

Maori Perspectives Of The Environment

A Review of Spatial Databases

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Glossary

CFRT	Crown Forestry Rental Trust
DCDB	Digital Cadastral Database
GIS	Geographic Information System
GPS	Global Positioning System
LINZ	Land Information New Zealand
TPK	Te Puni Kokiri
RDBMS	Relational Database Management System
RMC	Regional Management Committee
RUAMS	Resource Use Application Management System

1 Introduction

Maori perceive that their value systems have been marginalised and their role as kaitiaki has been diminished. Little weight has been given to Maori perspectives and customs for conservation matters, or for the management of natural resources (Awatere, Ihaka, and Harrison, 2000). There is a growing realisation by local government that understanding Maori views and beliefs are essential for resource management decisions. There is an inadequacy of Maori values information currently utilised by resource management agencies in New Zealand. This has resulted in very low participation rates by iwi and hapu in local government resource management processes (Blackhurst, Day, Warren, Ericksen, Crawford, Chapman, Jefferies, Laurian, Berke, and Mason, 2003; Whangaparita, Awatere, and Nikora, 2003). Solutions for incorporating Maori values into iwi and local government decision-making processes are required.

Certain caveats need to be adhered to before Maori values information can be effectively included in the resource management process. These requirements include: access and control of intellectual property, preventing the misuse of Maori values in culturally inappropriate ways and enabling iwi and hapu to participate fully in the development of the information tools.

Relational databases and corporate applications are powerful tools for the management of information. A relational database management system (RDBMS) stores data in many related tables. Analysts can make complex queries from one or more related tables. One of the main benefits of designing a relational database is the reduction of duplicate data entry. Another benefit is the reduction in the size of tables making it easier to manage large amounts of data (Prague and Irwin, 1999). Relational databases that are used on a corporate scale can also have several users concurrently using the database. In comparison, a Microsoft Access database can only support up to two users editing and adding data on the same database.

Environment Waikato employs a relational corporate database system for everyday operations. Environment Waikato's primary datasets are stored in relational tables on an Oracle Application Server. These datasets are also linked to a number of spatial databases or contain spatial reference data (such as geographic co-ordinates for resource consent sites) within them. Figure 1 provides a diagrammatic representation of some of the primary datasets.

Spatial datasets are an essential component of Environment Waikato's GIS. The term GIS is generally defined as:

Geographic Information System - A system of hardware, software, data, people, organisations and institutional arrangements for collecting, storing, analysing and disseminating information about areas of the earth (Dueker and Kjerne, 1989).

The spatial datasets managed by Environment Waikato are used for diverse resource management decisions that have important consequences for iwi and hapu. Improving the way key spatial datasets are managed can assist Environment Waikato to work more productively with iwi and hapu. This is essential for effective resource management. Providing analysts with an up-to-date geographic representation of a number of Maori organisation's rohe, can minimise the risk Local Governments face in failing to consult with the relevant iwi representatives.

1.1 Project Scope

As part of our broader brief to gather, summarise, analyse and distribute information held by Environment Waikato (EW) on Maori and the environment, we identified and analysed a number of spatial datasets managed by the Information Resource Group. This report has been prepared to contribute towards developing a resource for Environment Waikato's Strategic Plan Review Teams.

1.2 Objective

The aim of this review is to identify information gaps within Environment Waikato's spatial databases with respect to Maori values information. This research has identified a number of key datasets that are relevant to the current research including: RUAMS (Resource Use Application Management System), Contacts Linking GIS Layer, Digital Cadastral Database GIS Layer and Archaeological Sites GIS Layer. A description of these databases is provided in section 2.

1.3 Method

Informal discussions were held with three staff from Environment Waikato. Mark Williams (Environmental Officer) and Ruth Sparling (Information Systems Analyst) from the Resource Information Group were interviewed. The discussion with Mark Williams focused on identifying spatial databases within Environment Waikato that were relevant for achieving the objective of the current research. An informal discussion with Ruth Sparling concentrated on identifying the link between the spatial datasets and the relational Corporate Database managed by Environment Waikato. Chris Koroheke (Iwi Liaison Officer) was also interviewed. The discussion with Chris centred on the development of new spatial layers for Maori values information. Descriptive information on the datasets identified were also obtained from Environment Waikato's website (Environment Waikato, 2003).

2 Datasets

Environment Waikato has many datasets relating to information systems in the Waikato Region. These datasets are part of a regional inventory of environmental data categorised into the subsets of: air, ground water, land, marine water, people, structures, surface water, waste and info-systems. Datasets were selected from the various subsets based on their potential to hold Maori values information. A summary of datasets that were identified as having relevance for the current research is described next.

2.1 RUAMS Database

RUAMS (Resource Use Application Management System) is a database to record, track and administer all resource consents, navigational safety by-laws applications and selected permitted activities in the Waikato Region. This database has the potential to track iwi submissions utilising links with the Submissions Tracking System, Resource Consents Submission Database and the Contacts Database.

2.2 Contacts Linking GIS Layer

The purpose of the Contacts Linking GIS Layer is to provide Environment Waikato staff with the ability to view and map the location of selected persons and organisations stored in the Contacts database. The Contacts database stores Environment Waikato client names, addresses and contact information. The database also records the type of relationship that Environment Waikato has with the client. For example, contacts can be identified as iwi or having an interest in issues such as Annual Plans and resource consent notifications.

2.3 Digital Cadastral Database GIS Layer

Environment Waikato holds a copy of the Digital Cadastral Database (DCDB) covering the Waikato Region for use in the Environment Waikato GIS system. It assists Environment Waikato with the effective management of land and related resources. Analysts from the Resource Information Group receive a number of requests from iwi organisations for digital cadastral information related to Maori land.

2.4 Archaeological Sites GIS Layer

The purpose of the Archaeological Sites Layer is to provide Environment Waikato staff with an easily accessible, comprehensive database of sites in the Waikato Region that are recognised as having archaeological significance. Knowledge of Waahi Tapu sites would assist planners in resource management decisions. However, there is debate within iwi regarding access and control issues for a waahi tapu register administered by Environment Waikato.

3 Information Gaps

Information gaps identified within the RUAMS, Contacts Link GIS Layer, Archaeological Sites GIS Layer and the DCDB GIS Layer are discussed in this section.

3.1 RUAMS database

The RUAMS database is a record of approved resource consent activities in the Waikato Region. What the RUAMS database lacks is a record of submissions on resource consents. This type of information would prove useful to analysts in the Resource Use Group as it could identify the number of submissions from iwi that are specific to a geographic location, therefore highlighting the degree of concern that iwi have for that location. Environment Waikato analysts can then identify mitigation and consultation strategies prior to the resource consent process. Tracking iwi resource consent submissions spatially could be undertaken by firstly: recording resource consent submissions by Maori organisations in the Submissions Tracking System which is linked to the RUAMS Database, and secondly: establishing a spatial database of Maori organisations through the Contacts Linking GIS Layer.

Alternatively, the stand-alone Resource Consent Submissions Database could be integrated into the Corporate Database and linked to RUAMS. Equal identification fields (e.g. Resource Consent Number field) in both databases will minimise the task of integration. A limitation of the Resource Consent Submissions Database is that it lacks a Maori/iwi/hapu identifier. Inclusion of a contact identification field linked to the Contacts database may resolve this issue.

3.2 Contacts Linking GIS Layer

The Contacts Linking GIS Layer currently contains point data for approximately half of the marae in the Tainui rohe. Further work is required to complete mapping of marae in the Environment Waikato region. This task is relatively easy through the use of GPS (Global Positioning System) units. Linking the marae GIS layer to the contacts database would prove beneficial for planners in identifying a first point of contact for consultation.

There is no spatial reference data for Maori organisations, iwi and hapu in the Contacts Linking GIS Layer. There are a number of options available for developing boundary layers for Maori organisations, iwi and hapu. One proposed option could involve identifying boundaries or shared boundaries with iwi or hapu through a series of hui. Alternatively, the Crown Forestry Rental Trust (CFRT) may have already mapped these

boundaries as part of the Waitangi Tribunal Claim's process. Another option is to map the boundaries of Maori organisations such as Trust Boards (e.g. Hauraki Maori Trust Board), Hapu clusters (e.g. Huakina Development Trust), Kaitiaki Group, Regional Management Committees (e.g. Maniapoto RMC), Marae and Incorporations. Boundary information for these organisations is usually accessible from iwi environmental management plans, published books, reports and Memorandums of Understanding. Plans for developing spatial layers for Maori organisations within the Waikato Region are currently in progress. The end result is that an enquirer can be directed, via a Maori organisation(s) or contact(s), to the relevant individual or group for consultation.

3.3 Digital Cadastral Database GIS Layer

The Land Information New Zealand (LINZ) owned DCDB does not have a Maori Land "identifier" which limits regional planning on Maori land. Obtaining the Te Puni Kokiri (TPK) Maori Land Digital Cadastral Database can assist analysts in focusing activities on Maori land. Te Puni Kokiri developed the Maori Land Digital Cadastral Database in 1997. This dataset is a spatial record of Maori Land and contains useful information for planning including: property boundaries, parcel size, number of owners, management structure, and tenure. This database has recently been updated to include information as of August 2000. A limitation of the data set is that it only contains property boundaries of parcels that have been surveyed. Partitioning of Maori land is unavailable.

The TPK Maori Land DCDB is a sufficient starting point for identifying Maori land in the Waikato Region for developing rating policies. However, another limitation of the database is that like LINZ's DCDB, it does not contain a complete list of Maori land owners. This is an area of concern that Central Government agencies including TPK, the Maori Land Court and LINZ are currently addressing. Due to this limitation, ownership details will have to be recorded in a separate database for the purpose of rating. Obtaining contact details of Maori land owners will prove to be difficult but may be accessible through local councils, the Maori Trustee, and Farm accountants.

3.4 Archaeological Sites GIS Layer

A number of iwi support the development of a register for all waahi tapu (archaeological sites inclusive). These iwi support this initiative because it offers resource consent planners a proactive tool for managing resource consent applications. Despite cost concerns, submitters (see Technical Reports 3 and 4) thought that the establishment and maintenance of a comprehensive register that was accessible by iwi, hapu and Environment Waikato would further minimise iwi concerns about the potential negative impact to waahi tapu caused by resource use. In contrast, Tainui Maori Trust Board made numerous submissions to Environment Waikato opposing the establishment of a waahi tapu register. This stance was based on Tainui's belief that waahi tapu sites should and could not be incorporated into a database for the convenience of developers.

Public access to a proposed waahi tapu register will cause concerns for the majority of iwi. Iwi will be reluctant to provide sensitive waahi tapu information to Environment Waikato for public use. Likewise, Environment Waikato may be reluctant to fund a project that will have little benefit for the public directly, although indirectly it will. There is provision however in the Resource Management Act 1991 for EW to transfer their functions, powers or duties under the Act to iwi authorities. Therefore, it is recommended that EW provide support for each iwi to manage their respective waahi tapu register independently. EW could provide the necessary technical support to assist iwi authorities in establishing a register. On-going financial, training and maintenance support from Environment Waikato is also required for this exercise to be sustainable. This recommended exercise would assist iwi to become more active in the resource management process by empowering them to provide expert advice to EW regarding the impact of proposed resource consent applications on waahi tapu. This service could provide EW resource consent planners with essential information prior to consultation with iwi, resulting in the likelihood of productive meetings and mutually beneficial outcomes for all parties concerned.

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