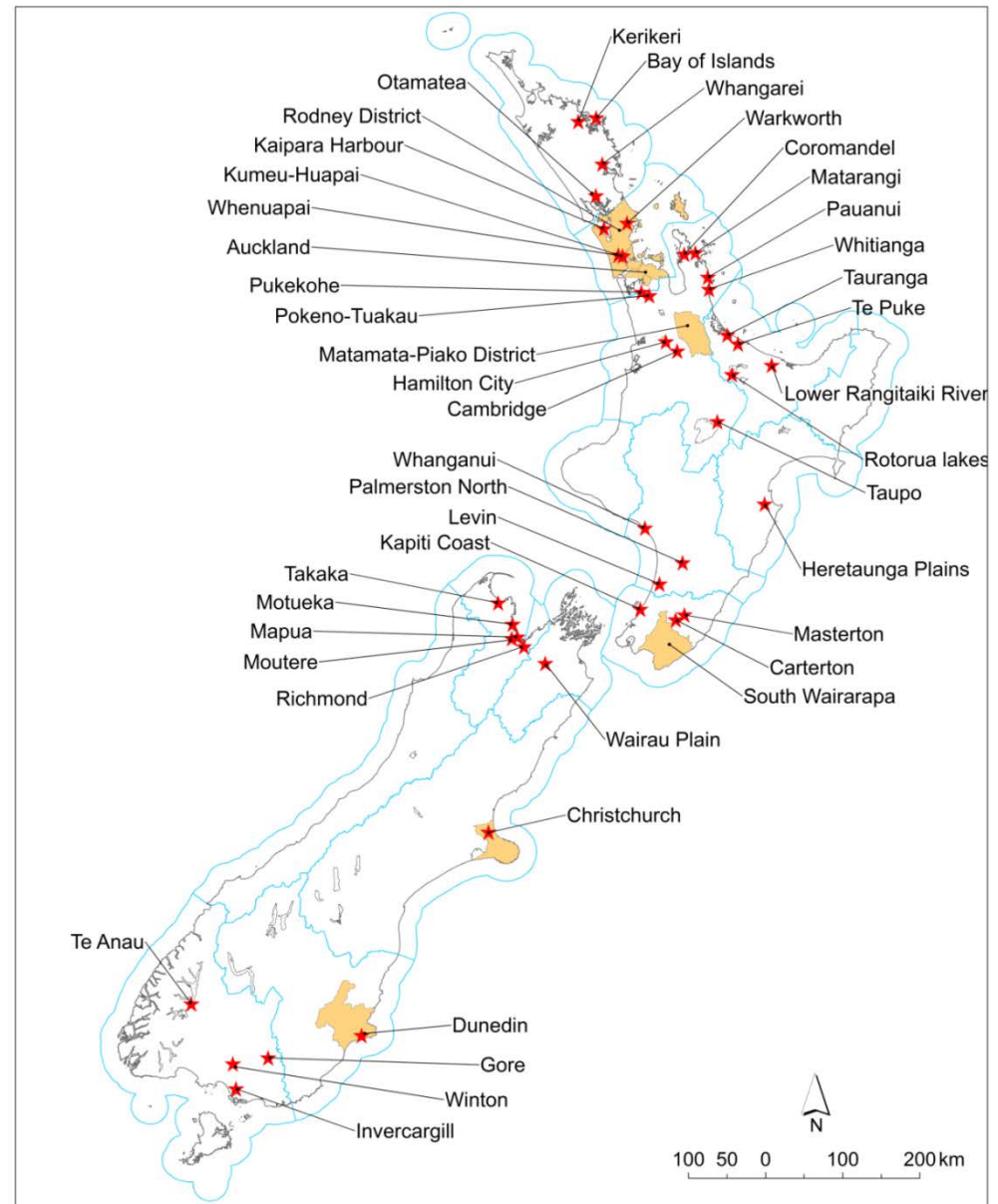
Auckland Council	the on-going subdivision of rural land that leads to increasingly smaller land parcels
Bay of Plenty Regional Council	development on land that is categorised as Land Use Capability (LUC) class I, II, or III
Horizons Regional Council	subdivision on land categorised as LUC class I and II
Tasman District Council	...any increase over time in the number of separately developed properties in any area, through successive land subdivision to form new land parcels and associated land development activities such as buildings and roads

Results: Key Issues

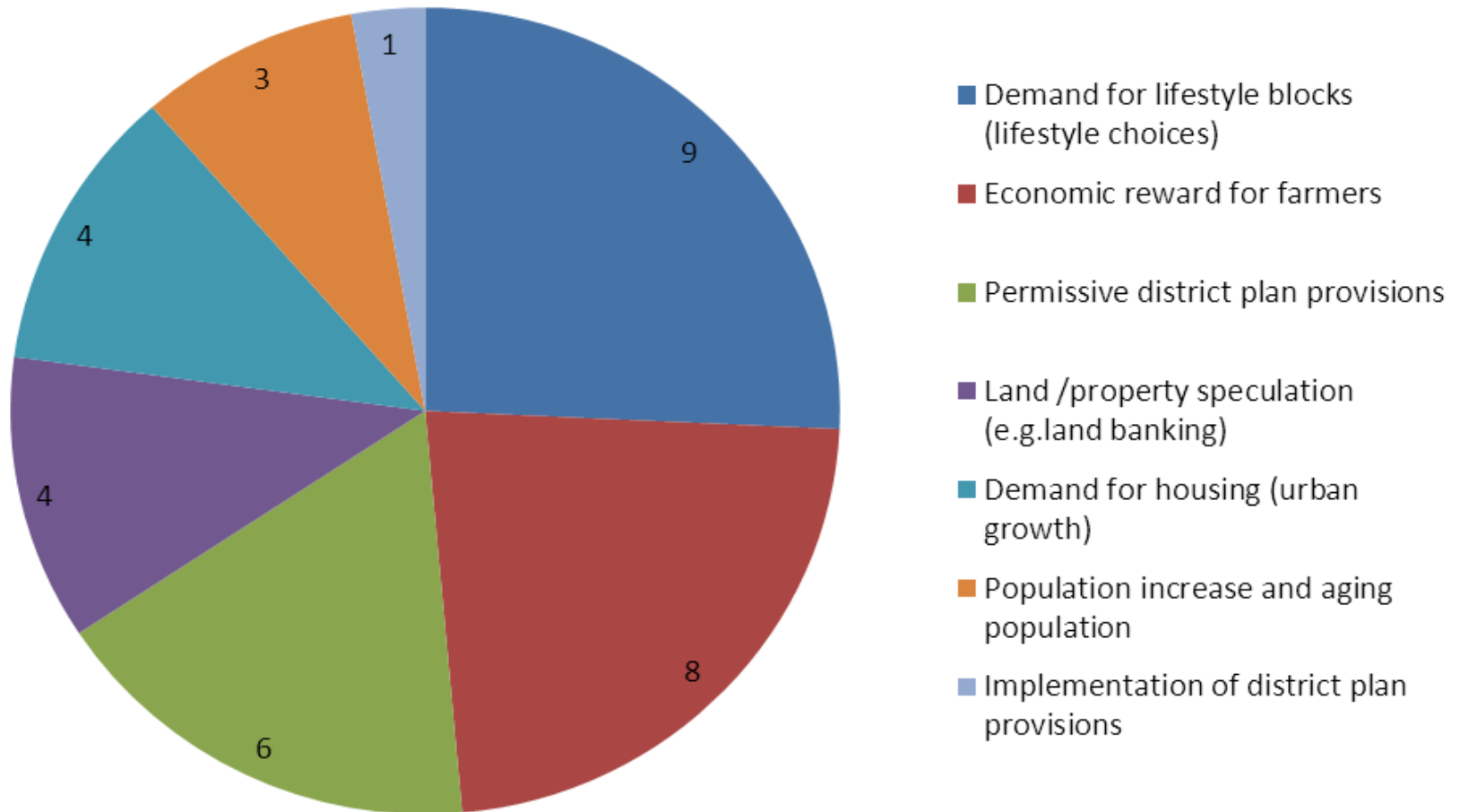
Councils most frequently identified these issues

- **Loss of land for production**
 - **Reverse sensitivity**
 - **Social and economic impacts of a changing rural landscape**
 - **Infrastructure provision**
 - **Decreasing options for productive land use**
 - **Increased water supply/allocation pressure**
 - **Regional sustainability**
 - **Risk to local and global food production**
 - **Increased environmental pressure on land that remains in productive use**
 - **Increased pressure on water quality**
 - **Land contamination problems**
 - **Increasing natural hazard risk**
-

Results: Hot-spots



Results: Drivers



Results: Policy and planning

- 12 councils have provisions in their operative or proposed RPS
 - RPS issues and objectives are broadly consistent around the country; policies and methods vary
 - Considerable progression from first to second generation RPSs
 - District Plans and their implementation are key
 - Unitary authorities reported easier and better internal relationships
-

Results: Policy and planning

Example: Waikato Regional Policy Statement

- Transitioning from operative RPS 2000 to 2nd generation RPS, operative RPS 2000 does not address land fragmentation
- Proposed RPS sections: Built Environment, Soils, and Development Principles

Aims:

- limit development on high class soils
- limit impermeable surface on high class soils
- promote high class soils remain in production
- and increase productive use of high class soils currently not in that use
- enable urban and rural development in areas away from high class soils

Results: Land Fragmentation Monitoring

Key Findings

Regular Monitoring & Reporting

Auckland
Waikato
Marlborough

Ad hoc Reporting

Horizons
Wellington

Future Commitment

Hawke's Bay Regional Council
Tasman District Council

Monitoring Methods

- Methods not consistent
- Tends to track some aspect of subdivision

Monitoring Data Needed

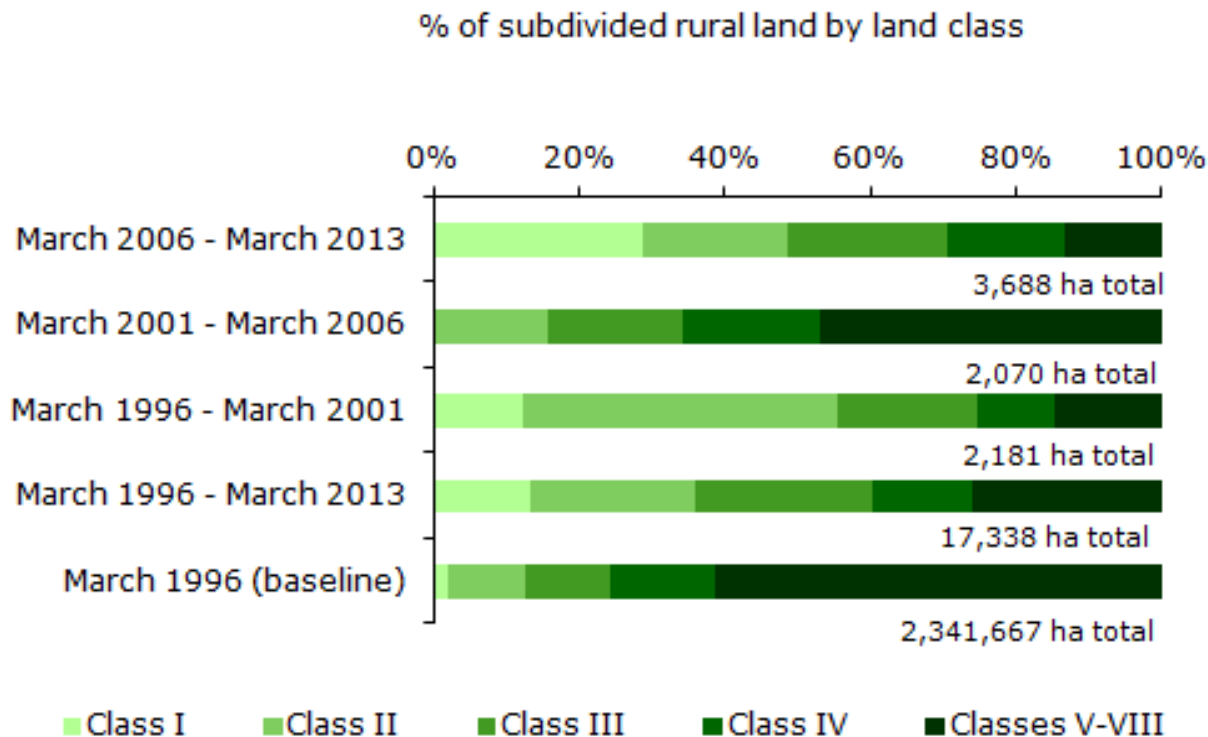
- Aerial photography
- Up-to-date land cover & use
- Consistent definitions
- Information sharing

Results: Land Fragmentation Monitoring Indicators

Land fragmentation monitoring: indicators

Auckland Council	Number of land parcels by size Number of land parcels close to a sensitive environment
Waikato Regional Council	Area of rural land subdivided by LUC class
Marlborough District Council	Change in parcel size and number
Hamilton City Council	Number of new titles issued
Matamata-Piako District Council	Number of residential lots created as a result of subdivision Number of lots between 2500m ² – 10000m ² Applications received/granted to subdivide LUC class I, II, III land in lots <8 ha Average lot size for rural subdivision LUC I, II, III Number of consents declined for subdivision on LUC I, II, III

Monitoring example: Waikato Regional Council



Source: Waikato Regional Council,

<http://www.waikatoregion.govt.nz/Environment/Environmental-information/Environmental-indicators/Land-and-soil/Land/rural-subdivision-report-card/>

Monitoring example: Waikato Regional Council

	Class I	Class II	Class III	Class IV	Classes V - VIII
1991 (hectares)	44,855	249,378	275,892	337,038	1,434,504
% of the Waikato region	1.83	10.18	11.26	13.76	58.57
Subdivision pressure (average hectares per year)	42.25	176.33	122.02	66.4	104.71
2006 (hectares)	44,432	247,615	274,672	336,374	1,433,457
Subdivision pressure (average hectares per year)	151.69	104.85	116.32	83.78	70.18
2013 (hectares)	44,280	249,207	275,700	336,876	1,434,240

Monitoring example: Auckland Council

TABLE 7 Number of land parcels located close to important ecological features between 1998 and 2008. (Source: ARC).

Year	Parcels above aquifers	Parcels within 200m of native vegetation	Parcels within 1km of the coast	Parcels within 200m of wetland
1998	110,570	145,538	219,455	4,732
2001	117,427	152,174	229,058	4,765
2004	122,456	157,566	236,839	4,749
2008	129,856	166,014	247,280	4,797

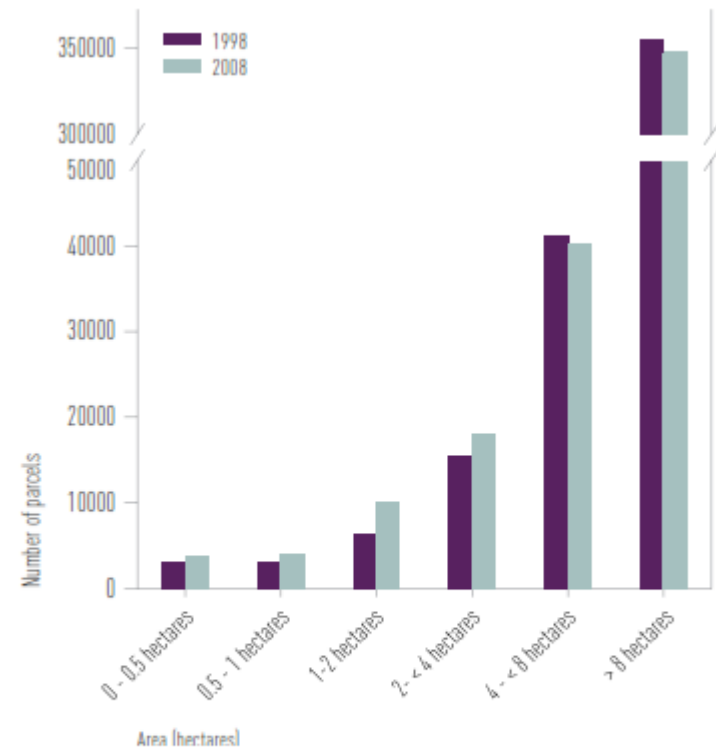


FIGURE 6 Number of land parcels by size (hectares), 1998 and 2008. (Source: Landcare Research and ARC).

Source: Auckland Regional Council: State of Environment Report 2010

Region	Regional Importance	Existing Policies		Plan Rules	Monitoring
		1st Gen RPS	2nd Gen RPS		
Northland	High	✓	✓	-	-
Auckland	High	✓	✓	RPS 1999: No Proposed Unitary Plan 2013: ✓	✓
Waikato	High	-	✓	-	✓
Bay of Plenty	High	✓	✓	-	-
Gisborne	High	✓	n.a.	-	-
Hawke's Bay	Low (local)	-	✓	-	-
Taranaki	Low	-	-	-	-
Manawatu-Whanganui (Horizons)	Low	✓	✓	-	Ad hoc
Wellington	Low	✓	✓	-	Ad hoc
Nelson	Low	-	n.a.	-	-
Marlborough	Low (local)	✓	n.a.	✓	✓
West Coast	Low	-	n.a.	-	-
Tasman	High	✓	n.a.	✓	-
Canterbury	Low	✓	✓	-	-
Otago	Medium	-	n.a.	-	-
Southland	Low	-	✓	-	-

Take away points

- Lack of common language around land fragmentation
- Identified as an issue by councils and incorporated into RPS
- Very few councils monitoring land fragmentation
- Broad call for consistent guidance on land fragmentation, and data/information needs for management