

What coordinates do I use for Neara?

Neara is georeferenced to **GDA2020 MGA56 coordinates and AHD71 heights**. What does this mean?

GDA2020 – “Geodetic Datum of Australia”

The **Geodetic Datum of Australia** is the *Geodetic Sphere* that best fits the shape of the curved earth (technically a Spheroid, as the Earth is flattened at the North and South poles). It is the basis of Geodetic Coordinates (Latitude and Longitude, which are referenced from the centre of the Earth). GDA is realised on the International Terrestrial Reference Frame 2014 (ITRF2014) at epoch 2020.0 (that is, as at 1 January 2020) ¹, lending to its full name **GDA2020**.

MGA2020 (Zone 56) – “Map Grid of Australia”

The **Map Grid of Australia** is a projected rectangular coordinate system (Universal Transverse Mercator - UTM) with an underlying datum of GDA2020. It flattens the curved sphere in a localised area and applies grid coordinates (Easting and Northings) fixed in epoch 2020.0. The UTM system divides the Earth into 60 zones, each with a width of 6 degrees of longitude. It so happens that Ausgrid's entire distribution area is within **MGA2020 (Zone 56)**. This Map Grid reference is sometimes shortened to **MGA56**.



Image source - <https://esriaustraliattechblog.wordpress.com/2021/03/31/understanding-spatial-references-in-australia/>

AHD71 – “Australian Height Datum 1971”

The **Australian Height Datum 1971** is the current reference system for heights in Australia. Zero metres (0.000m) on AHD was determined from mean sea level at 30 locations around the Australian continent between the years 1966 and 1968.

What happened prior to GDA2020?

The **Geocentric Datum of Australia 1994** (GDA94) was used, and it was based on the realisation of ITRF1992 at epoch 1994.0 (1 January 1994).

Compared to GDA94 coordinates, GDA2020 coordinates will have 'shifted' approximately 1.8 metres. This is why it is important that the correct coordinate system is used.

¹ The reference at epoch 2020.0 is relevant to understand as, due to tectonic motion, the Australian Tectonic Plate is moving at 7cm per year. Without this epoch reference, coordinates would be constantly changing, creating issues with construction, land records, etc. Hence, under GDA2020, coordinates are set at epoch 2020.0.