

On 23 September 2009, Land information New Zealand (LINZ) will launch the new 1:50,000 scale national map series Topo50, replacing the NZMS260 series.

The Topo50 map series will use both a new datum and projection from that used for the NZMS260 series: New Zealand Geodetic Datum 2000 (NZGD2000) and New Zealand Transverse Mercator 2000 (NZTM2000) projection.

Reasons for the new datum include:

- improved spatial accuracy
- compatible with international systems

Reasons for the new projection include:

- consistency with other New Zealand mapping
- standard projection
- better support for users

New Zealand's emergency services will switch base mapping and 111 systems to NZTM2000 and use Topo50 maps from launch. It is recommended that you also switch to a Topo50 map at this time so that you use the same maps as those used by the emergency services.

## WHAT DO THESE CHANGES MEAN?

On the new Topo50 maps, the latitude, longitude and grid coordinates (known as northings and eastings) will be different from those used on the current NZMS260 maps. This is due to the new datum and projection being used.

- Latitude and longitude will move by approximately 200m because of the new datum
- Grid coordinates have been moved by approximately 900km east and 550km north to avoid confusion with the old map series
- Topo50 map sheet numbers will change to two letters and two digits e.g. BQ31. The current NZMS260 maps use a single letter and two digits e.g. R27. There is no correlation between the old and new map sheet numbers.

For example, coordinates for Te Papa in Wellington:

	260 map series	Topo50 map series
Geographical coordinates (latitude, longitude)	41° 17' 31" S 174° 46' 53" E	41° 17' 25" S 174° 46' 54" E
Full grid coordinates (eastings, northings)	2659200 mE 5989200 mN	1749178 mE 5427488 mN
Six figure grid reference (map reference)	R27 592892	BQ31 492275

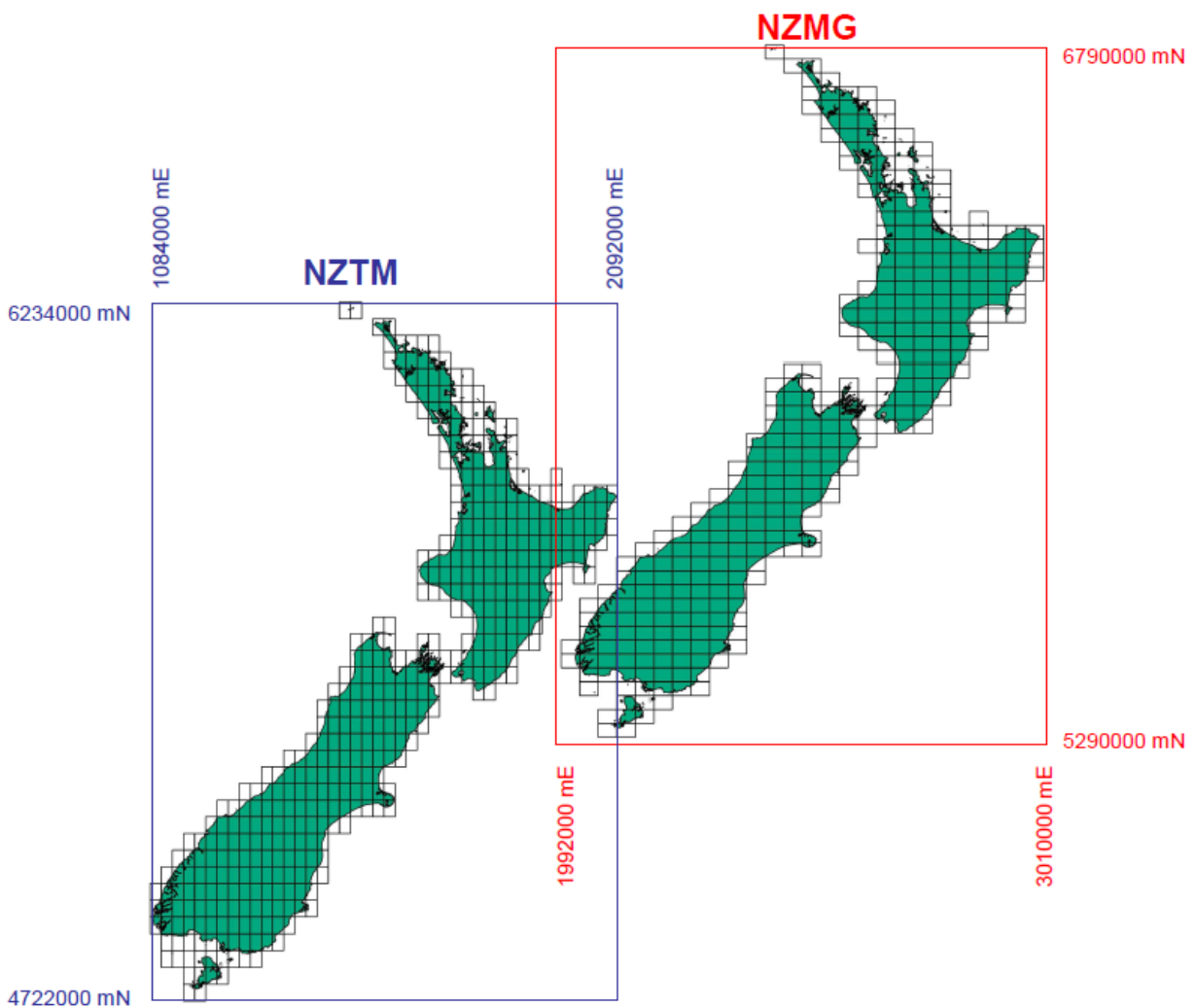
For more information, check out [www.linz.govt.nz/topo50](http://www.linz.govt.nz/topo50)

## Grid changes

“Grid coordinates have changed because of the new projection and have been moved by approximately 900km east and 550km north”

Maximum and Minimum coordinate values for NZMG and NZTM

	NZTM (Topo50 map series)	NZMG (260 map series)
Max Northing	6234000 mN	6790000 mN
Min Northing	4722000 mN	5290000 mN
Max Easting	2092000 mE	3010000 mE
Min Easting	1084000 mE	1992000 mE



## GPS SYSTEM

### Setting the datum, NZGD2000, on your GPS unit

For those currently using GPS systems, you can set your GPS receiver to NZGD2000, the datum used by Topo50 to determine latitudes and longitudes.

If your GPS does not support NZGD2000, it will still be able to support Topo50. You can simply set your GPS receiver to the default datum setting of World Geodetic System 1984 (WGS84).

WGS84 is the datum the GPS system uses and for all practical purposes it is the same as NZGD2000. This means that latitudes and longitudes from your GPS receiver will be compatible with those shown on Topo50 maps.

### Setting the projection, NZTM2000, on your GPS unit

To get Topo50 grid coordinates (eastings and northings), check that your GPS unit supports the projection used for Topo50 maps, NZTM2000. You can either select the appropriate menu option in your GPS unit or consult the user manual.

If your GPS does not support NZTM2000, the receiver may have the capability to input a user defined projection. Many GPS receivers have this capability. You may need to consult the user manual on how to access this feature.

You will need to set up your receiver with the following NZTM2000 parameters:

<b>Projection:</b>	<b>Transverse Mercator</b>
Origin Latitude:	0.0 degrees South
Origin Longitude:	173.0 degrees East
False Northing:	10,000,000 m North
False Easting:	1,600,000 m East
Central Meridian scale factor:	0.9996

Note that this projection is the same as a Universal Transverse Mercator (UTM) but with a different origin latitude, and different false northing and easting.

## MORE TECHNICAL GPS INFORMATION

For more technical GPS information please contact your GPS retailer or manufacturer.

## CONVERTING between NZMS260 and Topo50

The LINZ website provides information and resources to assist with coordinate conversions and transformations. You can find that following tools at [www.linz.govt.nz/topo50](http://www.linz.govt.nz/topo50)

<b>Online Conversions</b> Coordinates can be converted between datums and projections automatically using one of the two online utilities.	
Basic online conversion	This allows conversions between pre-selected datums and projections. This is the simplest way to convert coordinates on the LINZ website.
Detailed online conversion	This enables users to choose from a wider range of datums, projections and height systems. It also allows a variety of input and output formats including bulk options.

<b>Software Conversions</b> Coordinates can be converted between datums and projections automatically using free downloadable software.	
NZ Map Reference Converter	The New Zealand Map Reference Converter (NZMapConv) is software that LINZ provides to convert map references between the old NZMS260 map series and the new NZTopo50 map series or vice versa.
CONCORD Converter	Concord enables users to choose from a wider range of datums, projections and height systems. It also allows a variety of input and output formats including bulk options.

**NZ Map Reference Converter**

A. NZ260 map reference:

B. NZMG coordinates (east/north):

C. NZGD49 (lat/lon):

D. NZ Topo50 map reference:

E. NZTM2000 coordinates (east/north):

F. NZGD2000/WGS84 lat/lon:

Enter NZMS260 map reference, eg R27 714010

Buttons: Convert, Previous, Next, Options..., Help...

For more information, check out [www.linz.govt.nz/topo50](http://www.linz.govt.nz/topo50)



## Topo50 Map Layout

### A1 Portrait Layout

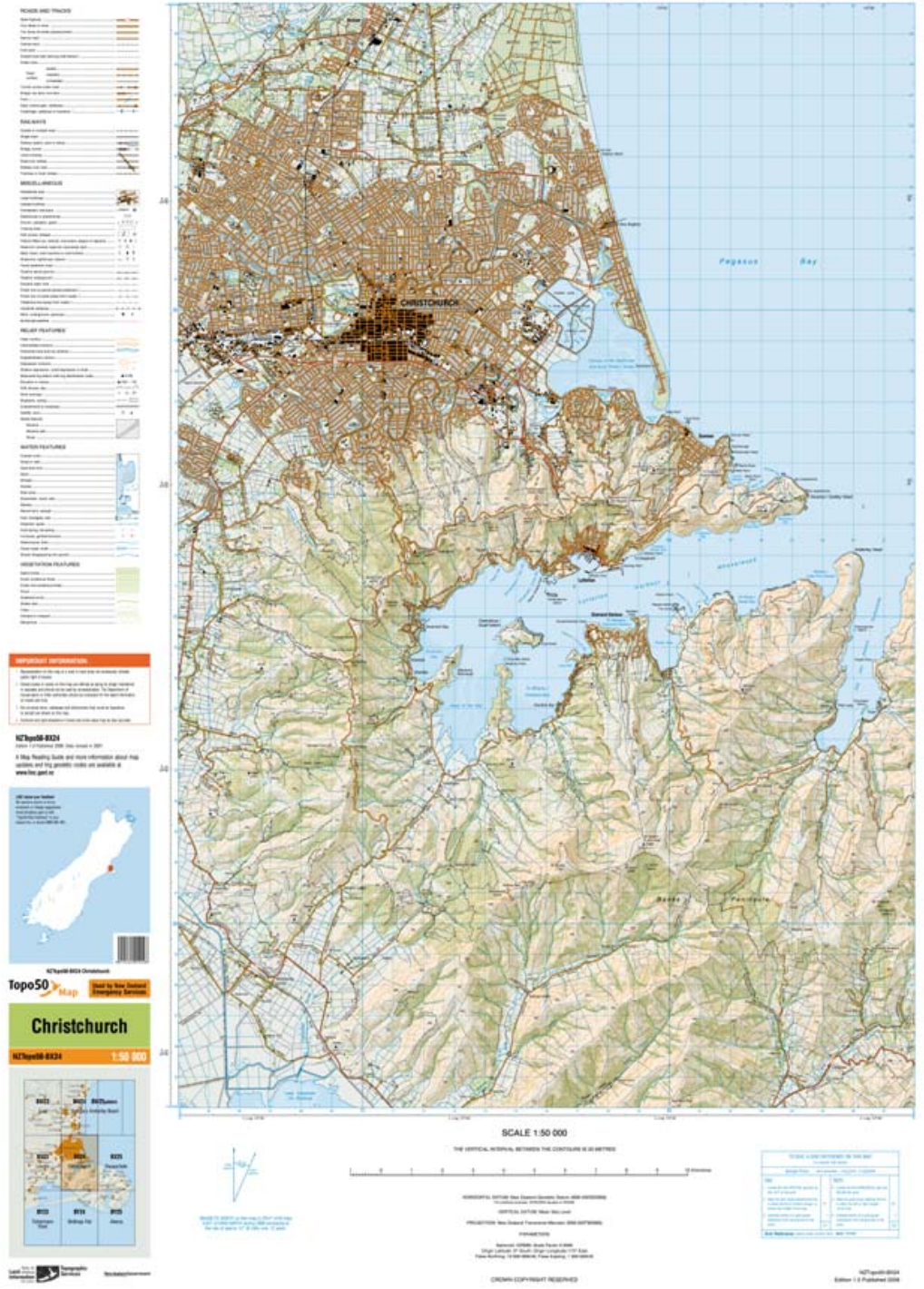
- Each sheet covers a different area to the NZMS260 map

### Legend Key

- Reference links indicate important information
- Warning notes are grouped together

### Map Reading References

- Projection parameters provide more information
- Map reading references are grouped together



## Topo50 Map Layout

### Topo50 Front Cover

- Redesigned to distinguish from 260 series
- Adjacent sheet names are shown on the reference panel
- Awareness panel – “Used by New Zealand Emergency Services”
- Sheet numbering is different, e.g. Christchurch area was ‘M35’ and will now be ‘BX24’

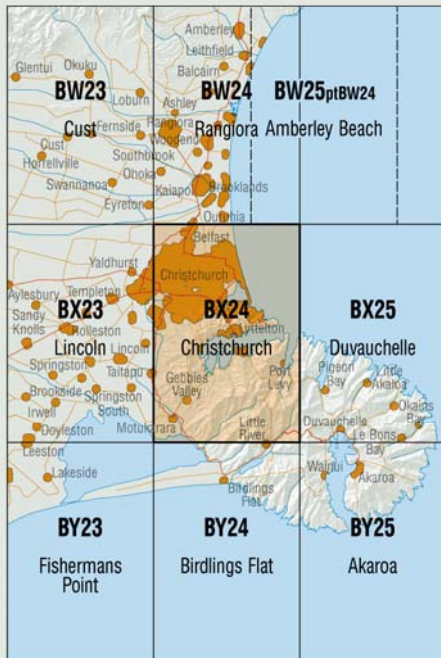
**Topo50** Map

Used by New Zealand  
Emergency Services

# Christchurch

NZTopo50-BX24

1:50 000



Toitu te  
Land whenua  
Information  
New Zealand



Topographic  
Services

New Zealand Government

### Topo50 Back Cover

- Displays a locality indicator
- Important Information & warnings are highlighted
- Refers to the LINZ website and invites advice on any errors or omissions

#### IMPORTANT INFORMATION:

1. Representation on this map of a road or track does not necessarily indicate public right of access.
2. Closed tracks or routes on this map are defined as being no longer maintained or passable and should not be used by recreationalists. The Department of Conservation or other authorities should be contacted for the latest information on tracks and huts.
3. Not all aerial wires, cableways and obstructions that could be hazardous to aircraft are shown on this map.
4. Contours and spot elevations in forest and snow areas may be less accurate.

#### NZTopo50-BX24

Edition 1.0 Published 2009, Data revised in 2001

A Map Reading Guide and more information about map updates and trig geodetic codes are available at [www.linz.govt.nz](http://www.linz.govt.nz)

#### LINZ values your feedback

We welcome advice of errors, omissions or change suggestions: email [info@linz.govt.nz](mailto:info@linz.govt.nz) with "Topo50 Map Feedback" in your subject line, or phone 0800 665 463.



9 4 14264 22424 8



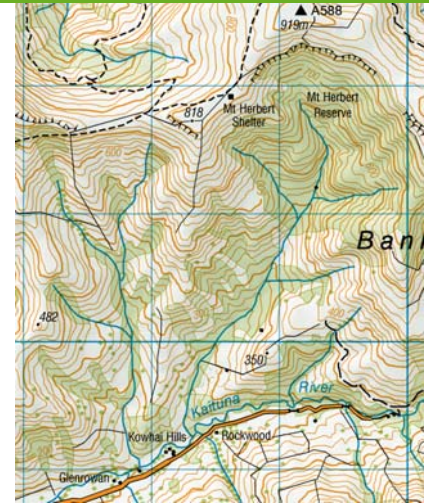


## Understanding and reading a Topo50 topographic map

The following explains some of the key features of a Topo50 map. Understanding these features will help you read a Topo50 map.

Topo50 maps show geographic features in detail. They are useful for a wide range of activities, such as local navigation by vehicle or on foot, locality area planning, and studying the environment.

<p><b>Map Scale</b></p>	<p>The Topo50 maps are at a scale of 1:50 000. One centimetre on the map represents 500 metres on the ground.</p>
<p><b>Distance</b></p>	<p>Using the scale bar on a map you can determine the distance between two points on the map.</p>
<p><b>Contours and Relief Shading</b></p>	<p>Topo50 maps show contour lines every 20m. They join points of equal height and represent the relief in the terrain.</p> <p>If many contour lines are close together, the terrain is steep; contour lines that are far apart indicate land with gentle slopes.</p> <p>The accuracy of the height of a contour line is usually taken to be about half the contour interval, i.e. <math>\pm 10\text{m}</math>. The contours represent the heights above mean sea level (MSL).</p> <p>In addition to contour lines, relief shading helps you visualise the terrain. Hills and valleys are shaded as if they were illuminated from the north-west.</p>
<p><b>North</b></p>	<p>Maps show a north point diagram in the map margin. This shows the direction of Grid North and Magnetic North at the centre of the map.</p> <p><b>Grid North (GN)</b> is the direction of the vertical grid lines (eastings) on a topographic map.</p> <p><b>Magnetic North (MN)</b> is the direction towards the Earth's North Magnetic Pole.</p> <p>The difference between GN and MN is known as the Grid/Magnetic angle. This varies across New Zealand. Because the position of the North Magnetic Pole moves slightly from year to year, the Grid/Magnetic angle will vary by a small amount each year.</p>



Portion of a Topo50 map showing contours and relief shading

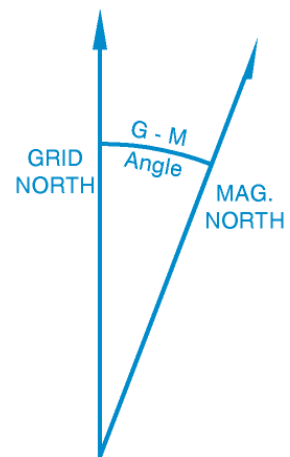


Diagram of North point on a Topo50 map.

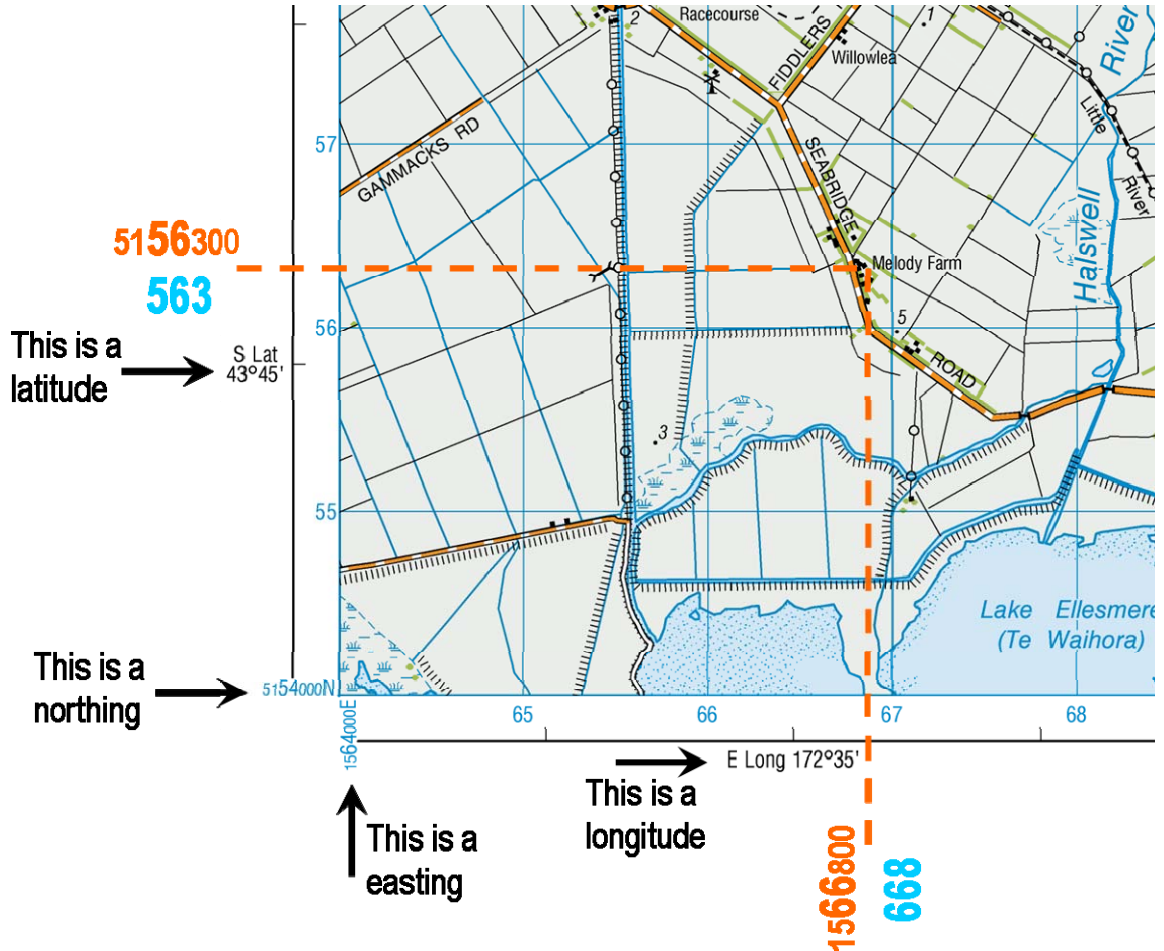
## How to read map coordinates

### How to use the map to pinpoint your position

The following example shows how to describe your location, using Melody Farm (Topo50 sheet BX24) as your reference point.

Other than verbally describing where you are – “I’m at Melody Farm” – you can numerically pinpoint your location in three ways:

- **Geographical coordinates** (latitude and longitude)
- **Full grid coordinates** (eastings and northings)
- **Six figure grid reference** (map sheet number and a six figure grid reference)



#### Melody Farm coordinates

<b>Geographical coordinates</b>	<b>43° 44' 45" S</b>	<b>172° 35' 15" E</b>
<b>Full grid coordinates</b>	<b>1566800 mE</b>	<b>5156300 mN</b>
<b>Six figure grid reference</b>	<b>BX24 668563</b>	

July 2009