

# FORMAK Location Guideline

## Giving Accurate Locations

Giving accurate locations for the measurement plots, counts and transects that you undertake is extremely important.

- It allows the sites to be re-located so they can be re-measured. FORMAK is based on re-measuring a relatively small number of sample points – so without the ability to measure the same point your efforts may be wasted.
- Almost all aspects of a forest ecosystem are spatially significant – i.e where they are located in relation to things such as soils, other forest areas, pest locations, aspect are important. By accurately getting the location of data you collect, it is possible to potentially look at and understand these relationships by mapping the data. This is becoming more and more important through increasing access to computer based GIS (geographic information system) mapping.
- It allows the location of your data in relation to other FORMAK sites to be examined – potentially making it possible for you to examine relationships between your site and others nearby.

There are two ways of giving location data for a point – as a map grid reference, manually identified off a NZMS 260 series (1:50,000) map or as a GPS coordinates from a GPS receiver.

Wherever possible GPS coordinates should be provided, as these are much more accurate. However, many people using FORMAK will not have access to a GPS receiver, so a map grid reference will be their only option.

Brief instructions on these two methods are given below.

### Map Grid Reference

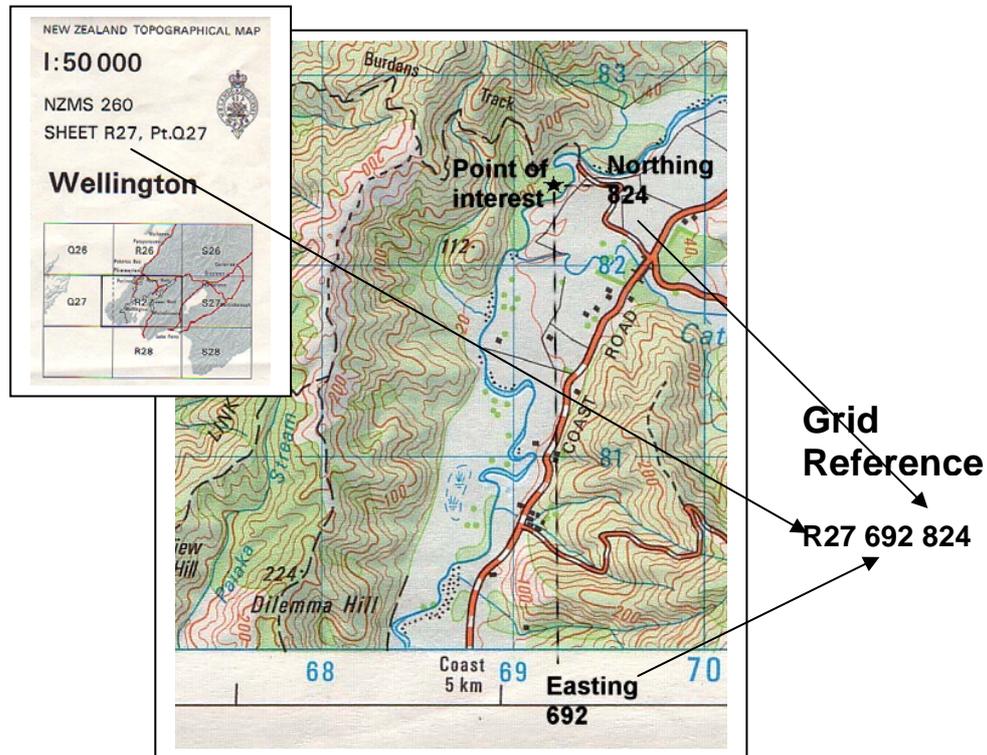
All NZMS 260 series maps include an instruction on giving grid references from the map. They also give an example grid reference from the map.

NZMS 260 maps have a numbered grid. Grid numbers are recorded along the top and bottom and though the map. Longer numbers at the corners of the map are for full NZ coordinates and are ignored.

Steps in giving a map grid reference are:

1. Identify on the map the point you wish to locate.
2. Make sure the map is up the right way – i.e the text is right way up and north is at the top.
3. Identify the vertical grid line to the left of this point and identify the two figures labelling this line which are written on the top, bottom, and centre of the map. These are the first two figures of your 3 digit Easting.
4. Estimate how many tenths the point is east (to the right) of this line. This is the third figure in your 3 digit Easting.

5. Identify the horizontal line that is below the point of interest and identify the two figures labelling this line. These are the first two figures of your 3 digit Northing.
6. Estimate how many tenths the point is north (above) this line. This is the third figure of you 3 digit northing.
7. Write down the map sheet number (a letter and number sheet number recorded in the map title) followed by the 3 digit easting followed by the 3 digit northing. This is the map grid reference.



### GPS Location.

A summary of some key points when using a GPS is set out below. More detail is provided in a publication "Guidelines for Fixing Co-ordinates of NVS Plots Using GPS" by Larry Burrows of Landcare Research, July 2000.

GPS units work by receiving signals from special satellites orbiting the earth and identifying the location of the receiver relative to the known position of the satellites. Once a minimum of three satellites are being received, the receiver can give a two dimensional position i.e an easting and northing without altitude. Signals from four or more satellites are required to get a more accurate three dimensional location and altitude.

When a GPS unit is first switched on it takes a little time, up to a few minutes to receive the information required to fix a position. Once it is on and being used, there is less delay.

Because they are receiving signals transmitted by a distant satellite that requires line of site, GPS reception is affected by obstructions such as hills, buildings, tree trunks and branches. The obstructing affect of heavy forest can make it difficult get a fix with a GPS under heavy canopy.

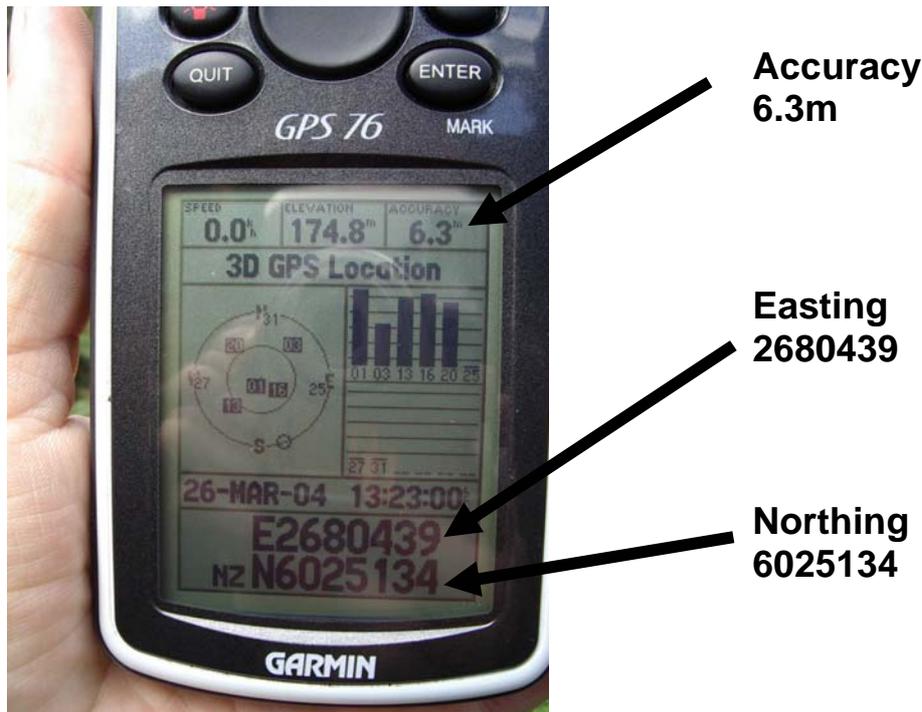
If you cannot obtain a fix, try waiting (to allow other orbiting satellites to come into reception) and moving slightly to an area of, for example, more open canopy to allow a fix to be obtained. Using

an antenna that can be raised up on a pole, or climbing into a tree can make a big difference by reducing obstruction from major trunks and branches.

If reception is difficult at the location you are trying to record, it may be necessary to move to a nearby point where you can get reception such as under a canopy gap, in a clearing or on a nearby ridge. You can then record the offset from this location to the point you are really trying to locate (see recording offsets).

Set your GPS unit to give coordinates in NZ Map Grid, using the NZ Geodetic 49 datum.

Most GPS units will also display an estimate of the accuracy of the location in metres. Where this is displayed it is important to record it as it gives a useful guide to those re-locating the plot or using the location data in the future.



## Recording an Offset

Often it may not be possible to get a GPS signal under canopy where a plot is located. In these situations, it is necessary to get a GPS location from nearby where obstructions are less, e.g. edge of remnant, under a canopy gap, on a ridge etc. You can then record the “offset” that will allow you to locate the point you are really interested in.

An offset is

- The magnet bearing you will have to travel **from the GPS location to the point of interest**, and;
- The distance, in metres, you have to travel **from the GPS location to the point of interest**.

### To record an offset:

- 1) From the GPS location sight to the point of interest. Take a compass bearing in this direction (see Map & Compass Guideline) and record it.
- 2) From the GPS location, pace (or otherwise measure or estimate) the distance to the point of interest, travelling on the offset bearing.

