Land Information New Zealand
Toitu te whenua

Topo50 Map Series - Frequently asked questions

Coordinates are changing

Why are the coordinates changing?

In 2000 Land Information New Zealand (LINZ) released a new national datum, New Zealand Geodetic Datum 2000 (NZGD2000). This changed the way that coordinates (latitudes/longitudes) of points in New Zealand are determined. Latitudes and longitudes in NZGD2000 are significantly different to those determined in terms of the previous datum - NZGD1949. The difference is equivalent to an approximate 200m change in position. Subsequently LINZ has also defined a new projection for national topographic mapping, the New Zealand Transverse Mercator 2000 (NZTM2000) projection, to replace the New Zealand Map Grid (NZMG) projection. Both these changes have followed extensive analysis and public consultation.

A new map series using the new datum and projection 'Topo50' will be released in 2009 to replace the current NZMS260 series.

Launching the new maps

When will the new Topo50 maps be available?

The complete set of new Topo50 maps will be available in September 2009. Up until this time the complete set of current NZMS260 maps will be available, however they will be withdrawn from sale once the new series is available.

Where can I buy a Topo50 map?

From September 2009, Topo50 maps will be available for sale from major map and outdoor retailers as well as Department of Conservation information centres that have retail outlets.

Current NZMS260 maps

Can I keep using my NZMS260 map?

It is recommended that you switch to a Topo50 map in September 2009, as these will be the maps used by the emergency services. In the case of an emergency it will be advantageous to use the same maps as those used by the emergency services.

The geographical information on most maps will be the same as on a NZMS260 map. A selection of Topo50 maps will have more up to date information than the similar area on a NZMS260 map. As Topo50 maps are updated they will all eventually supercede the NZMS260 equivalent in the accuracy and currency of their geographical information.

Differences between the NZMS260 and Topo50 maps

What are the differences between an NZMS260 and a Topo50 map?

Projection: The Topo50 series uses a different projection. This means that someone reading a grid reference on the NZMS260 map will give quite a different reference to someone looking at the same geographical point on the new Topo50 series. Technically this is because the Topo50 series will use the New Zealand Geodetic Datum 2000 and the New Zealand Transverse Mercator 2000 projection. This means that the point of reference for latitude and longitude and the grid

coordinates of geographic features will have changed. Geographic coordinates, longitude and latitude, will change by approximately 200m, 190m in a north-south direction and 10m in an east-west direction. Grid coordinates, northings and eastings, will change by over 550,000m in the northing and 900,000m in the easting. This difference is sufficiently large so that coordinates of the NZMS260 and Topo50 maps will not be confused.

Format: The maps will be in a portrait format, as opposed to the NZMS260 series which was produced in landscape. Each map covers slightly less area which means that there are 155 more maps covering NZ. This means that each individual map will cover a different area than on the NZMS260 maps.

Why should I buy a Topo50 map?

LINZ is the national mapping agency for New Zealand which ensures national coverage with over 452 topographic maps. LINZ has systems and processes in place to access and receive the latest information from many sources to ensure the national maps are of the highest possible quality. Maps are regularly printed to ensure they are always available and that the latest critical information is available to users and emergency services.

What is the difference between LINZ maps and other organisations' maps?

LINZ's maps are consistent in specification and cover the whole country. They are regularly updated and new editions are frequently printed. They are available from more than 400 retailers in New Zealand. LINZ maps can be used with confidence as they are used by the emergency services

Will the information on my new maps be different?

The geographic features portrayed on the Topo50 Map Series will not change. However the coordinates of those features will change.

Do the new Topo50 maps cover the same area as the NZMS260 maps?

No. There were 297 NZMS260 maps covering New Zealand and there are 452 new Topo50 maps. This is due to them being in a new format (A1 portrait).

Why did the format change from landscape to portrait?

Changing the layout of the map distinguishes the new map series from the NZMS260 series.

Will the information on the new maps be more current than the NZMS260 maps?

Generally no, however some areas will have undergone maintenance as part of the regular maintenance cycle. There will be a map available on this website which will show the currency of the data on all Topo50 maps.

Will the new Topo50 maps cost the same as the NZMS260 maps?

We are currently working through the pricing structure for the new maps and anticipate having an approximate price range available by the end of 2008.

Topo50 maps and GPS

My GPS is a few years old; will it support NZGD2000 and NZTM2000?

If your GPS does not support NZGD2000 you can set your GPS receiver to the default setting of WGS84. WGS84 is the datum the GPS system uses, and for all practical purposes WGS84 is the same as NZGD2000. This means that latitudes and longitudes from your GPS receiver will be compatible with those shown on Topo50 maps.

If your GPS does not support NZTM2000, the receiver may have the capability to input a user defined projection. You will need to set up your receiver with the NZTM2000 parameters. Note that many receivers have this feature and you will need to consult your user manual as to how to access this feature. The parameters you will need to input for defining the NZTM2000 projection are:

Projection:	Transverse Mercator
Central Longitude:	173.0 degrees
Central Latitude:	0.0 degrees
Central Scale:	0.9996
False origin:	X 1,600,000
False origin:	Y 10,000,000

Note that this projection is the same as a Universal Transverse Mercator (UTM) but with a different central longitude and false origin.

How can I check that my GPS supports NZGD2000 and NZTM2000?

For all practical purposes NZGD2000 is the same as WGS84, the default system used by the GPS and so NZGD2000 will be compatible with your GPS. You will need to consult the projections defined in your GPS by selecting the appropriate menu in the GPS or user manual to determine if NZTM2000 is a supported projection.

Converting between NZMG and NZTM2000

How do I convert the coordinates between NZMG and NZTM2000?

To convert coordinates from NZMG to NZTM2000 you can use the online conversion tool at www.linz.govt.nz/coordinateconversion. This tool provides conversions between the most commonly used coordinate systems in New Zealand.

What is the effect on map grid coordinates of changing from NZMG to NZTM2000?

Grid coordinates, northings and eastings, will change by over 550,000m in the northing and 900,000m in the easting. This difference is sufficiently large so that coordinates in terms of either projection will not be confused.

Why not keep on using NZMG/NZGD1949 in my database/GIS?

The main reason for moving to NZGD2000 is to make it easier to integrate your database with other data. This may include GIS data from LINZ or other agencies that is in terms of NZGD2000, and data captured using GPS (with which NZGD2000 is closely aligned). Also NZGD2000 is much more accurate on a national scale, which is desirable for large scale datasets requiring accuracy better than a few metres.

Should I convert my geographic data to NZTM2000 or to NZGD2000?

Most modern GIS systems permit data to be converted at will between different coordinate systems. Though data may be stored in NZGD2000, it could be converted on the fly to NZTM2000, or any of a number of other map projections. So generally it doesn't matter which system is used.

How can I convert NZGD1949/NZMG coordinates to NZGD2000/NZTM2000?

Converting coordinates from NZMG to NZTM2000 involves three steps.

1. from the NZMG map projection to NZGD1949 latitude and longitude
2. from NZGD1949 latitude and longitude to NZGD2000 latitude and longitude
3. from NZGD2000 latitude and longitude to NZTM2000 northing and easting
   Most coordinate conversion software will perform these steps internally, so that it will appear as a direct conversion.

The first and last steps, converting to and from map projections, are mathematically exact operations. However the conversion from NZGD1949 latitude and longitude to NZGD2000 latitude and longitude is not precise - there is no exact correct way to do it. There are several options provided by LINZ with varying degrees of accuracy. For more details see converting from NZMG to NZTM2000.

What tools can LINZ provide to help this transformation?

Online coordinate conversion tool at www.linz.govt.nz/coordinateconversion: This can be used to convert a few coordinates to a few hundred coordinates between different New Zealand coordinate systems.

To convert a large number of coordinates select advanced options, and choose free format entry for the input format, and unformatted for the output format.

Coordinate conversion software CONCORD can also be downloaded at www.linz.govt.nz/downloadsoftware. This is a Microsoft Windows program that can be used to convert files of coordinates from one system to another.

Note: Both the online converter and Concord only translate individual points - they cannot convert other GIS objects composed of many points.

Why did we change the map projection?

The NZMG map projection was a unique projection crafted to minimize the scale error over the land area of New Zealand. It was specifically defined in terms of the International Ellipsoid used by the NZGD1949 datum.

NZGD2000 is based on the GRS80 ellipsoid to be consistent with international reference systems. So NZMG is not an option for NZGD2000. While it would have been possible to craft a similarly optimised projection for NZGD2000 this was considered undesirable, as it would not be immediately supported by GIS and survey software vendors. Instead New Zealand Transverse Mercator 2000 (NZTM2000) was adopted, which is standard Transverse Mercator projection that software vendors can support.

Why did we change the datum?

The NZGD1949 datum was no longer accurate enough. The datum was developed over 50 years ago, and its accuracy is limited by the survey technology available at the time. The accuracy has also degraded significantly due to the natural process of earth deformation.

New Zealand Geodetic Datum 2000 (NZGD2000) was surveyed using the Global Positioning System (GPS), which provides a much higher and more uniform accuracy. It is also a three dimensional datum (NZGD1949 was a two dimensional datum), it is aligned with international datums, and takes account of ongoing deformation.