



Landcare Research
Manaaki Whenua

Guidelines for Monitoring Land Fragmentation

Envirolink Tools Project 2013-2014
Workshop #3

Daniel Rutledge & Robbie Price
Land Monitoring Forum Meeting
Wellington, 14 February 2014



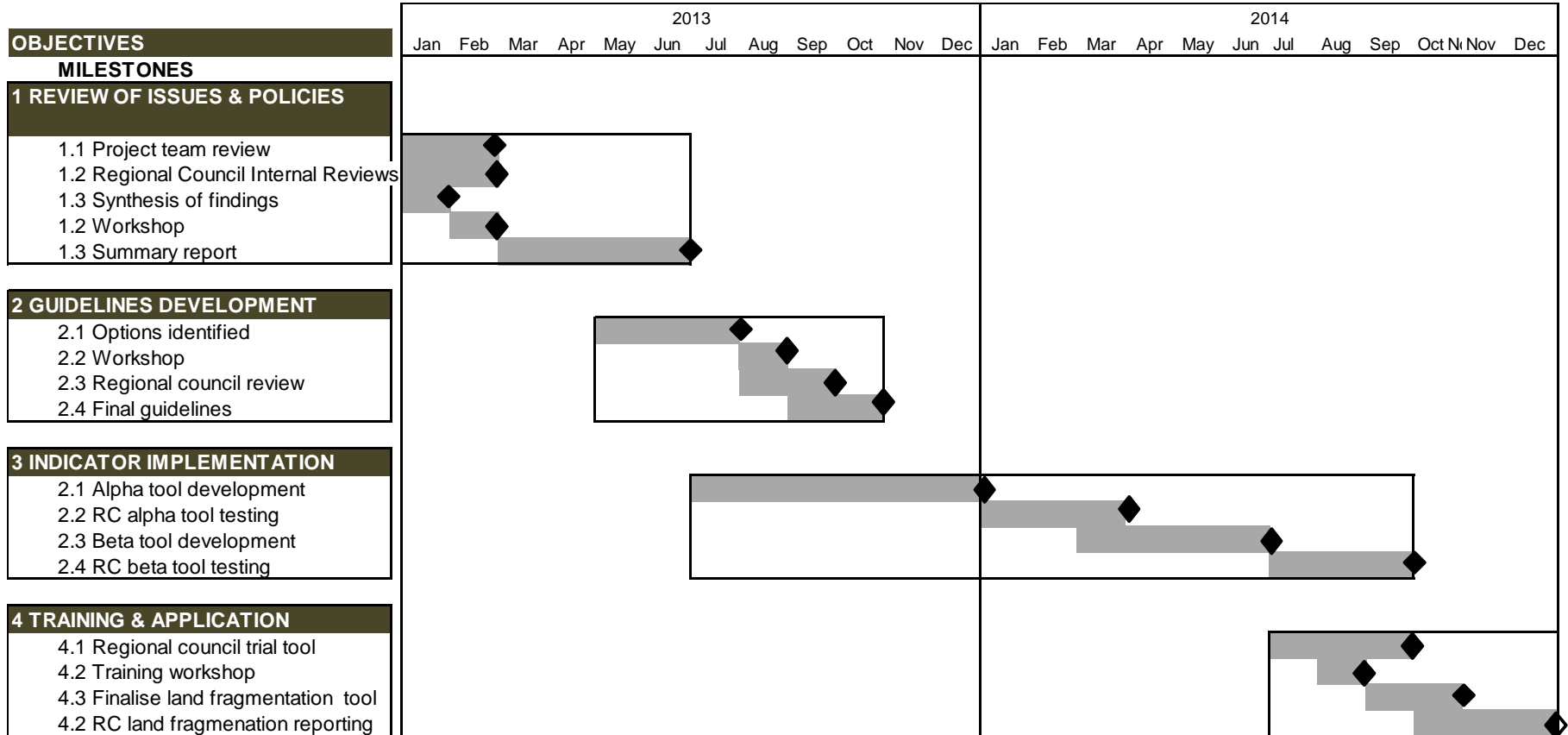
Today's Agenda

- Project Update (5 Minutes)
- Policy Report Synopsis (10 Minutes)
- Considerations in Guidelines & Indicator Development to Date (15 Minutes)
- Exercise: Initial Design of Land Fragmentation Monitoring Report (remainder of time)

Project Update

- 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 on 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

Project Schedule



Project Update

- Policy Report complete following substantial internal and external review
- Guideline & indicator development underway
- Steering Group formed (Reece, Haydon, Andrew, Fiona, Craig Fredrickson)

Policy Report Synopsis

| REGION | REGIONAL IMPORTANCE | EXISTING POLICIES | | PLAN RULES | MONITORING |
|----------------------------------|--|---------------------------|--|--|------------------|
| | | 1st Generation RPS | 2nd Generation RPS | | |
| Northland | High | Yes Operative RPS 1999 | Yes Proposed RPS 2013 | No | No |
| Auckland | High | Yes Operative RPS1999 | Yes Proposed Unitary Plan 2013 | Operative RPS 1999: No Proposed Unitary Plan 2013: Yes Rural Zones | Yes |
| Waikato | High | No Operative RPS 2000 | Yes Proposed RPS 2013 | No | Yes |
| Bay of Plenty | High | Yes Operative RPS 1999 | Yes Proposed RPS 2010 | No | No |
| Gisborne | High | Yes Operative RPS 2002 | - | No | No |
| Hawke's Bay | Locally important – Heretaunga Plains | No Operative RPS 1995 | Yes Operative RPS 2006 (RPS Change 4 2011) | No | No |
| Taranaki | Low | No Operative RPS 1994 | No Operative RPS 2009 | No | No |
| Manawatu-Whanganui (Horizons) | Low | Yes Operative RPS 1998 | Yes Proposed One Plan 2010 | No | Ad hoc reporting |
| Wellington | Low | Yes Operative RPS 1995 | Yes Operative RPS 2013 | No | Ad hoc reporting |
| Nelson | Low | No Operative RPS 1995 | - | No | No |
| Marlborough | Locally important – Wairau Plain | Yes Operative RPS 1995 | - | Yes Rural Zones | Yes |
| West Coast | Low | No Operative RPS 2000 | - | No | No |
| Tasman | High | Yes Operative RPS 2001 | - | Yes Rural Zones | No |
| Canterbury | Low | Yes Operative RPS 1998 | Yes Operative RPS 2013 | No | No |
| Otago | Medium | No Operative RPS 1998 | - | No | No |
| Southland | Low | No Operative RPS 1997 | Yes Proposed RPS 2012 | No | No |

Policy Report Synopsis

| COUNCIL | INDICATOR | DATA SOURCES |
|---------------------------------|---|---|
| Auckland Council | Change in the number of titles | LINZ Cadastral Database |
| | Change in the number of vacant titles outside the existing Rural-Urban Boundary | LINZ Cadastral Database |
| Hamilton City Council | Number of new titles issued | Not specified |
| Marlborough District Council | Change in parcel size and number | Council consents database (geo-referenced) |
| Matamata-Piako District Council | Number of residential lots created as a result of subdivision | Council state of environment indicators database |
| | Number of lots between 2500m ² and 10 000m ² in the residential, rural residential, and rural zones | Council state of environment indicators database |
| | Applications received/granted to subdivide LUC Class I, II, and III land in lots < 8 hectares of size | Council state of environment indicators database |
| | Area of LUC class I, II and III land removed from the Rural zone through District Plan changes | Council state of environment indicators database |
| | Average lot size for rural subdivision on class I, II and III land | Council state of environment indicators database |
| | Number of consent applications declined for subdivision on Class I, II and III land | Council state of environment indicators database |
| South Waikato District Council | Number of new lots approved for development | Not specified |
| Waikato Regional Council | Amount and type of low-density rural land subdivided into smaller blocks (Low density = land with 1 or fewer houses per 4 hectares) | Statistics New Zealand Census of Population and Dwellings Meshblock Database Land Resource Inventory |

Considerations in Guidelines & Indicator Development

- Definitions
- Council Monitoring Needs
- Tool Development

Need for Several Key Definitions

- Versatile/Elite/High Class/High Quality Soils and/or Land
- Cadastral
- Land Fragmentation

Versatile/Elite/High Class Soils and/or Land

- **Versatile Soils**

“A versatile soil capable of many uses needs to be deep, fine-textured, moist, free-draining, loamy, and have an organic-rich topsoil. These properties best enable plant roots to take up nutrients, water and oxygen, and get enough support for rapid growth. Fertility is highest in soils young enough not to have been leached and old enough to have built up organic matter. They are also derived from parent rocks that are well supplied with essential nutrients” (Hewitt 2009 What makes a good soil? Te Ara Encyclopedia of New Zealand)

- **Elite Land**

“Land classified as Land use capability class 1 (LUC 1). This land is the most highly versatile and productive land in Auckland. It is: well-drained, friable, and has well-structured soils, flat or gently undulating, and capable of continuous cultivation. Includes: 1) LUC1 land as mapped by the New Zealand Land Resource Inventory (NZLRI), 2) other lands identified as LUC Class 1 by more detailed site mapping, 3) land with other unique location or climatic features, such as the frost free slopes of Bombay Hill, Bombay clay loam, Patumahoe clay loam, Patumahoe sandy clay loam” (Proposed Auckland Unitary Plan, Part 4: Definitions)

- **High Class Soils**

“Those soils on LUC classes I and II (excluding peat soils) and soils LUC class IIIe1 and IIIe5 classified as Allophanic Soils using the NZ soil classification.” (Waikato Regional Council, Proposed RPS 2010)



Cadastral Definitions

| Term | Definition |
|----------------------|--|
| Certificate of Title | Records the legal owners of land and all dealings with the land, like transfers of ownership and mortgages, leases etc, registered under the Land Transfer Act 1952. All certificates of title were converted into 'computer registers' between 1999 and 2002 (Landonline titles conversion), although the terms 'certificate of title' and 'title' are still commonly used. These may also be referred to as 'documents' or 'instruments'. (Land Information New Zealand, LINZ glossary) |
| Deposited Plan | <p>Sometimes also known as a 'Title Plan', these are plans recording land transfer subdivisions that have been deposited by the Registrar General of Lands. They are identified by a number and a DP prefix such as 'DP 12345'. Most modern land transfers are identified by their position on a specific deposited plan, eg Lot 123 DP 4567.</p> <p>This is the plan deposited when the title was created. This could be a simple plan of the property's boundaries, area and dimensions, a detailed survey plan or a combination of both. (LINZ glossary, http://www.linz.govt.nz/survey-titles/glossary)</p> |
| Lot | Commonly used to describe a parcel of land, specifically on a Deposited Plan. Can also be known as a site, section or property (pers comm. Craig Fredrickson, Land Use Analyst, Auckland Council). |
| Title | The land contained on a registered Certificate of Title. A title may contain one, or more parcels. There are numerous types of title, which include: Freehold Titles, Leasehold Titles, Unit Titles and Cross Leases. (pers comm. Craig Fredrickson, Land Use Analyst, Auckland Council). |
| Parcel | <i>A cadastral polygon with a legal description (can also been known as a property, section or lot).</i> (pers comm. Craig Fredrickson, Land Use Analyst, Auckland Council). |

Land Fragmentation: Proposed Definition

Land fragmentation is any type of division of a land resource that changes the current or future range of possible activities and thereby alters the actual or potential uses of that land resource across a range of scales. Changes may occur directly to the land resource of interest or indirectly from changes to other land resources than the one of interest.

Land fragmentation has four key fundamental and interacting characteristics that can change individually or in combination:

1. Cover – Physical changes (e.g., infrastructure, vegetation, hydrology, etc.) that affect the range of possible activities and therefore uses of the land resource.
2. Title – Changes to the spatial distribution of (property) rights to the land resource, typically represented by subdivision in which a single parcel or lot is divided into two or more smaller parcels or lots.
3. Rights – Changes to the allowable range of activities in connection with the land resource.
4. Ownership – Changes in the person or people who have rights to the land resource.

Put another way: who is allowed to do what, where given both biophysical and socioeconomic constraints?

Council Monitoring Needs in Perceived Order of Priority

- Land supply for primary production
- Reverse sensitivity
- Other effects
 - Water quality
 - Erosion
 - Biodiversity
 - Others?

Tool Development

- Based on the experience with the Land Use Database Project and internal IT issues, the Steering Group has advised us not to aim to develop a software tool and instead concentrate on developing guidelines, methods and protocols to follow.

Exercise:

Initial Design of Land Fragmentation
Monitoring Report