

# **Topographic Information Strategy** 2005–2010

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# Foreword

Topographic information shows the natural and man-made features of the land represented to scale, and is familiar to us all on maps.

Used by the emergency services in life-or-death situations such as disaster response, topographic information is also involved in every-day processes such as land management and defence planning. It is, in fact, an every-day necessity for understanding our country and its assets, and so for supporting economic development.

Land Information New Zealand (LINZ) and our predecessors have been responsible for national topographic mapping in New Zealand for over a hundred years.



For well over a decade, digital techniques have been used to enhance efficient generation and publication of paper topographic maps. Our digital topographic data now form a vast resource that is one of the most useful strands in the fabric of the information revolution.

New technologies manipulating digital topographic information are producing exciting new applications: some of these are already used in emergency control centres, navigation systems and mobile devices, while others are still over the horizon.

### The need for a strategy

Our responsibility is to ensure that the nation's topographic information infrastructure will continue to be capable of serving society's changing needs. During recent consultations with our primary customers and other industry participants, we were told that they want a more predictable industry environment, in which to make essential long-term financial, technology and human resource decisions.

In publishing this Topographic Information Strategy now, with a clear indication of LINZ's direction, our intention is to contribute to the establishment of a more predictable industry environment. However, we recognise that there will still be many unknowns in an industry so characterised by rapid technological advance and changing customer needs.

We have developed this Strategy with considerable input from our primary customers and others, and we express our thanks for their goodwill and participation.

### Success factors

In addition to meeting our primary customers' requirements and signposting our strategic direction as clearly as possible, a successful strategy will need to:

- be flexible to accommodate the changing environment.
- support New Zealand's e-Government strategies to become an information and knowledge-based society.
- support LINZ's overall strategic direction and outcomes.
- recognise the key role of topographic data in providing the geospatial framework for a myriad of applications and uses.



Brendan Boyle Chief Executive, Land Information New Zealand



# LINZ responsibilities

As New Zealand's national mapping organisation, LINZ is responsible for collecting, maintaining, managing and making available an authoritative national record of the features of the natural and built environments.

This record is required to meet the needs of national safety and security, defence, emergency services and the constitutional framework.

In our Statement of Intent for 2005/06, we define our responsibility for topographic information as follows:

LINZ is responsible for national topographic mapping at 1:50,000 and broader scales. It undertakes this mapping for defence and emergency services and national constitutional purposes. LINZ makes its topographic data and mapping available via the Internet and in printed form through retailers. It also makes its bulk digital topographic data available directly from LINZ or through resellers.

We also have the responsibility to consult and work with others in the geospatial information community to determine and provide advice on the standards for, and quality of, topographic data required to meet the present and future needs of the nation.

LINZ topographic data will be required to provide a framework to which other geospatial data in New Zealand can be referenced. This is a first step towards ensuring a high level of interoperability between different sets of geospatial data.

# **Environmental overview**

LINZ maps are used for a great variety of work or leisure purposes, by businesses, trampers, tourists and many others.

LINZ's primary customers in the topographic area, (for whom we have Cabinet mandated responsibilities), are:

- defence forces
- emergency services
- local authorities
- Civil Defence and Emergency Management

The purposes for which our primary customers use topographic information vary greatly and include the following:

#### **Defence** planning

New Zealand's defence forces use topographic information for planning military exercises and swapping topographic information with partners internationally.

#### Location and routing

Search and Rescue, Defence, Ambulance, Fire Service, Police and Civil Defence agencies use topographic information in a wide range of planning and operational situations from natural disasters to community policing. Usage may involve mobile/field and control room situations, and the combination of topographic information with other data.

#### Land management

Topographic information is used by local government for regional planning and operations.

A number of commercial industry participants are important suppliers to our primary customers, helping to meet their needs through adding value to LINZ data.





# **Customer perspectives**

While each of our primary customers has their own requirements for topographic information, the following is a summary of the recurring themes heard during our consultation.

#### **Business**

Primary customers would like to reduce the monetary, human and time costs associated with their use of topographic information, primarily in the areas of information updates and delivery.

#### Delivery

The diversity of technologies, and their application in a wide variety of business and public roles, means it is important to have a variety of channels for the delivery of products and services that are fit for purpose.



Although multiple channels may be provided, the Internet will become the primary mechanism for the delivery of topographic information.

While over time technology will reduce reliance on traditionally printed maps, customers wish to continue using paper products in the foreseeable future.

#### Usage

Primary customers require topographic information to be more detailed, up to date and accurate.

- topographic data is increasingly used in their business applications, increasing demand for incremental updates and metadata.
- the small scale and Pacific Island data and printed maps need updating.

LINZ should cut over to a New Zealand Transverse Mercator (NZTM) map series based on New Zealand Geodetic Datum 2000 (NZGD2000) at a point in the future, supporting users with a comprehensive communication/education plan.

Information gathering arrangements should be improved to 'collect once, use many times', to counter the data maintenance inefficiencies and inconsistencies that have arisen from many agencies holding topographic data of a similar nature.

Consideration should be given to the national provision of:

- consistent geographic name information, including both official and common-use names.
- archiving arrangements for digital topographic data.
- ways to make historical topographic records available for research and other purposes.



# Key issues

Considering our customers' feedback, our responsibilities, and own view of the environment ahead, we have identified the following as the key issues we need to address in our strategic aims for topographic information.

### Comprehensive adoption of one spatial reference system

The geodetic reference system provides the underlying spatial framework for New Zealand. Currently, two are used for topographic mapping in New Zealand:

- NZGD49
- NZGD2000

There is a 200 metre difference between the two: a difference that is insignificant in some applications, but potentially life-endangering in others.

Wider adoption of the new reference system NZGD2000 is constrained by the lack of a NZTM-based map series and continued production of the NZMG projection-based NZMS260 series.

Further, some primary customers currently incur increased costs, because they require LINZ electronic data supplied as NZGD2000 to be converted back to NZGD49/NZMG in order to mitigate risk and meet the needs of existing systems.

### Bridging a gap between customer needs and LINZ delivery

Primary customers' uses of topographic information change rapidly in today's technology environment. LINZ services and delivery must keep pace with changing customer requirements. Concurrently, customer expectations of currency, accuracy and detail of topographic information have increased. LINZ must understand these expectations, and agree, set and meet appropriate quality standards.

# Providing the right product, service, and delivery channel mix; supporting interoperability

LINZ recognises the difficulty that our primary and other customers face in identifying their future needs for topographic information, given the rapid advance of technology while standards are still maturing. In turn, LINZ must be prepared to meet customer needs as they evolve, especially in the critical areas of electronic delivery and interoperability.



The advancement of technology and evolving standards provides new opportunities for both LINZ and its customers in processing and utilising topographic data.

Small scale mapping of New Zealand can be obtained from alternative data sources or providers other than LINZ.

# Strategic aims

# Our vision

Our vision guiding the development of the LINZ topographic information infrastructure is:

**6 6** Ready access to topographic information needed to realise a safe, sustainable and innovative society. **99** 

## Contribution to overall LINZ strategic direction

This vision and associated Topographic Information Strategy contribute directly to the following LINZ end and intermediate outcomes, LINZ overall vision, and strategic goals from our 2005/2006 Statement of Intent.

| LINZ End Outcome          | "Land information is available to enable New Zealand's economy to function effectively and for New Zealander's safety and security."     |
|---------------------------|--|
| LINZ Intermediate Outcome | "Convenient access to integrated land information."  |
| LINZ Vision               | "LINZ is valued as Government's centre of electronic land information and expertise."  |
| Strategic Goals           | "e-Delivery Excellence – LINZ's primary customers<br>exclusively use electronic channels, consistent with the<br>e-Government Strategy." |
|                           | "All-of-government leadership – LINZ is a strategic<br>leader and co-ordinator of land information initiatives<br>across government."    |

This Topographic Information Strategy reflects our commitment to providing the nation's topographic information infrastructure: e-delivery excellence is an associated strategic goal, the achievement of which will require careful pacing with customers' requirements.

At the time of writing, LINZ is also consulting on a strategy for New Zealand's geospatial information. This work will be completed in 2005 and may impact on some of the initiatives identified in this Strategy.

### Contribution to government goals

We recognise that topographic information is part of the fabric of information that underpins New Zealand's drive to become an information and knowledge-based society. We also acknowledge that apart from providing our own information we need to look to ensure that the information we collect can be used by others, where appropriate, for other public purposes.

As the Government formulates and implements policies that encourage New Zealand in this direction, we will ensure that our topographic information actively contributes to achieving the desired outcomes.

The vision of the e-Government Strategy is that New Zealand will be a leader in e-government and more particularly that:

- by June 2007, networks and Internet technologies will be integral to the delivery of government information, services and processes.
- by June 2010, the operation of government will have been transformed through its use of the Internet.

This Topographic Information Strategy indicates the pathway and framework of partnerships through which LINZ will work with our primary customers and others toward realising the e-government vision.

### **Critical success factors**

Through this Strategy, we seek to provide world-class topographic information products and services that meet the many current and future needs of the nation. Success in achieving the vision of this Strategy will be measured through:

- our primary customers and major user groups exploiting a topographic information environment to the benefit of their organisations.
- · our primary customers are satisfied with the topographic product and services.
- our contribution to e-government outcomes.
- topographic information management and delivery contribution to achieving LINZ's overall goals as defined in the Statement of Intent.

## Strategic goals

To realise our vision, we have set the following three strategic goals and objectives.

#### GOAL 1

Topographic information is readily available to those who need it.

#### **Goal 1 Objectives**

- 1. Monitor and respond to changing needs of LINZ primary customers, major user groups and the community for topographic information.
- 2. Maintain the skills and resources within LINZ to manage the production of topographic information, services and products.
- 3. Communicate with LINZ primary customers, major user groups and the community to ensure that they are able to use topographic information effectively.
- 4. Investigate and develop enhanced internet service as the primary mechanism for the delivery of topographic data services and information products.
- 5. Provide topographic mapping for New Zealand and its areas of interest that is based on the official datum and projection for that area.

### Commentary on Goal 1 and our objectives

#### Need for communication

We recognise that we need to develop and maintain relationships with our primary customers at both strategic and operational levels, to ensure that our development plans meet changing needs.

We will consult our primary customers on any developments that may impact on their operations, particularly the adoption of NZGD2000, and changes to the way we maintain our data.



#### Multiple delivery formats

We will make topographic information available to our primary customers in formats suitable for diverse uses. This will include:

- electronic data that supports business critical information systems.
- cartographic representations available in paper and appropriate to the delivery channel.

#### New NZTM-based map series will replace current NZMG-based series

We will give high priority to replacing the current NZMG-based map series with new NZTM-based equivalents. LINZ has already adopted the new datum (NZGD2000) and map projection (NZTM) for our digital database, but currently continues to publish our primary map products on the old datum (GD49) and NZMG. While some primary customers and major user groups have already migrated their digital data, others depend on completion of a new paper map series before they too can migrate.

#### New online products

We will investigate new online products and services to meet the needs of primary customers.

We will provide leadership to facilitate the sharing of topographic information, by providing access to our topographic data using open-based standards for interoperability.

#### GOAL 2

An accurate and up-to-date record of the natural and built environment is acquired.

#### **Goal 2 Objectives**

- 1. Review methods for acquiring authoritative topographic data that meets defined primary customer requirements
- 2. Develop processes and partnerships to ensure that topographic data is collected once and used many times

## Commentary on Goal 2 and our objectives

#### Increasing currency, accuracy and detail

We recognise the current topographic information does not meet all modern requirements. Our primary customers want more accurate, current, and detailed topographic information, for example for location-based services and to be compatible with GPS and digital navigation systems.

We will review our provision of topographic information against our customer requirements and continue to consult primary customers on their needs.



#### Towards 'collect once - use many times'

We will investigate the feasibility of new processes and partnerships with other organisations that also maintain topographic data, including orthoimagery.

#### GOAL 3

Topographic information is managed as an authoritative national resource.

#### **Goal 3 Objectives**

- 1. Implement methods for the management of authoritative topographic information.
- 2. Ensure the preservation of topographic information for the use of future generations.

### Commentary on Goal 3 and our objectives

The topographic information held by LINZ is a national resource that is fundamental to good decision-making.

Managing this information and maximising its use requires a specific focus. We will move on to defining New Zealand's topographic information infrastructure, after determining the topographic information acquisition and efficiency objectives of Goal 2.

We will also investigate how to ensure that New Zealand's history as portrayed in maps is preserved, whether these maps are manually or digitally produced.

LINZ will also establish formal mechanisms for governing its topographic information.

# **High-level** activities

The high-level activities required to advance our Topographic Information Strategy are indicated in the table opposite.

Of key interest to all primary customers is our proposal for implementing the full adoption of the new NZGD2000 datum and NZTM projection. We anticipate following our primary customers' clear preference for a Big-Bang approach, with the introduction of a new paper-based map series proposed for 2008/9. Considerable planning and consultation, supported with education and communication will be undertaken in the lead up to this event.

Consultation and communication are key pillars of this strategy to meet our responsibility to ensure that the nation's topographic information infrastructure will be capable of serving society's changing needs. We will consult our primary customers on any developments that may impact on their operations, particularly the move to one datum, and changes to the way we maintain and deliver topographic information.

LINZ will comprehensively review core topographic information requirements, identify and implement any necessary improvements to infrastructure, processes and delivery.





Consultation and communication are key pillars of this Strategy to meet our responsibility to ensure that the nation's topographic information infrastructure will be capable of serving society's changing needs.



# LINZ Topographic Information Strategy 2005–2010: High-level activities



# Appendix

# LINZ core topographic map series

#### New Zealand medium scale topographic maps

330 x 1:50 000 scale, Topographic Map Series Number 260

#### New Zealand small scale topographic maps

Sheets 1 to 18, 1:250 000 scale, Topographic Map Series 262 Sheets 1 to 4, 1:500 000 scale, Topographic Map Series 242 North Island at 1:1 000 000 scale, Topographic Map 265 South Island at 1:1 000 000 scale, Topographic Map 265 New Zealand at 1:2 000 000 scale, Topographic Map 266 New Zealand at 1:3 000 000 scale, Topographic Map Series 267 New Zealand at 1:4 000 000 scale, Topographic Map Series 268

#### Pacific Islands topographic maps

#### **Cook Islands**

Mitiaro, 1:25 000 scale, Topographic Map Series272/8/1 Mangaia, 1:25 000 scale, Topographic Map Series272/8/2 Aitutaki, 1:25 000 scale, Topographic Map Series 272/8/3 Penrhyn, 1:25 000 scale, Topographic Map Series 272/8/4 Suwarrow, 1:25 000 scale, Topographic Map Series 272/8/5 Rarotonga, 1:25 000 scale, Topographic Map Series 272/8/6 Palmerston, 1:25 000 scale, Topographic Map Series 272/8/7 Manuae and Pukapuka, 1:25 000 scale, Topographic Map Series 272/8/7 Manuae and Pukapuka, 1:25 000 scale, Topographic Map Series 272/8/10 Mauke/Atiu, 1:25 000 scale, Topographic Map Series 272/8/10 Mauke/Atiu, 1:25 000 scale, Topographic Map Series 272/8/11,13 Rakahanga, 1:25 000 scale, Topographic Map Series 272/8/12

#### Tokelau Islands

Atafu, 1:25 000 scale, Topographic Map Series 272/7/1 Nukunonu, 1:25 000 scale, Topographic Map Series 272/7/2 Fakaofo, 1:25 000 scale, Topographic Map Series 272/7/3

#### Offshore Islands

Raoul, 1:25 000 scale, Topographic Map Series 272/6 Snares Island, 1:25 000 scale, Topographic Map Series 272/1 and 5 Bounty Island, 1:25 000 scale, Topographic Map Series 272/1 and 5 Antipodes Islands, 1:25 000 scale, Topographic Map Series 272/4 Campbell Island, 1:25 000 scale, Topographic Map Series 272/3

#### Others

Niue, 1:50 000 scale, Topographic Map Series 250

#### Antarctica

Ross Sea Region, 1:3 000 000 scale map, Topographic Map Series 135.

## More information

If you would like to register your interest in LINZ's on-going communication and consultation about our Topographic Information Strategy and its implementation, please contact:

LINZ Topographic Information Communications, Email: info@linz.govt.nz Phone: 0800 665 463

