A method of testing the accuracy of Ausgeoid09 in South Australia has been derived. This is at points where both precise ellipsoidal and geoidal elevations are available. Such “geometrically derived” geoid-ellipsoid separations are compared with values interpolated from Ausgeoid09.

The precise spheroidal values on the Geocentric Datum of Australia 1994 (GDA94) are derived via the South Australian Seismic Network, (SASZ). This network is currently comprised of a set of 65 stainless steel ground marks, drilled into bedrock, and placed at roughly 80-kilometre spacing over the earthquake prone regions of South Australia. The SASZ network has been extensively observed by GNSS and adjusted onto the Australian Fiducial Network, (AFN). All points have well defined heights on the geoid model concerned, the Australian Height Datum (AHD).

Our model used for testing is a GNSS network of 450 survey marks surrounding the Adelaide metropolitan area and referred to as the 2nd Order Network. This 2nd order network adjustment was constrained to three SASZ points, two north from Adelaide and one south.

Thus an accurately measured GNSS network has thus been adjusted on to the more accurate SASZ monitoring network to give us a suite of spheroidal heights. All points on the SASZ also have quality orthometric elevations on AHD.

The study shows the agreement between measured geoid-ellipsoid values and those from Ausgeoid09 were generally around 2 to 3 cms. However exceptions to this figure arise in certain locations for reasons that can be explained.