

Land Resource Inventory Mapping

Introduction

Land Resource Inventory mapping plays a vital role in resource management in New Zealand. It assists in the planning for future land use, particularly agriculture, because it assesses the land resource and its potential for sustainable agricultural production.

Land Resource Inventory mapping is used by the Bay of Plenty Regional Council to assess the physical characteristics of the land in managing a variety of land management issues.

The Land Resource Inventory worksheets (see below) provide two sets of data:

- i) Land Resource Inventory (LRI) - inventory of five physical factors (rock, soil, slope, erosion type and severity, and vegetation) which is the basis of assessing land resources.
- ii) Land Use Capability classification (LUC) - the arrangement of land according to its capability for permanent sustained developing.

Land Resource Inventory Data

The Land Resource Inventory is recorded in the form of a code for each mapped unit:

Rock Type - Soil Unit - Slope Group
Erosion Severity and Type - Vegetation Cover

The code is enclosed by a boundary (polygon), which indicates that the information mapped is similar throughout that area (within the limitations imposed by the scale of mapping). A new inventory area is mapped where any one factor changes. Each code is explained in an attached legend. These factors determine the Land Use Capability (LUC) of each map unit.

Rock Type

The rock type directly influences the soil type, surface stability and land use of any site.

The most frequent rock types in Bay of Plenty are ignimbrite, rhyolite, greywacke and Taupo pumice formations. In most cases these rocks are overlain by volcanic ash either from the Taupo sub group or the Rotorua sub group (ashes older than Taupo pumice).

Soil

Soil information is based on the New Zealand Soil Bureau soil survey's. Typical soils listed for the Bay of Plenty Region are listed in the Land Use Capability Extended Legend. Soil descriptions and interpretation can be gained from a number of sources (appropriate soil maps and associated reports) which provide details about the properties of a soil, its potential uses and productive potential.

The three most dominant soils in the region are the Yellow-brown pumice soils, Steepland soils and Recent soils from volcanic ash, these make up a total of 69% of the region's soils.

Slope

Slope is measured, or estimated visually in the field and/or from aerial photographs. The dominant slope is recorded for each map unit as one of seven groups, each of which have different management characteristics.

48% of our land in the Bay of Plenty has slopes between 21-35° (moderately steep to steep)

Erosion

Erosion severity and type is assessed by field work or from aerial photographs, aided by the knowledge of rock, soil and climate factors which directly affect the erosion and land use patterns. The severity of the erosion is recorded as either a percentage of bare ground (eg. wind or sheet erosion) or according to a scale (eg. soil slip and gully erosion – negligible to extreme).

Erosion types in Bay of Plenty include: Sheet, soil slip, gully erosion and stream bank erosion.

Vegetation

Vegetative cover is essentially derived from fieldwork as well as aerial photographs, published maps and descriptions for forest areas. Vegetative cover for each map unit is recorded as one of five major groups: grassland, cropland, scrubland, forest, and miscellaneous weeds, herbs etc.



Example of a Land Resource Inventory map

Land Use Capability Classification

Land Use Capability classification is described as a “systematic arrangement of different kinds of land according to those properties that determine its capacity for permanent sustained production”. The word capacity is used in the sense of “suitability for productive use” after taking into account the land’s physical limitations, management requirements and soil conservation needs. The Land Use Capability classification is based on the physical information in the Land Resource Inventory, supplemented with information on climate and the effects of past land use. There are three components associated with the Land Use Capability classification - a class, subclass and unit.

Land Use Capability Class

There are eight Land Use Capability classes. Simply, land classes I to IV are suitable for pastoral, arable and forestry use while land Classes V to VII are suitable for pastoral or forestry use. Class VIII land is suitable for protection purposes only.

Land Use Capability subclass

The capability subclass provides for a grouping of units with the same kind of limitation or hazard. The four general limitations recognised are erodibility (e), soils (s), wetness (w), soil (s), and climate (c).

Land Use Capability unit

At the most detailed level, the third category, the Land Use Capability unit, groups those inventory units which responds similarly to the same management, have about the same potential yield, and require similar conservation measures.

Farm Mapping

Sustainable land use options for a property are assessed through combining extensive fieldwork, stereoscopic analysis of aerial photographs, and the use of the latest publicised information available relating to soil and geology in the area. From the field work, each map unit is given a Land Use Capability class. Farm plans can then be prepared detailing the potential and recommended land use, the physical limitations, management requirements, and soil conservation requirements.

Land Resource Mapping

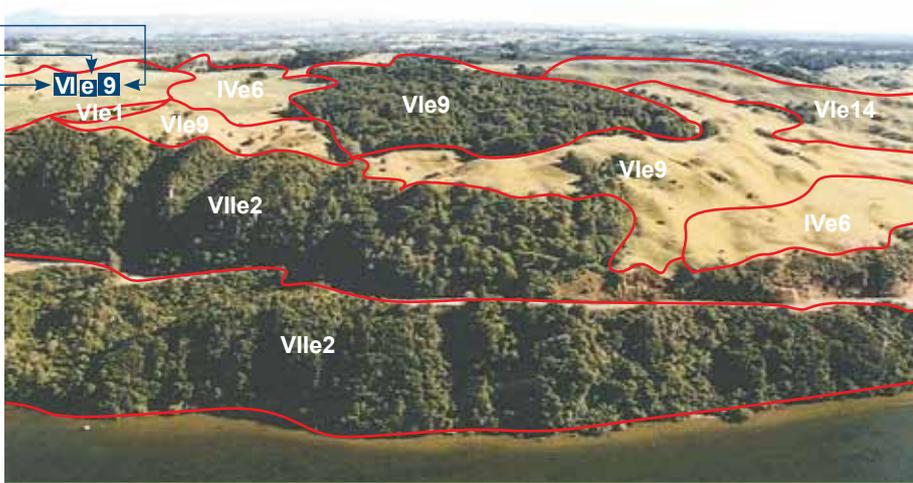
The system of mapping natural and physical resources already described, is undertaken in Bay of Plenty by trained, professional officers employed by the Bay of Plenty Regional Council to provide a service to landowners.

It is only possible to consider sustainable land use and management options when there is a complete understanding of the land’s capability to sustain a particular level of productive use.

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- **VI = class.** It tells you the broad degree of limitation to use.
- **e = subclass.** It tells you the dominant kind of limitation to use.
- **9 = unit.** The unit groups land with closely similar land use potential.

Each land class can be defined further according to limitations to use and suitable management techniques.



Example of land use capability classification



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