

# Creating an OCAD Basemap

## Data Sources

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# Before you start

- is the area suitable
- is the area accessible
- what sort of map are you making?  
rogaine, bush (major event), bush (club level event), park, sprint, school, MTBO, special ...
- scale, contour interval, symbol set, level of detail, map size, software
- deadlines ?

# What information is available?

- existing O-maps
- photogrammetry ( dedicated)
- photogrammetry & topo maps (public or private)
- aerial photography
- LiDAR data
- other map data (cadastral, environmental reports...)

Are the data sets hard copy, raster or vector?

How reliable are the data sets?

## Existing O-maps

- how was OCAD version created?
- original artwork for pre-OCAD map?
- is it accurate?
- is it appropriate?
- copy, or just use for guidance?

How reliable is the map?

## **Photogrammetry & topo maps**

- horizontal control for dedicated photogrammetry?
- is contour interval suitable?
- grid definition & projection on older topo maps
- quality of data in tree-covered areas
- original data, or scanned with possibility of stretch?

How reliable is the map?

# **Aerial photography**

- orthorectified to remove distortions?
- date of flight – what may have changed?
- georeferenced?
- projection and scaling
- quality of data in tree-covered areas
- digital image available?

How reliable is the data?

# **LiDAR data**

To be discussed later

## **Other sources**

- environmental & other published reports
- walking maps
- GPS survey of main features in area ( eg roads tracks)  
using handheld GPS
- satellite imagery
- smaller scale topo data (eg satellite radar)



# Setting up base map

- load as much of the available data as possible
- any clashes? - if so decide which part of the data set is reliable & which part should be treated with caution.
- pick one of reliable data sets as the reference
- in order of most likely to be the reference:
  - LIDAR
  - well-controlled photogrammetry
  - georeferenced detailed imagery (eg nearmap, SIX)
  - GPS base using repeated traverses along well-defined features with good gps (handheld, not a watch)
  - small scale digital mapping from LPI,
  - poorly-controlled photogrammetry,
  - scanned paper maps & 20year old O-maps

# Setting up base map

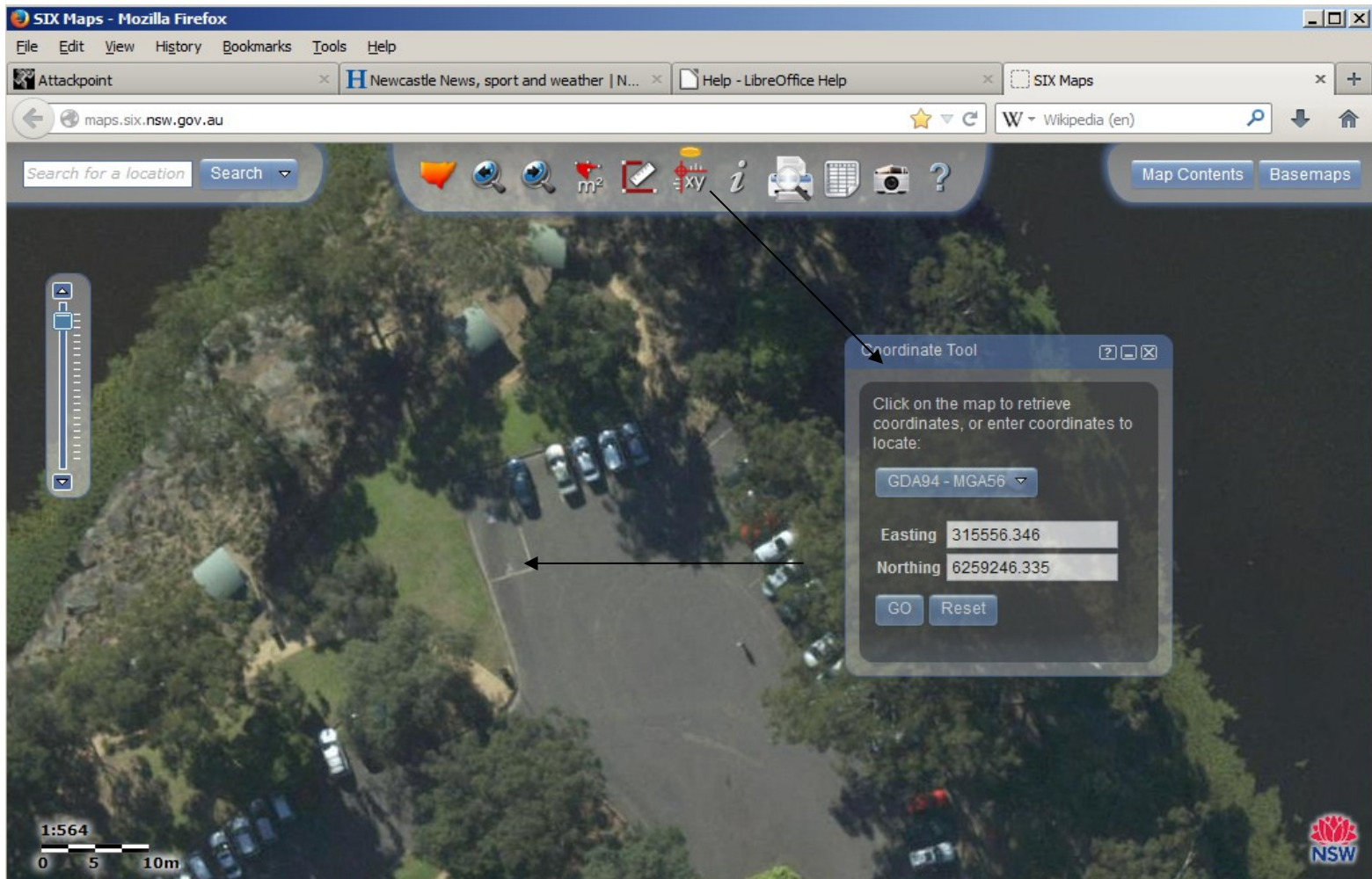
Only deviate from your reference data set if you can prove it is wrong, or need to make slight modifications for legibility or mapping standards

eg passage width between buildings, adjust contours to represent topo features more clearly at map scale.

repeated back-ups & save versions as you go, including regular backups to an off-site storage!

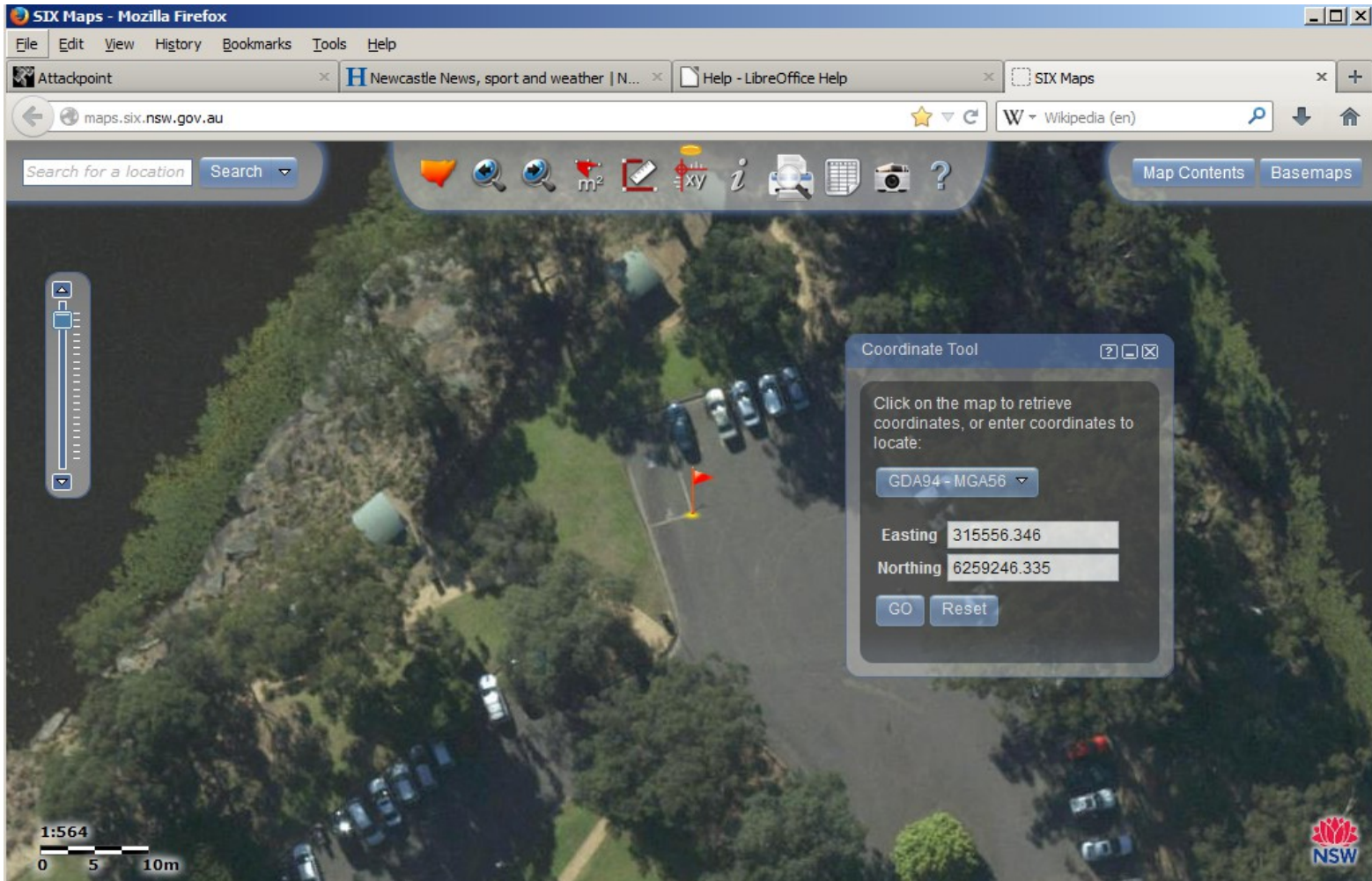
**computer storage is cheap - use it!**

# Getting coordinates - SIX



**coordinates of reference point**

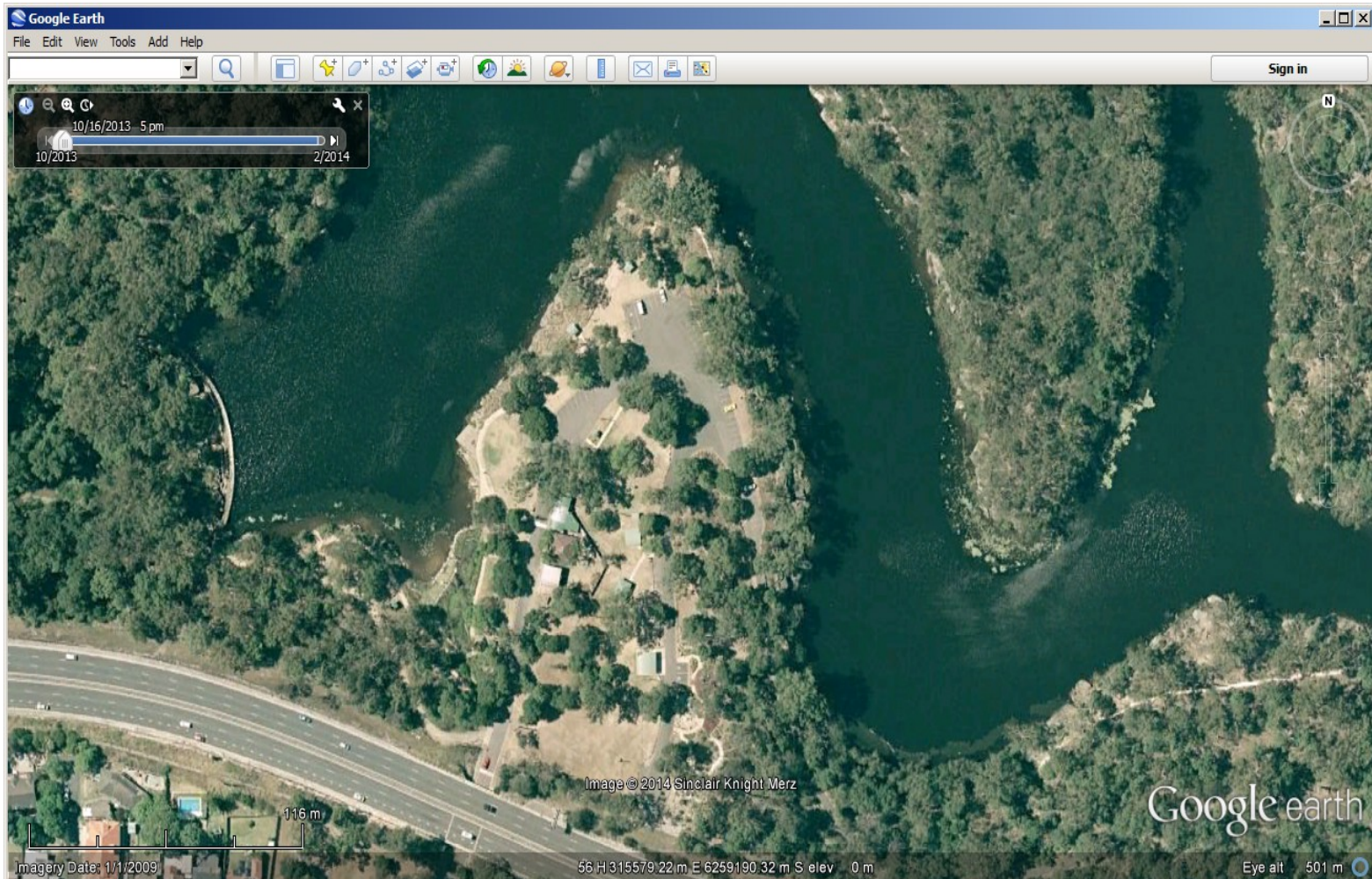
# Getting coordinates - SIX



**“Go” to check location**



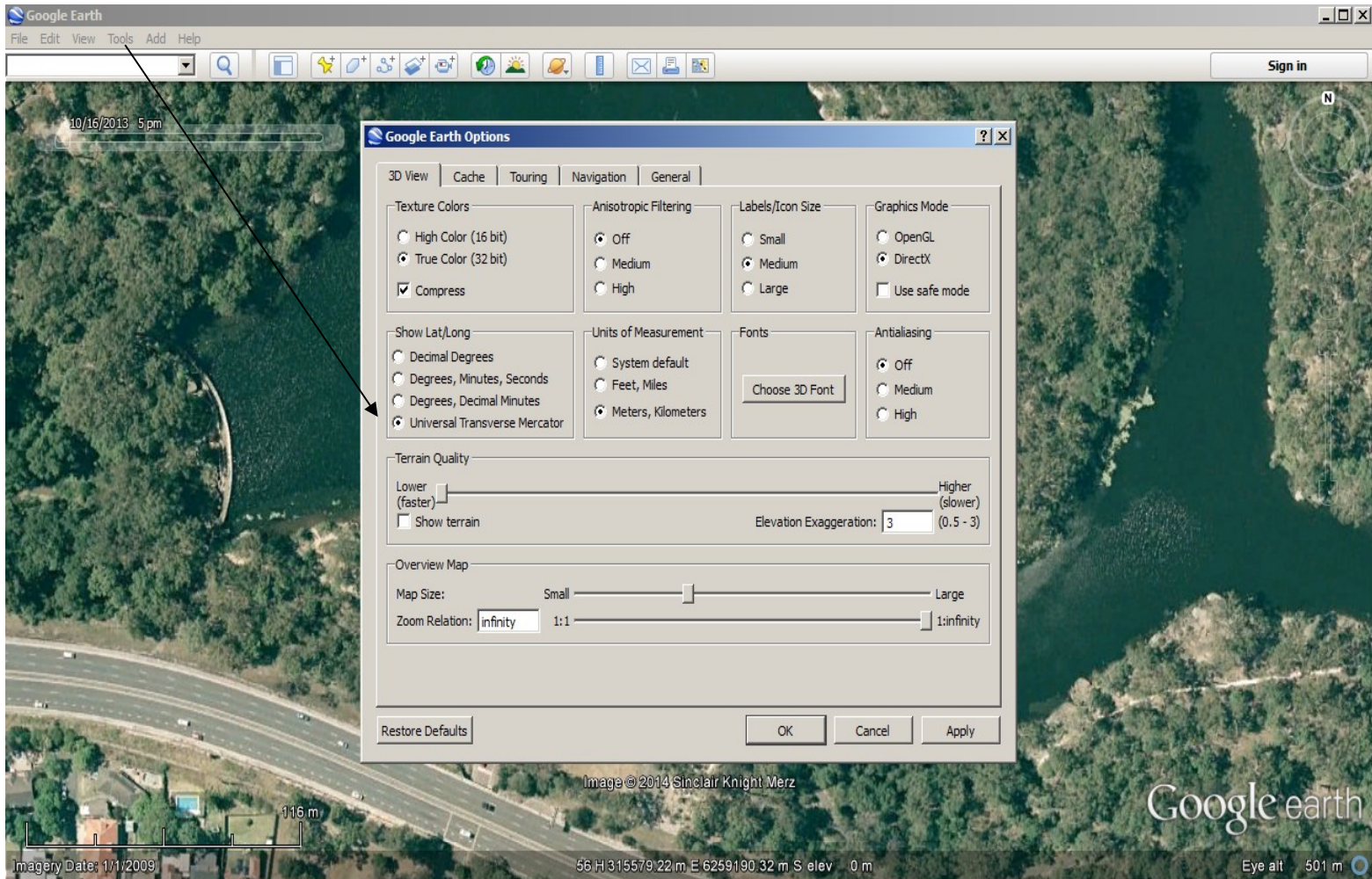
# Getting coordinates – Google Earth



**Open GE and move to location**

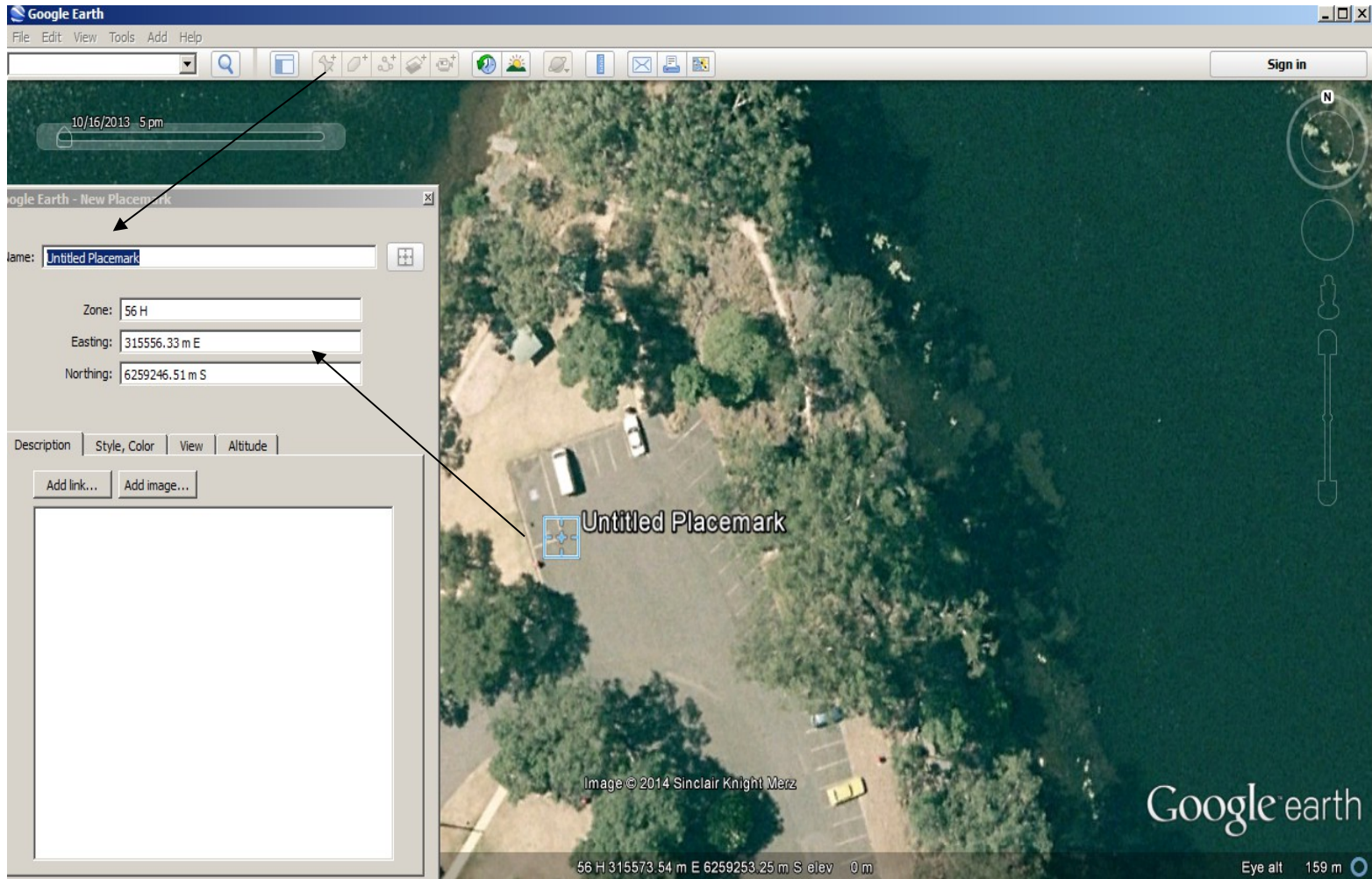


# Getting coordinates – Google Earth



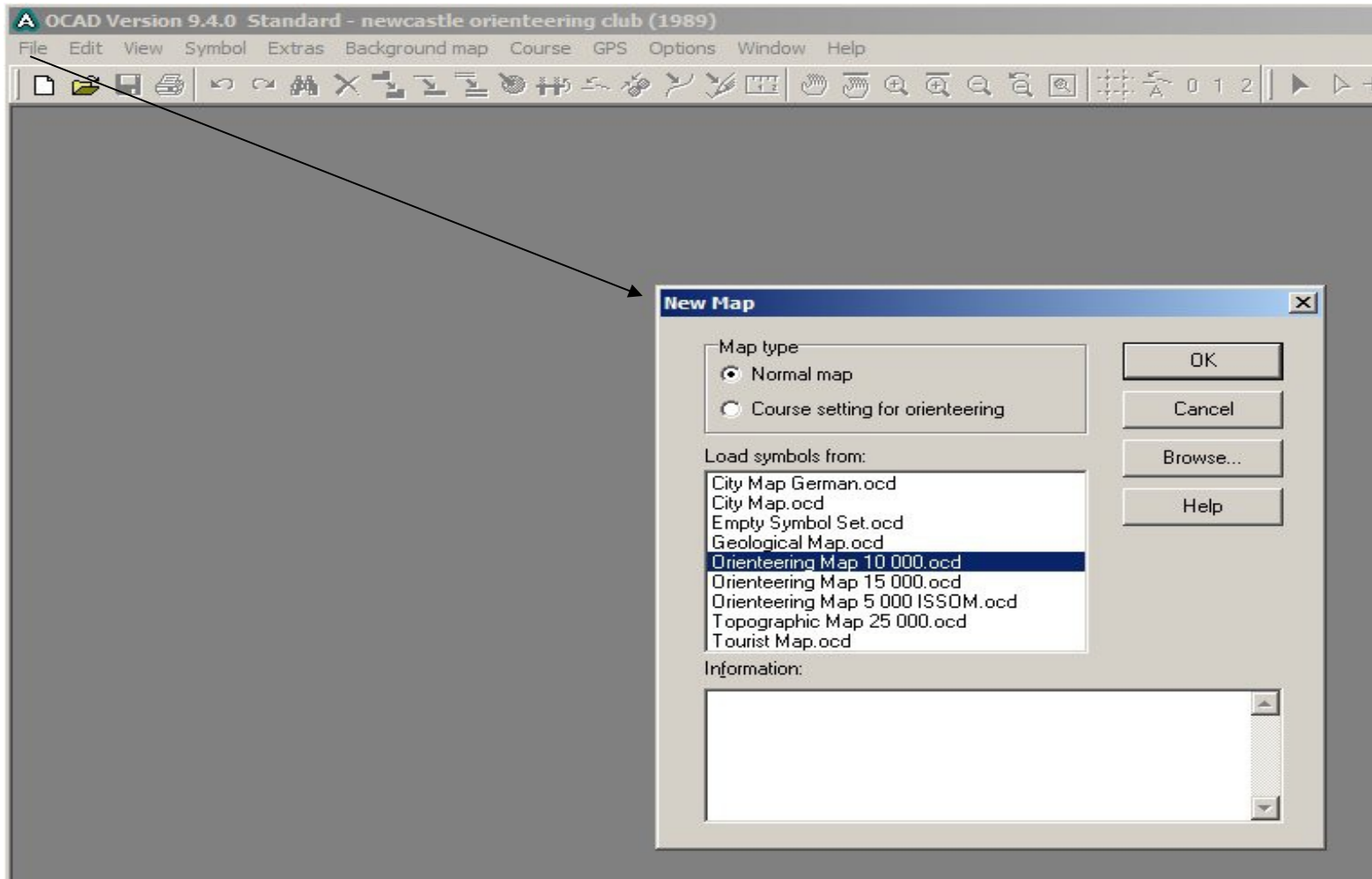
**Tools/options to set Universal Transverse Mercator coordinates**

# Getting coordinates – Google Earth



**“placemark” to get coordinates for selected reference**

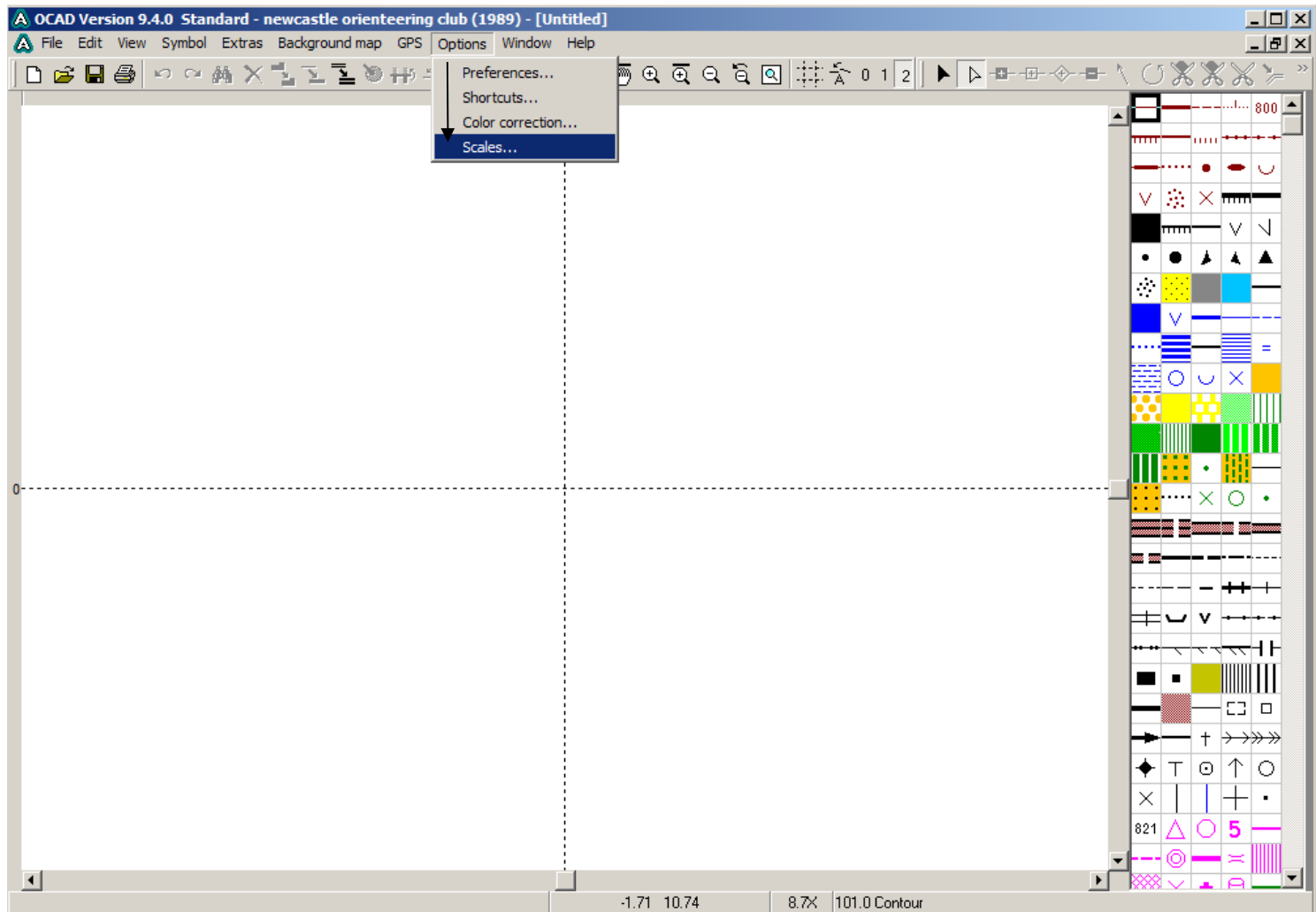
# Setting up base map - OCAD9



**new map file – with appropriate symbol set**

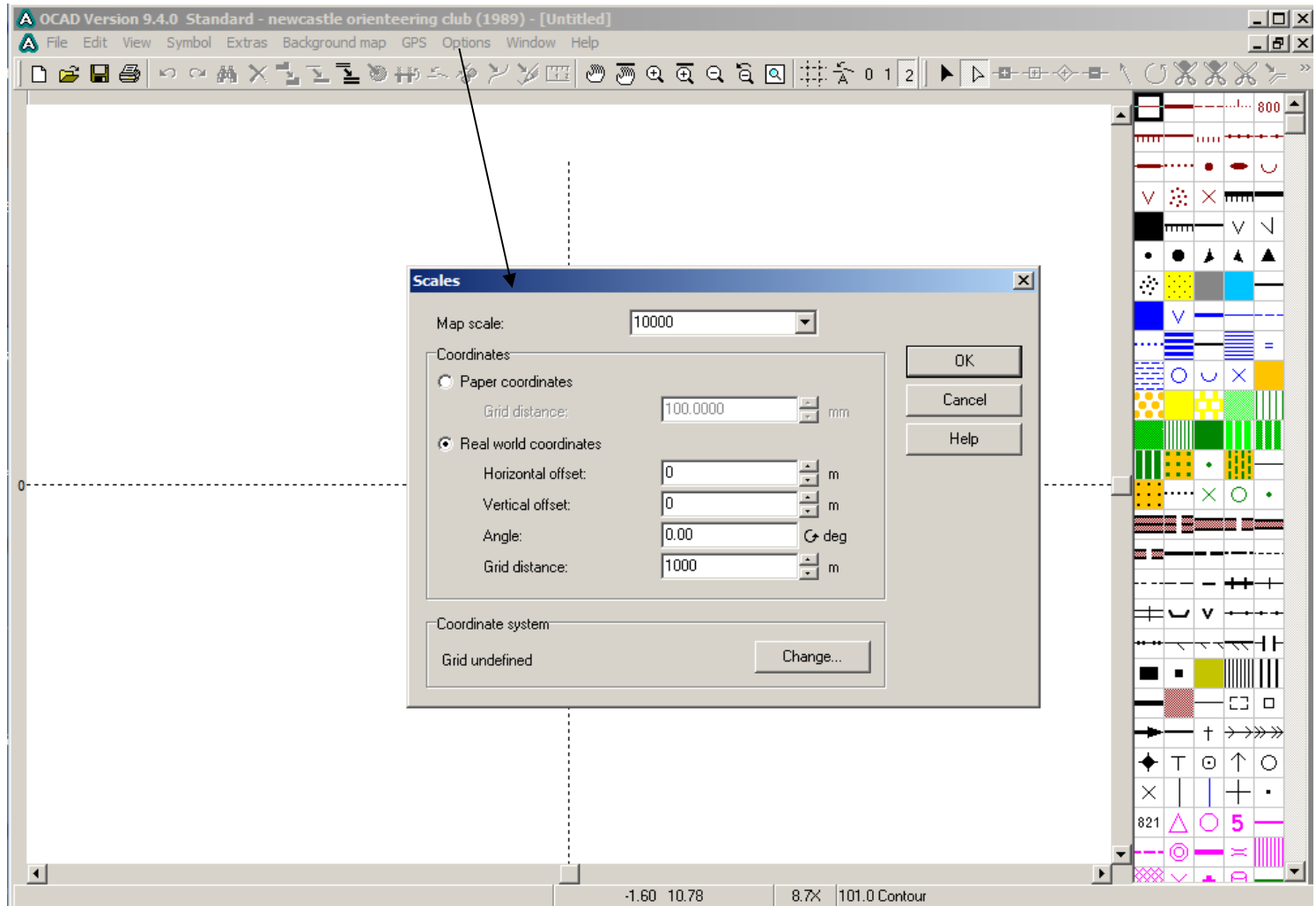


# Setting up base map - OCAD9



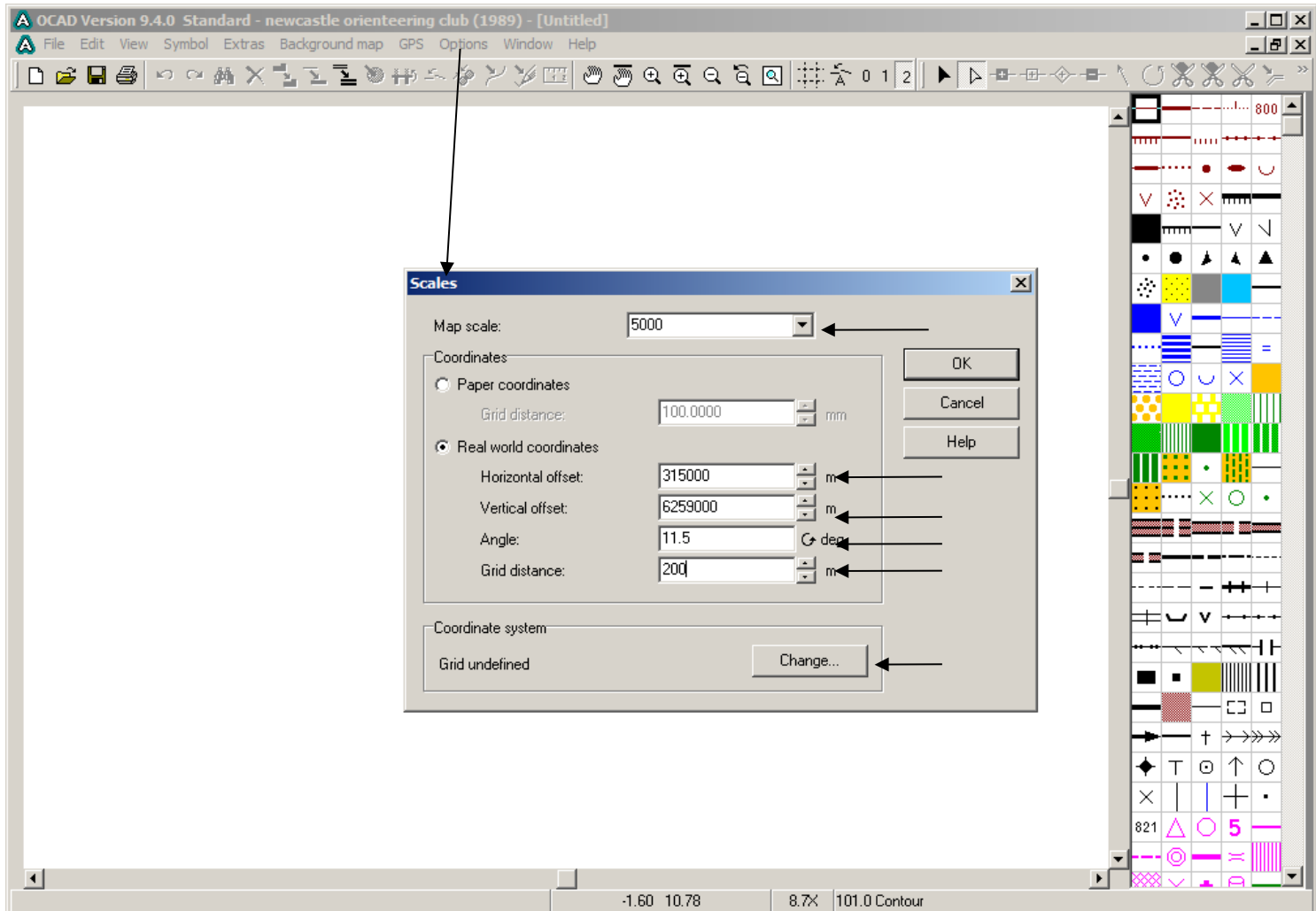
**Empty file      options - scales**

# Setting up base map - OCAD9



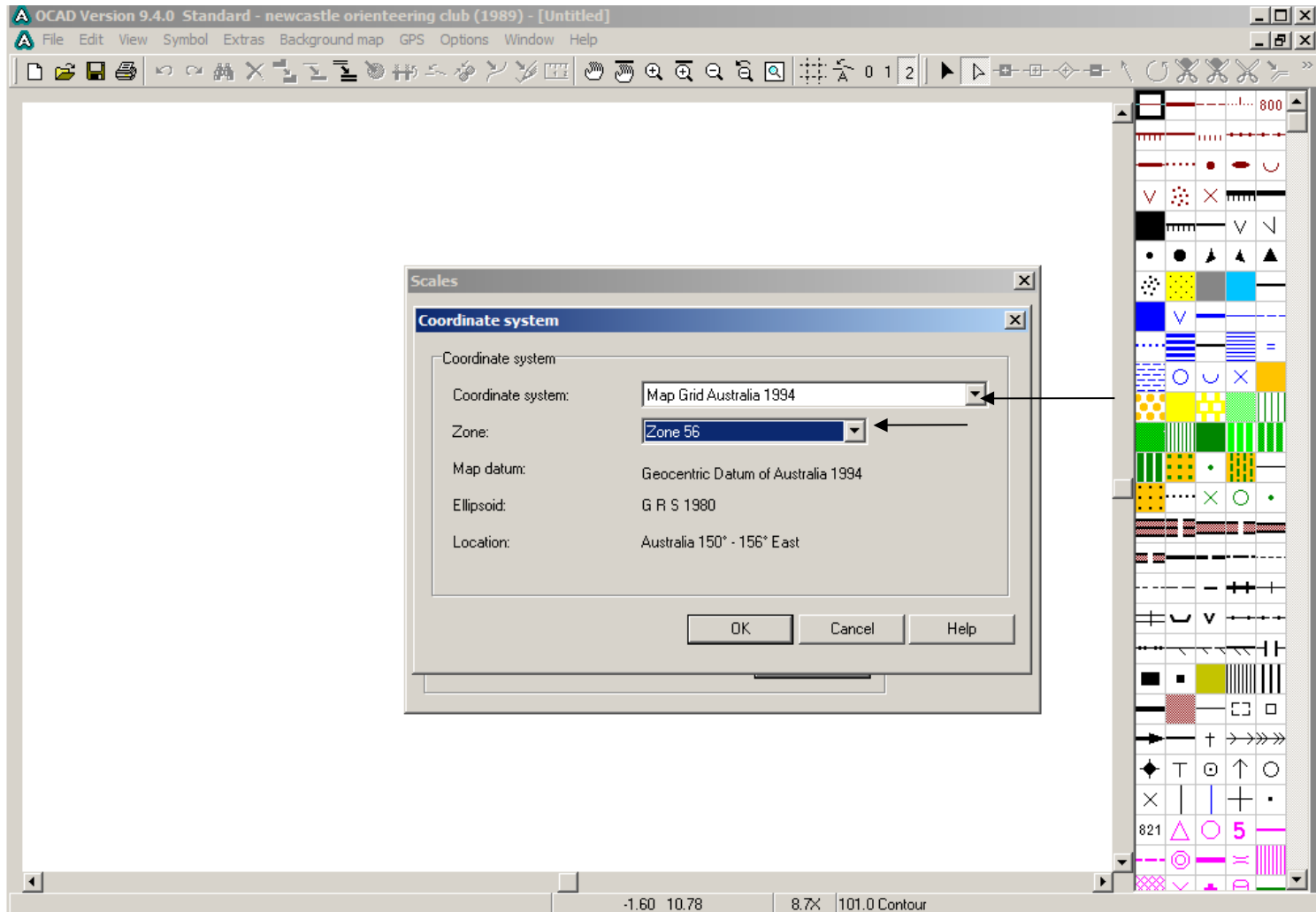
**before setting origin point**

# Setting up base map - OCAD9



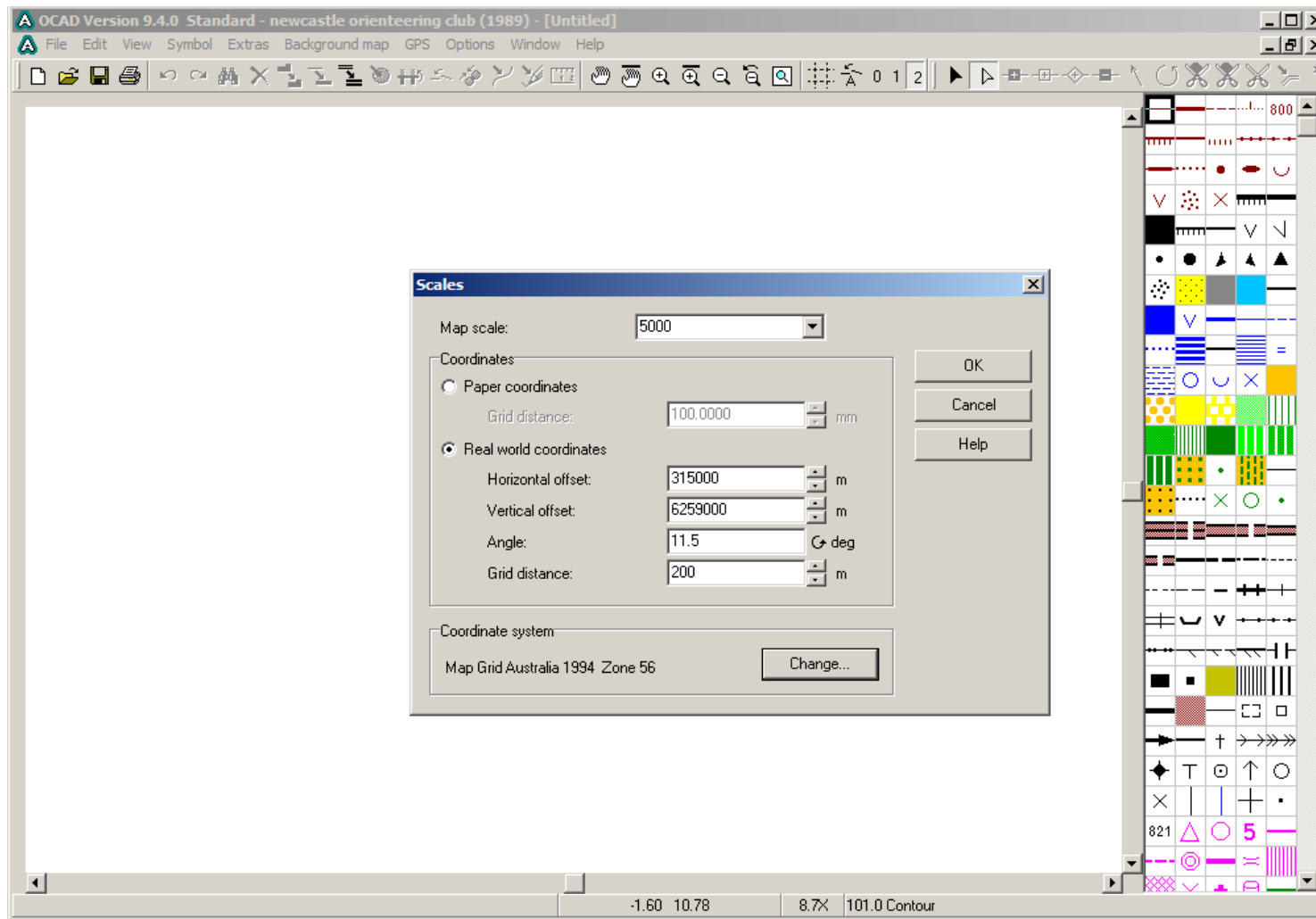
**Set origin point, scale, grid and on-screen mesh**

# Setting up base map - OCAD9



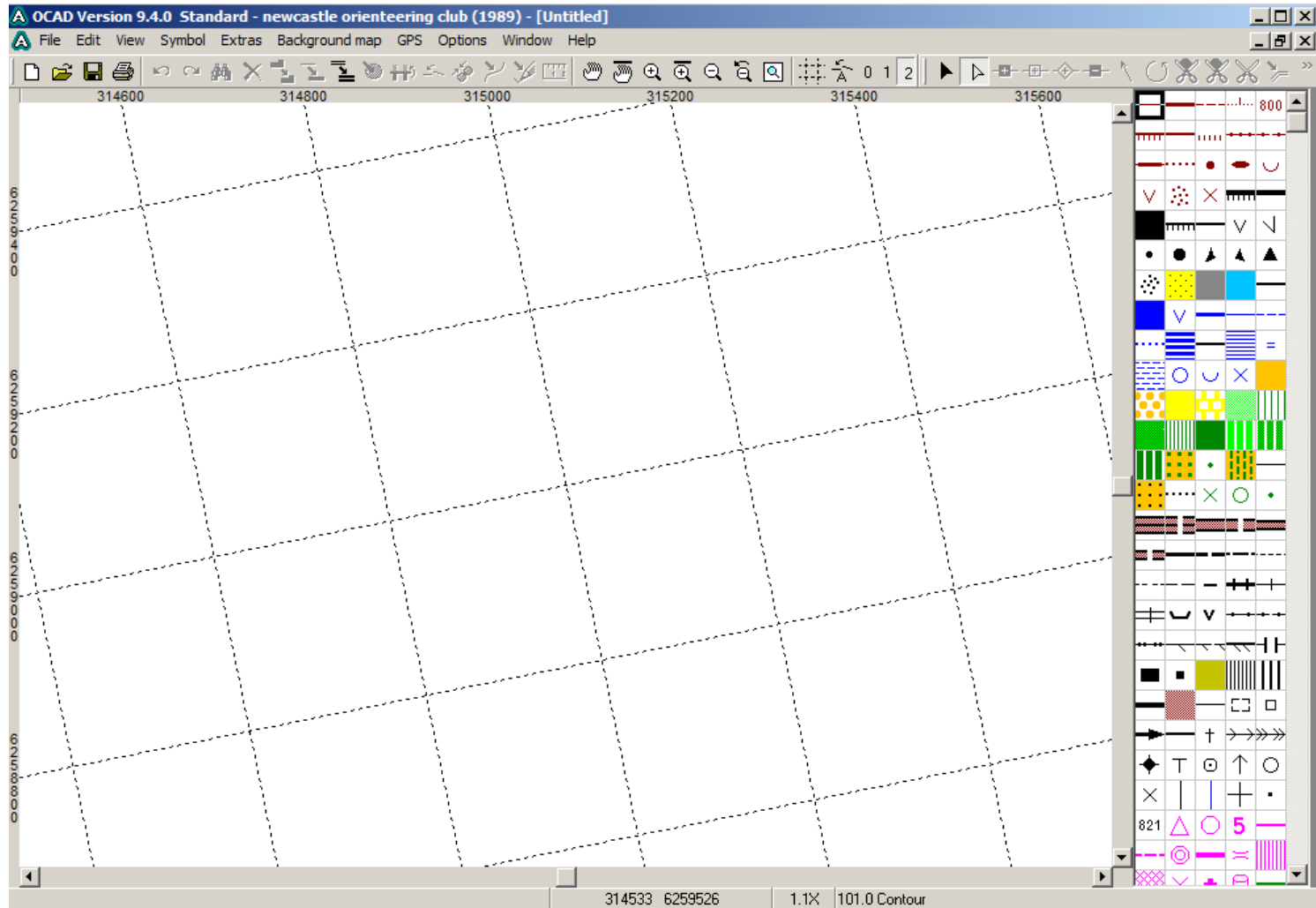
**Set grid definition - MGA zone 56**

# Setting up base map - OCAD9



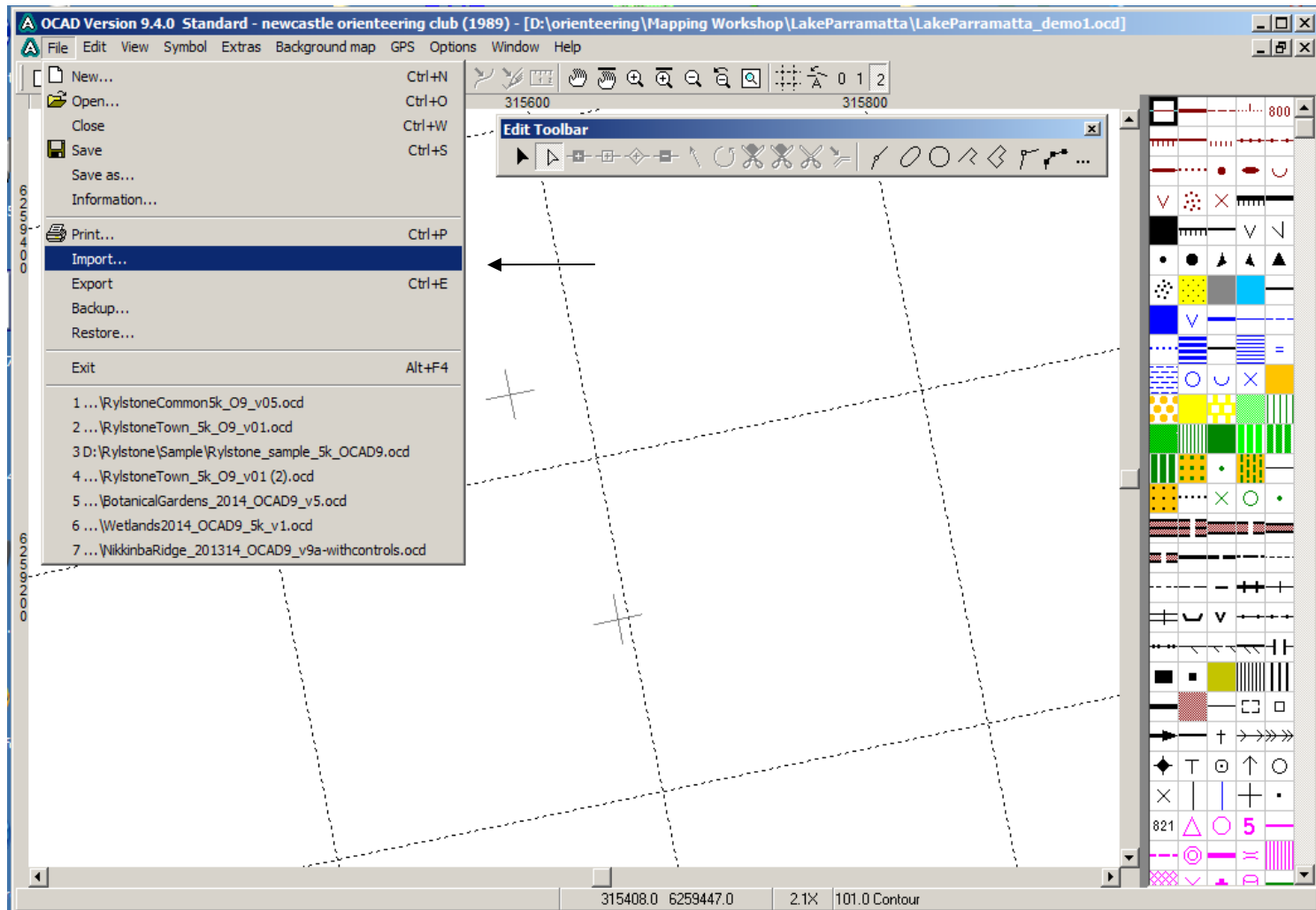
**Finished grid set-up**

# Setting up base map - OCAD9



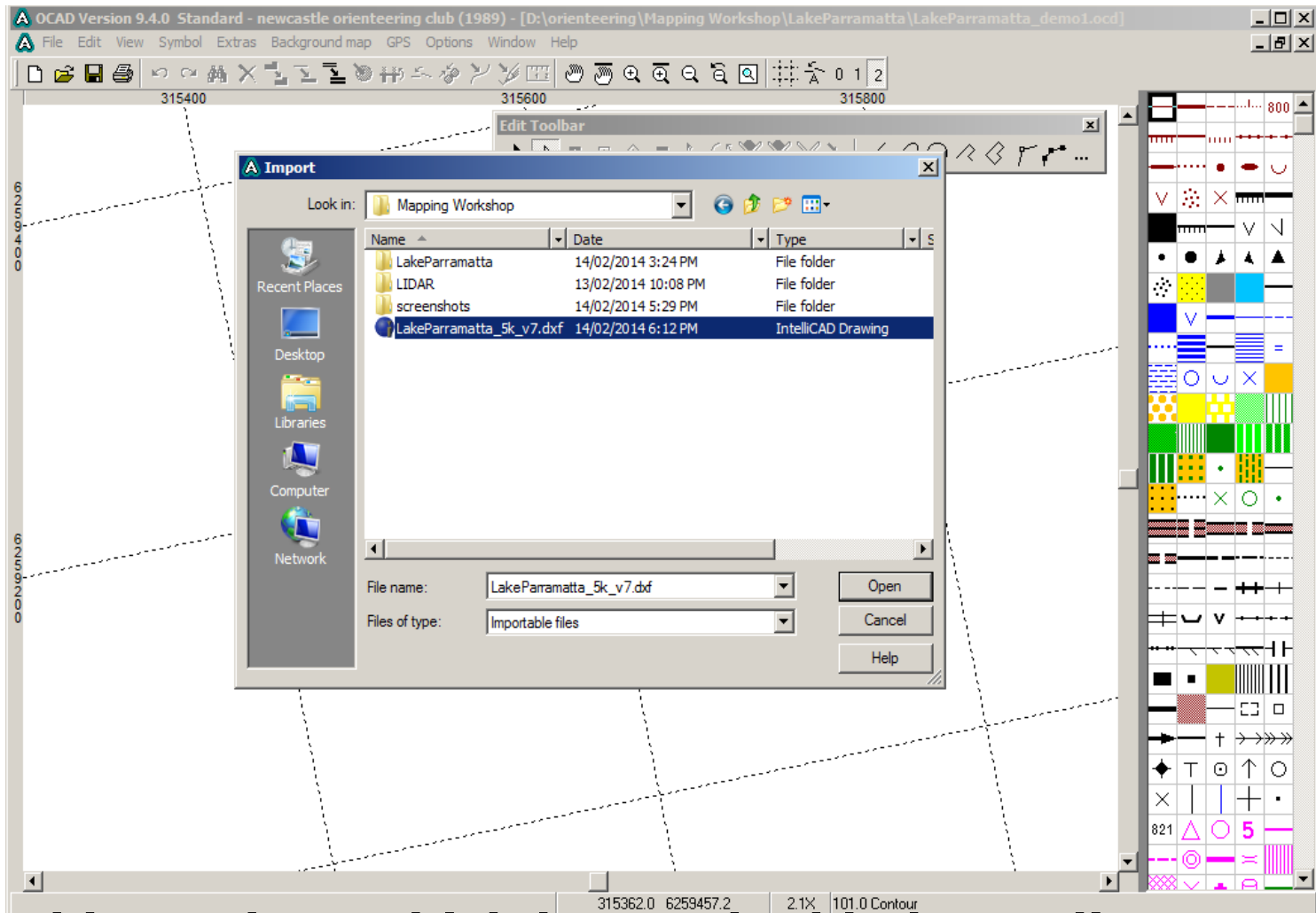
**result – 200m grid mesh rotated 11.5 deg**

# Setting up base map - OCAD9



**Add any data which has embedded coordinates  
Eg dxf files of contours and other vector information**

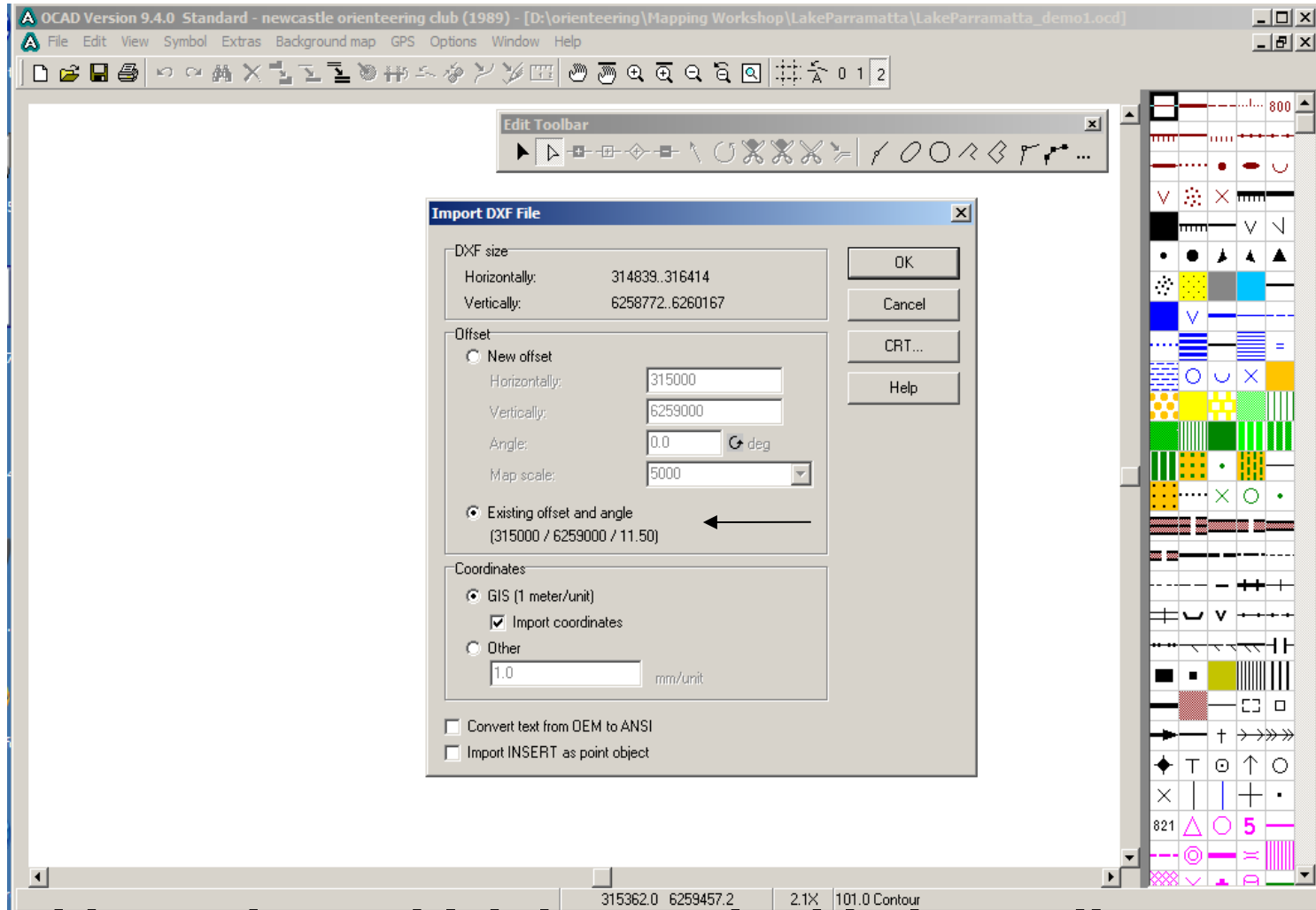
# Setting up base map - OCAD9



**Add any data which has embedded coordinates  
Eg dxf files of contours and other vector information**

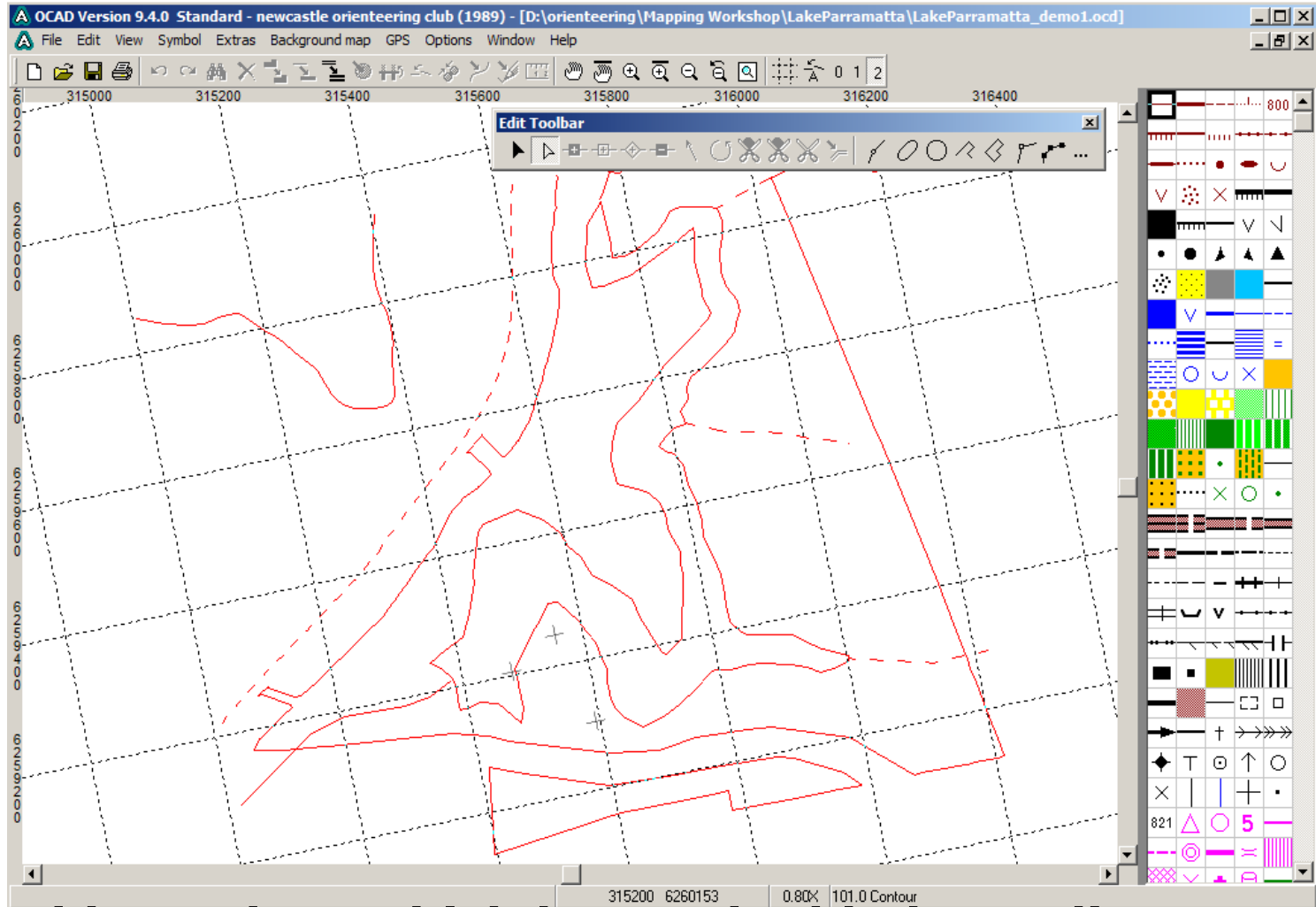


# Setting up base map - OCAD9



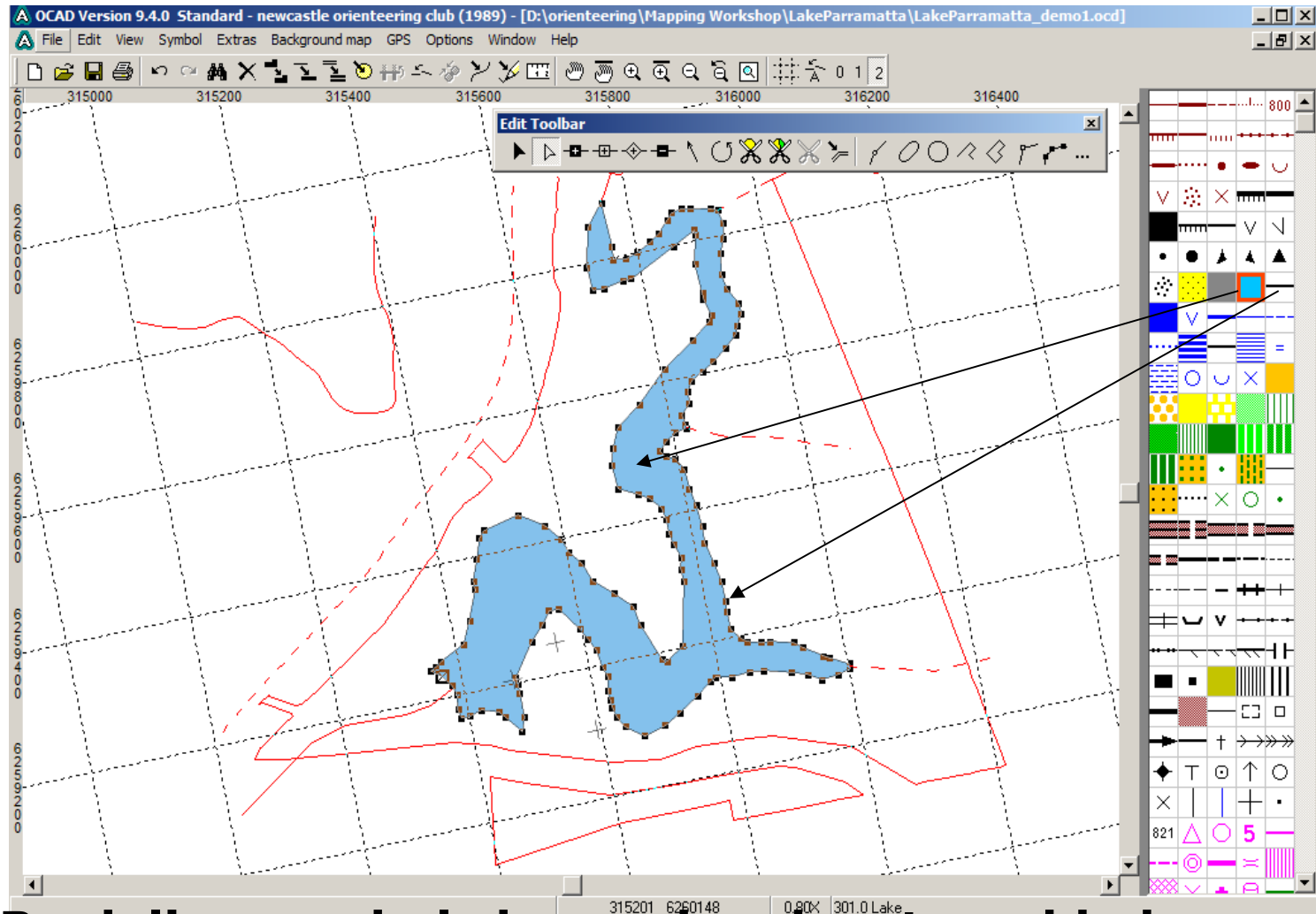
**Add any data which has embedded coordinates  
Eg dxf files of contours and other vector information**

# Setting up base map - OCAD9



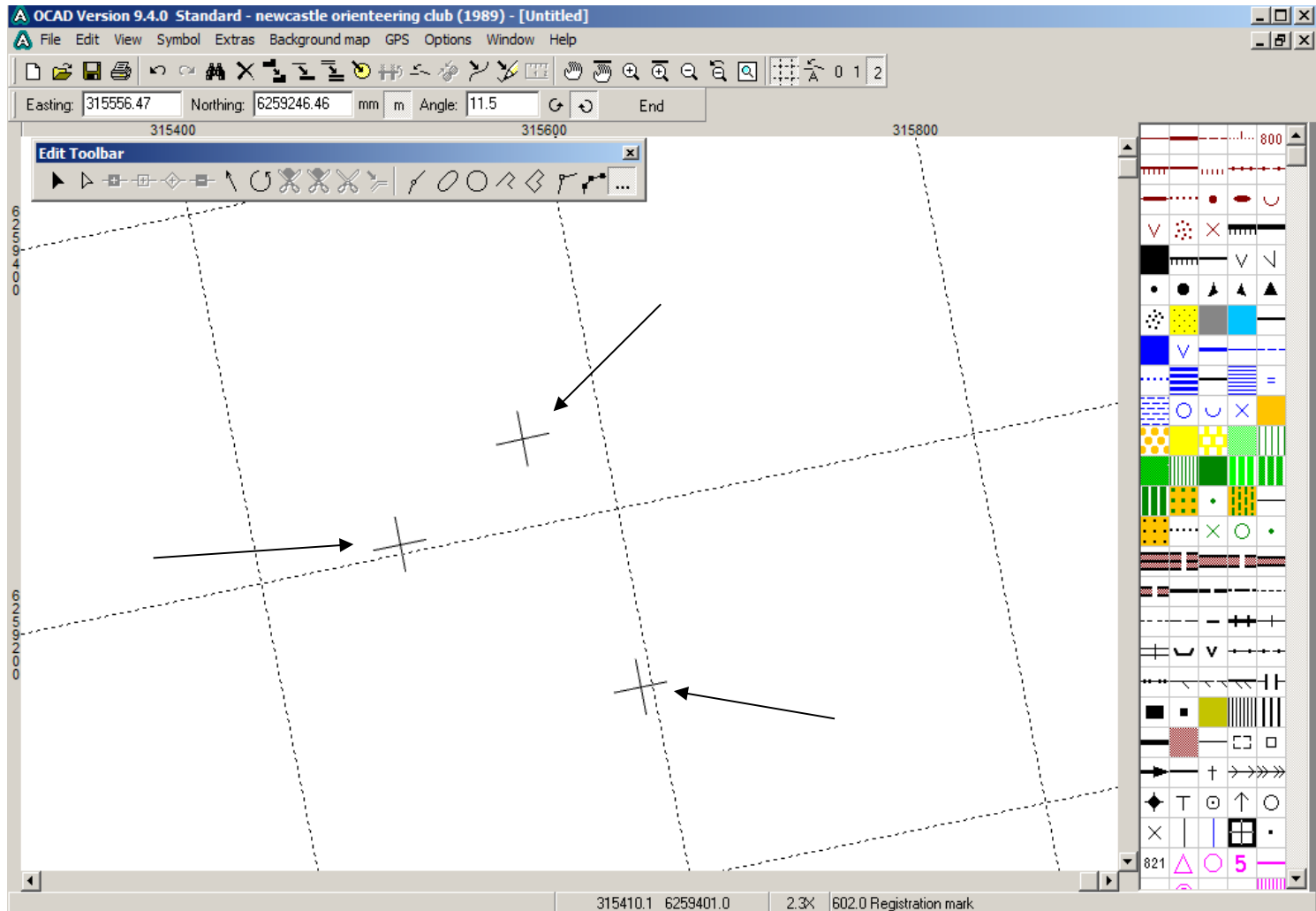
**Add any data which has embedded coordinates  
Eg dxf files of contours and other vector information**

# Setting up base map - OCAD9



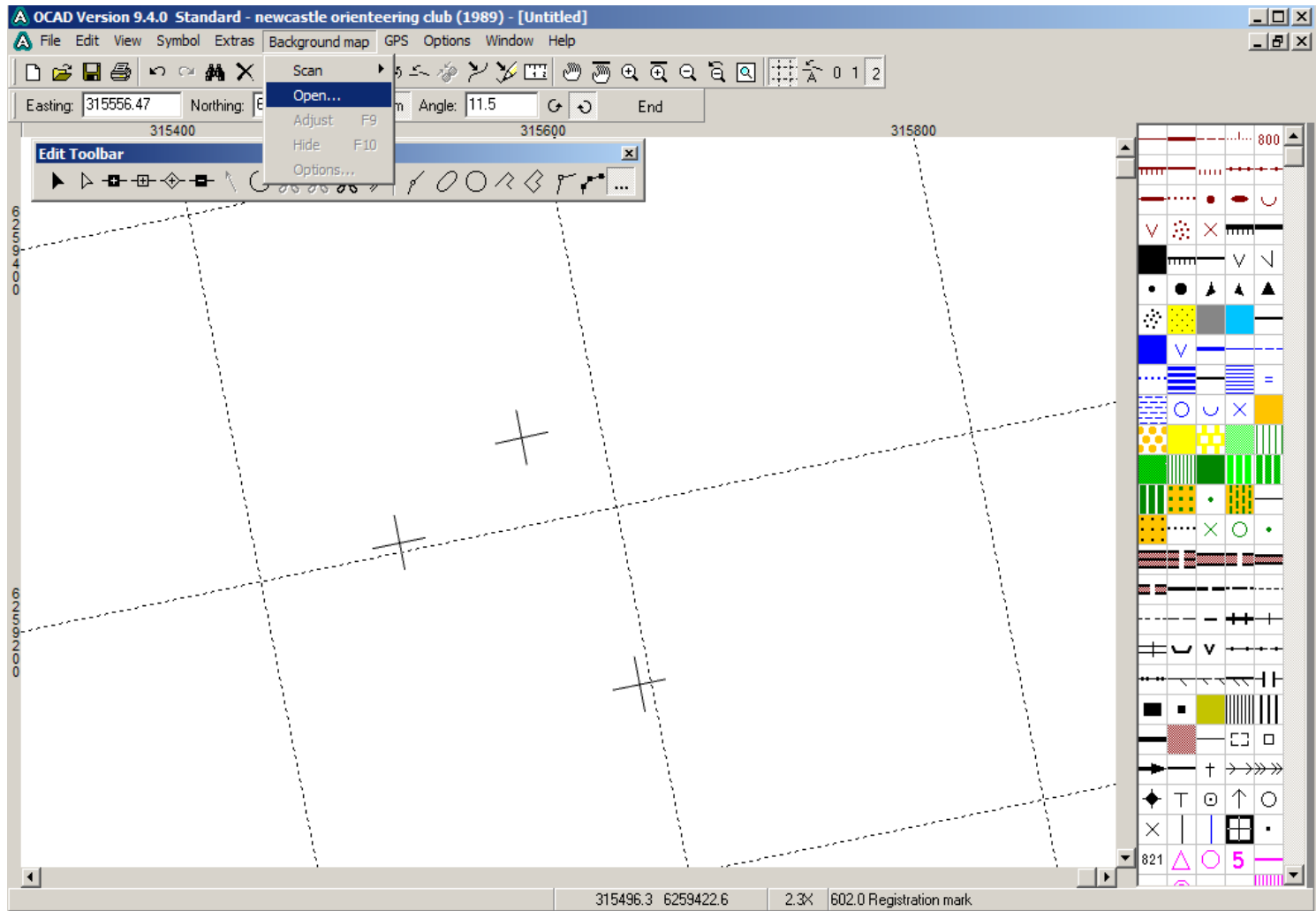
**Bank line symbol changed and water added**

# Setting up base map - OCAD9



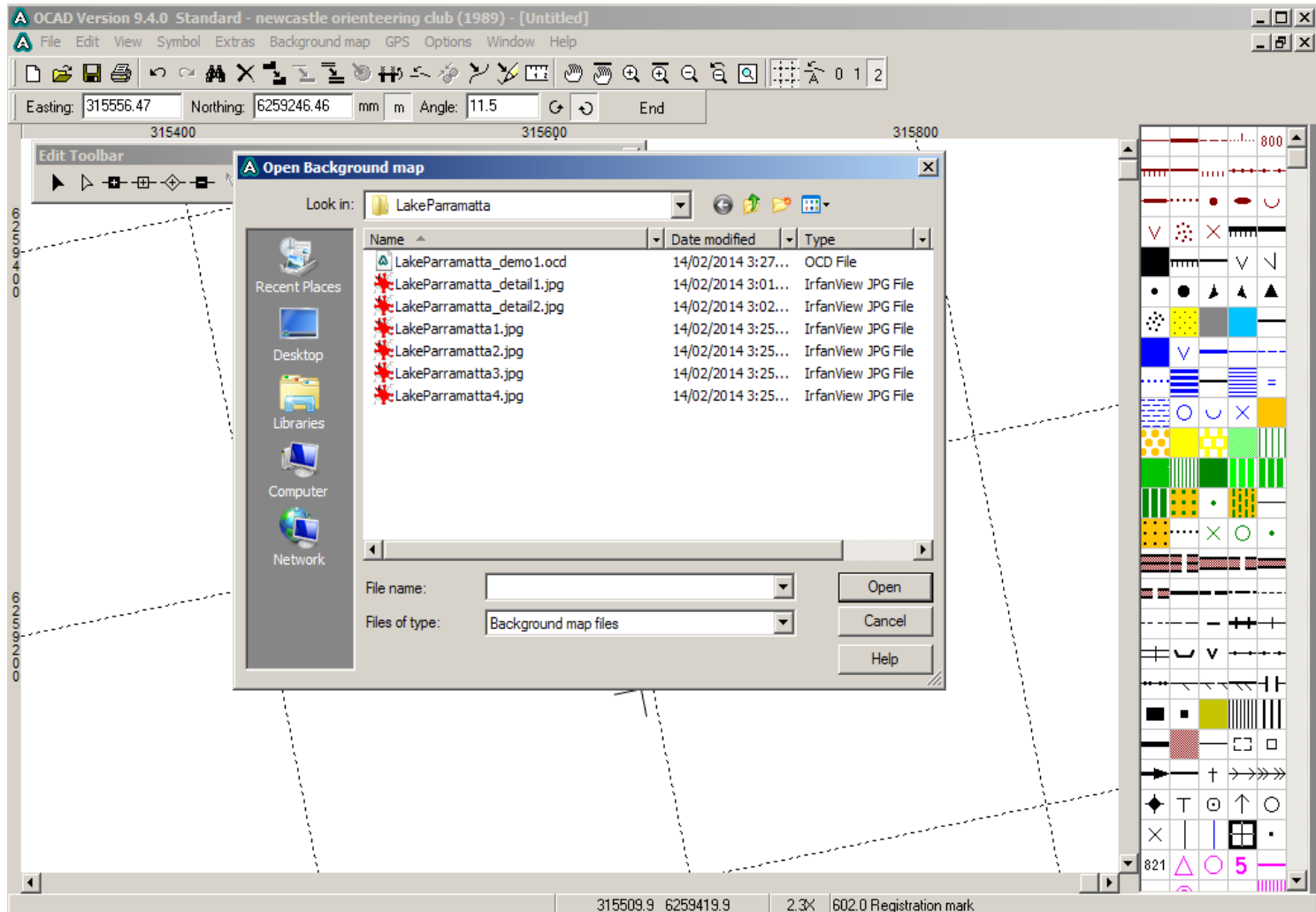
**Enter reference coords with keyboard**

# Setting up base map - OCAD9



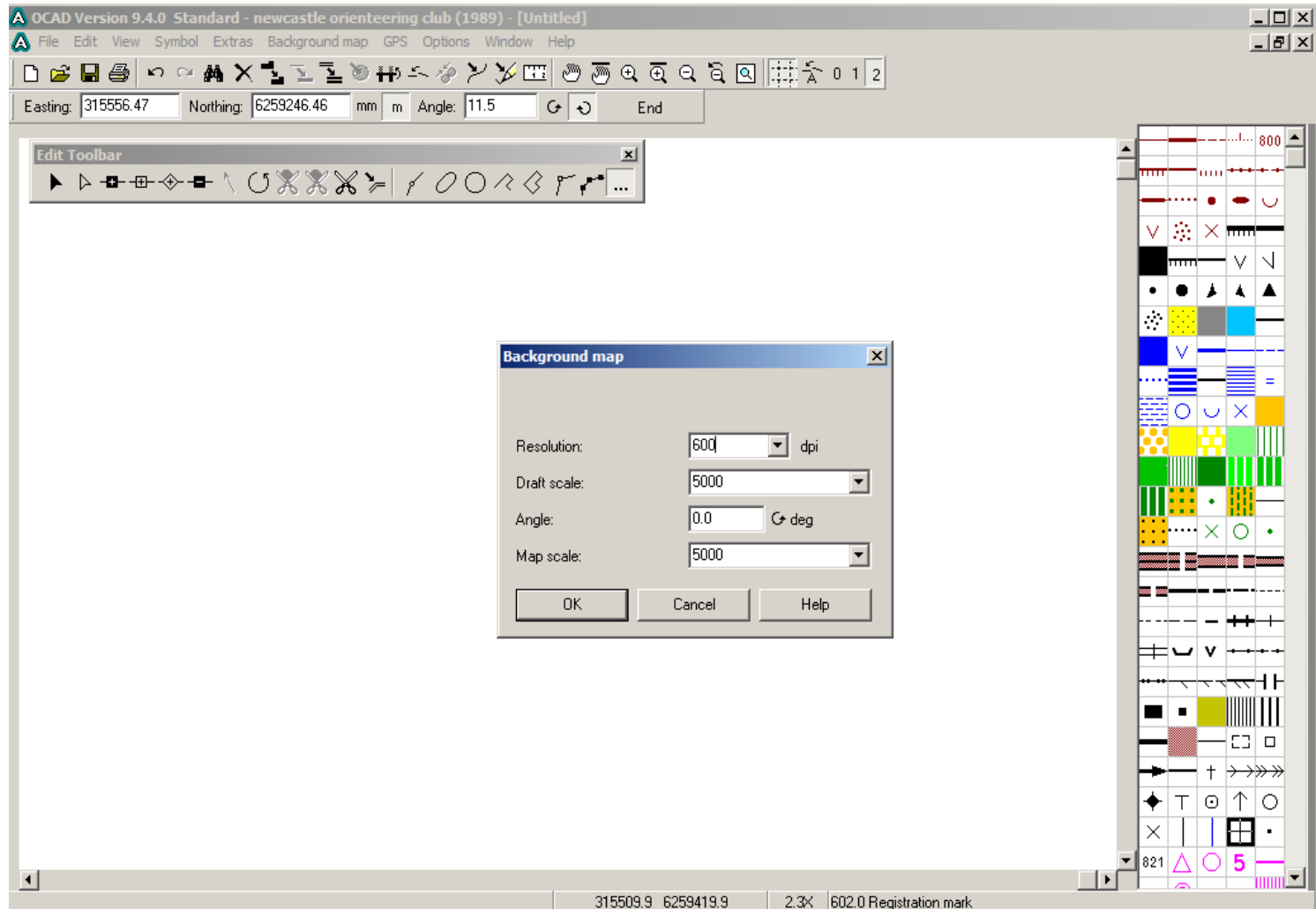
**set up background image - open**

# Setting up base map - OCAD9



**Select background image**

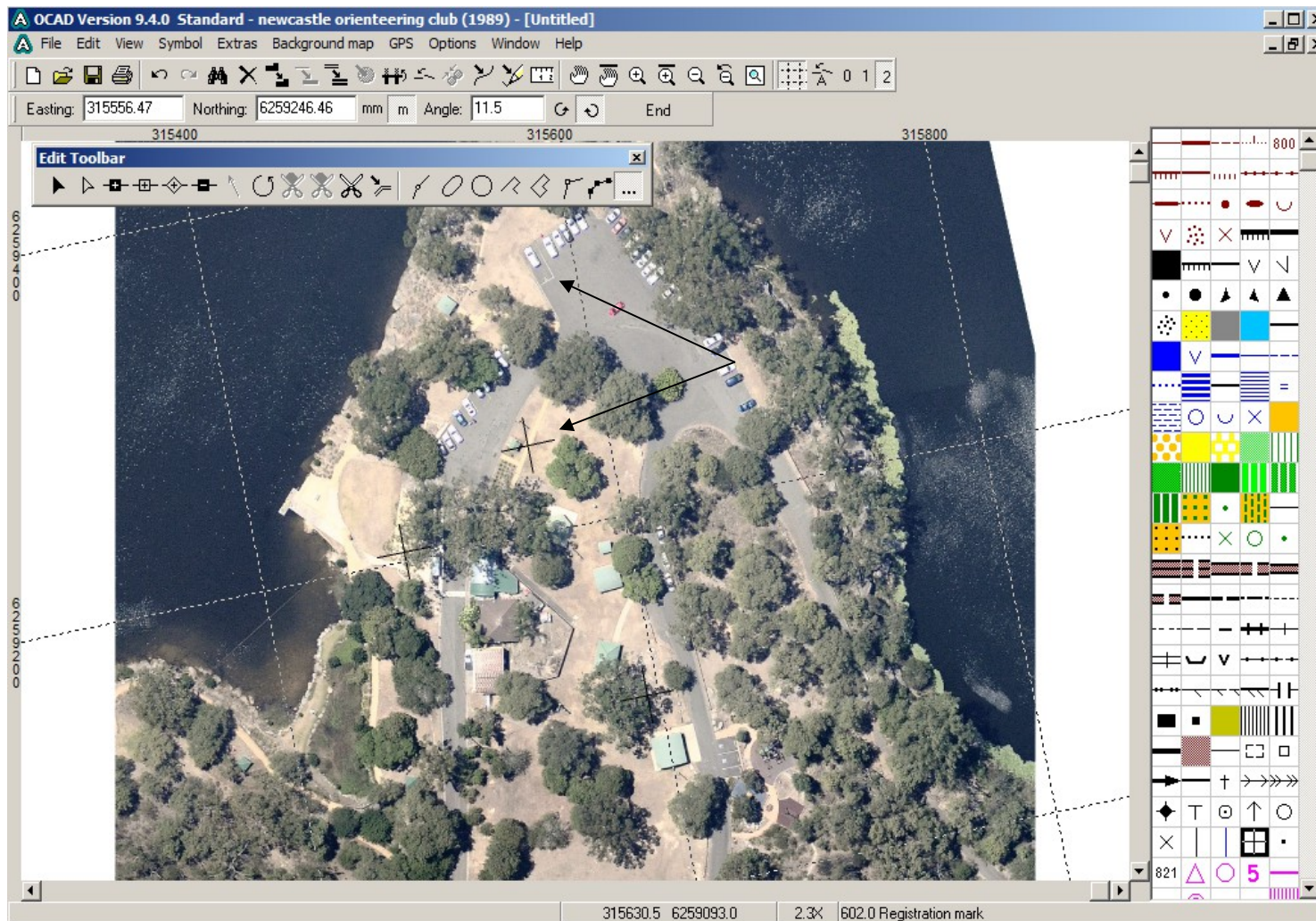
# Setting up base map - OCAD9



**Approx parameters for background image**



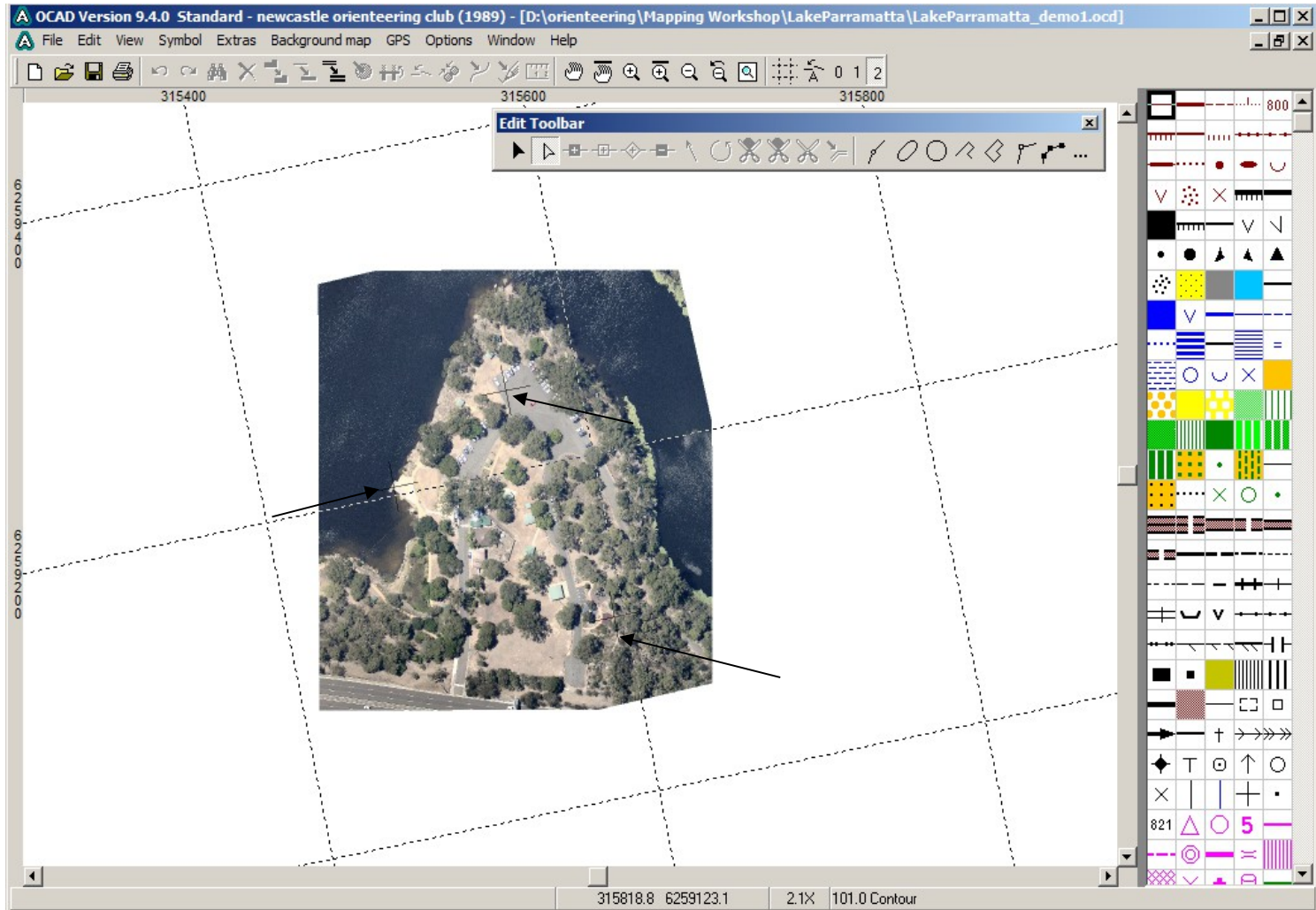
# Setting up base map - OCAD9



**Background loaded but not adjusted**

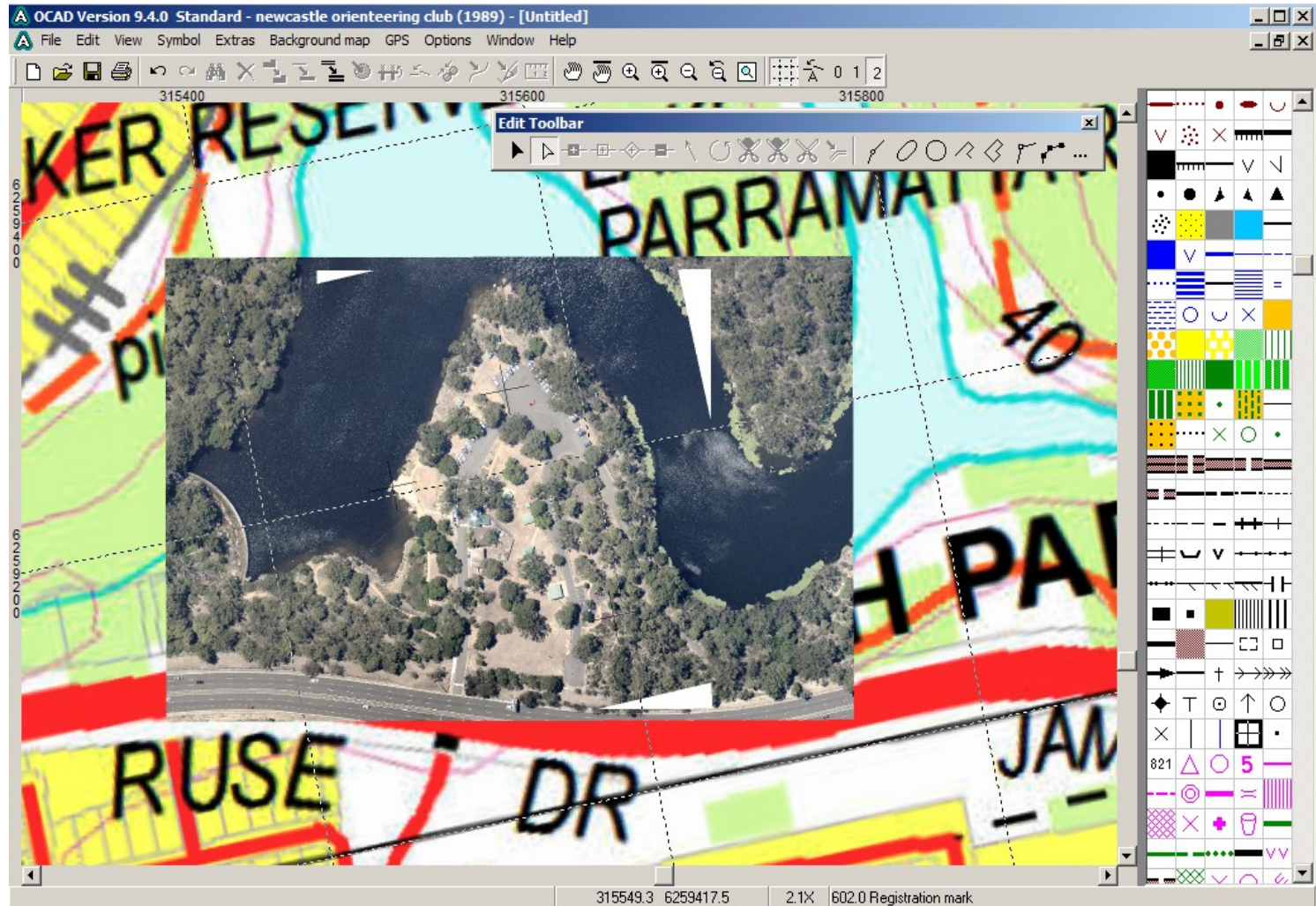


# Setting up base map - OCAD9



**Background image adjusted to references (F9)**

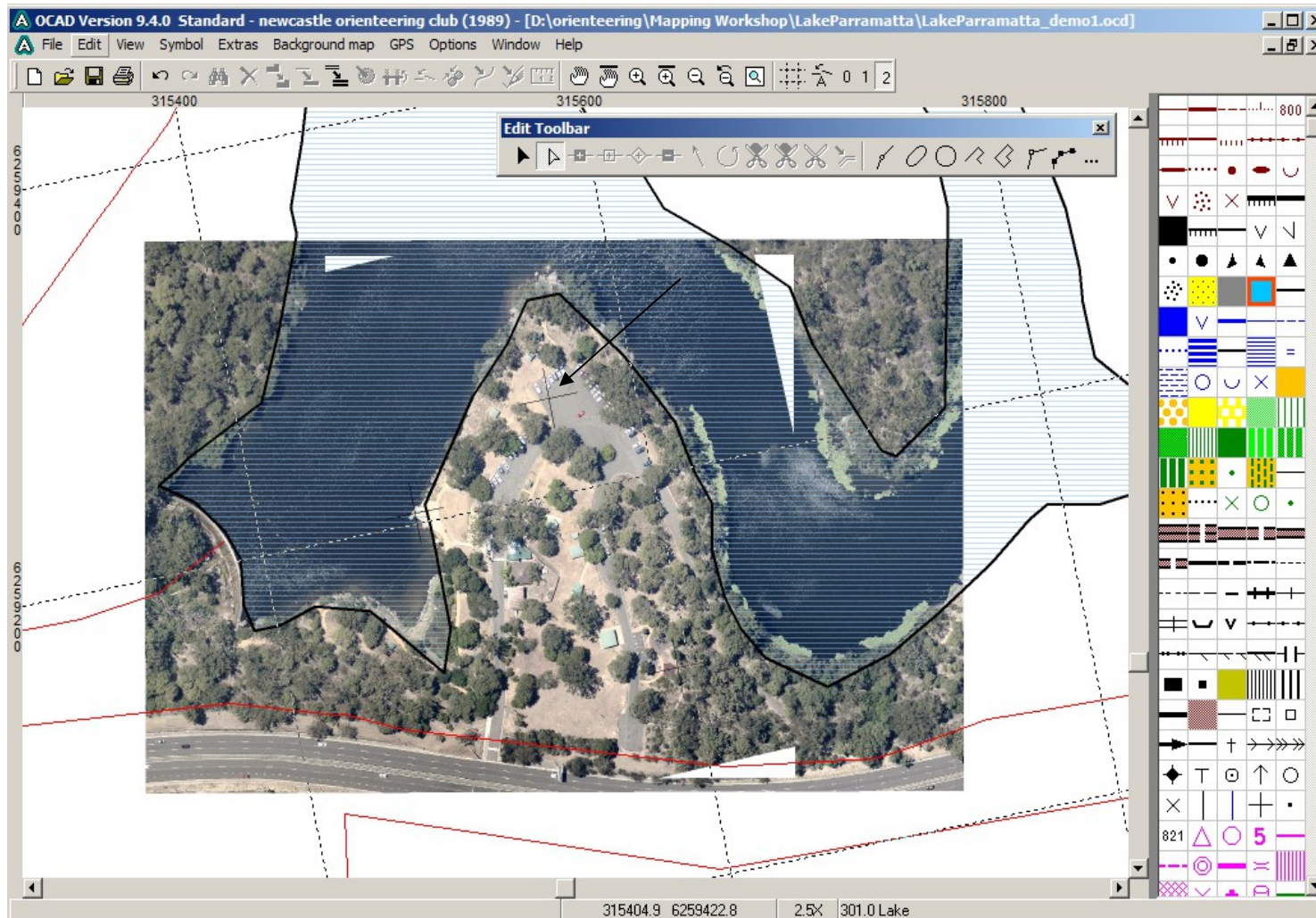
# Setting up base map - OCAD9



**more background images added & adjusted**



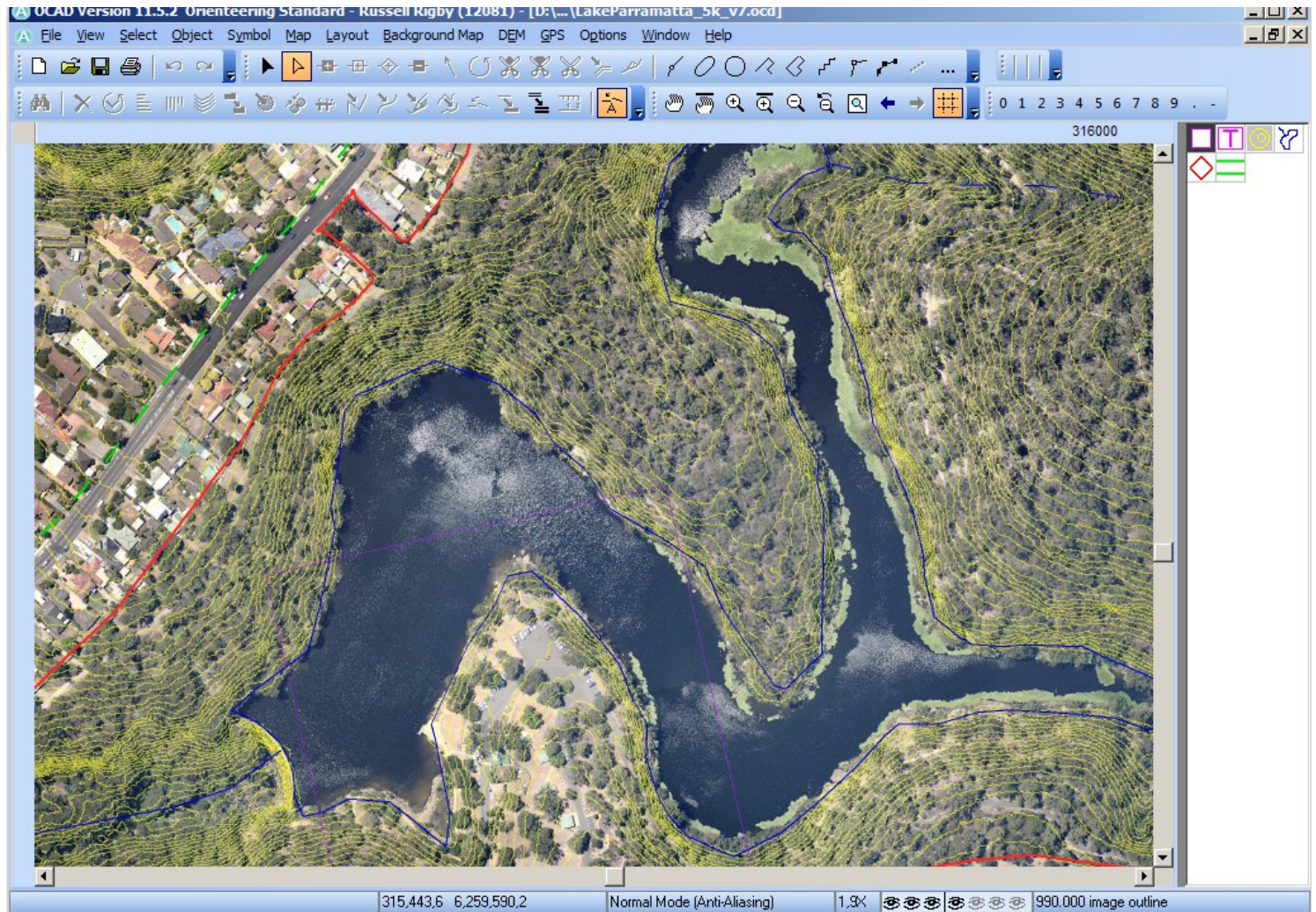
# Setting up base map - OCAD9



**Background images & vector data**



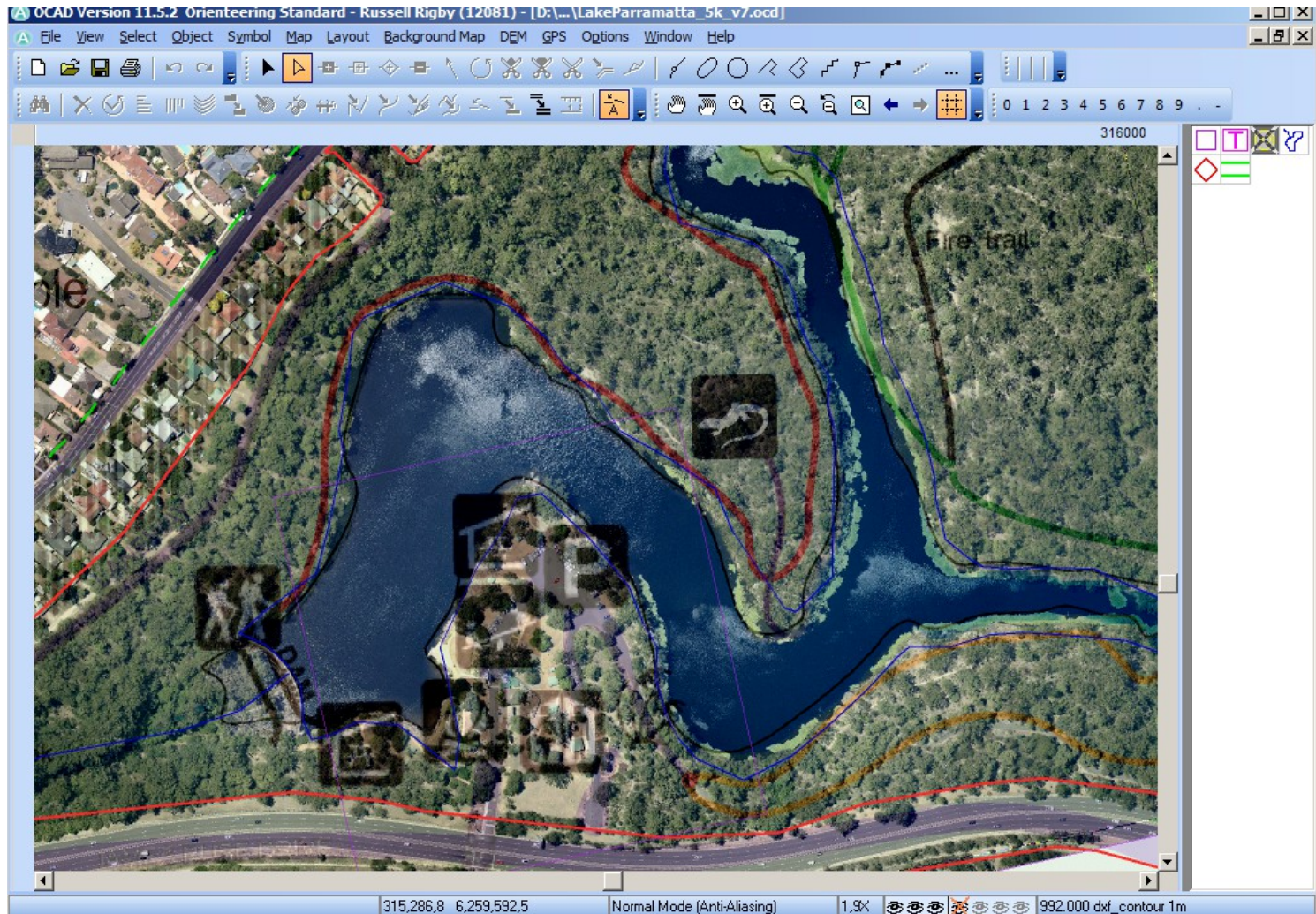
# Setting up base map - OCAD11



**Georeferenced images added without manual steps**



# Setting up base map - OCAD11



**Nearmap images, walking tracks & vector data**

# Links

**SIX** [maps.six.nsw.gov.au/](https://maps.six.nsw.gov.au/)

**GoogleEarth** [earth.google.com/](https://earth.google.com/)

**Nearmap** [nearmap.com](https://nearmap.com)  
(contact me if you want a download)

**NSW Spatial Data Catalogue**  
[sdi.nsw.gov.au/catalog/main/home.page](https://sdi.nsw.gov.au/catalog/main/home.page)

**OCAD** [ocad.com](https://ocad.com)

**nswtopo** [github.com/mholling/nswtopo](https://github.com/mholling/nswtopo)  
(talk to me if you want to try this one)

**map examples** [omaps.worldofO.com](https://omaps.worldofO.com)  
(thousands of map, world-wide)

**contact me** [mapping@onsw.asn.au](mailto:mapping@onsw.asn.au) or (02) 49633857

A basemap created using any combination of data, is by **NO MEANS** a completed orienteering map! This basemap *must* be taken into the field by a fieldchecker, who can then correct features that have been mis-identified.

The features have been drawn in the correct locations with the correct shape, but the fieldchecker must make the decision of what should and should not remain on the final map. Also contour shapes, while physically correct, may need to be adjusted to better represent the terrain to an orienteer running a course.

# Setting up base map - summary

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