

Defining New South Wales

Under direction from the Surveyor-General, Spatial Services plays a vital role in supporting the survey industry in New South Wales (NSW) by:

- participating in and contributing to national geodesy to define the national datum and geodetic control standards
- extending, improving and maintaining the official State Control Survey Network
- setting cadastral surveying standards, drafting regulations to protect the integrity of the State's cadastre

Geodesy

Geodesy is the scientific aspect of surveying where the size, shape, atmospheric temperature and pressure, gravity and movement of the earth are taken into account in making and processing precise survey measurements.

The principles of geodesy are fundamental to everything that uses position and height.

Spatial Services participates in the following geodetic activities in NSW, many of which support national initiatives:

- Geodetic Survey Network
- Geocentric Datum of Australia (GDA)
- Australian Height Datum (AHD)
- Geoid determination and AUSGeoid
- Global Navigation Satellite Systems (GNSS)
- Continuously Operating Reference Stations (CORS)
- Positional and Local Uncertainty



State survey control network

The Surveyor-General and Spatial Services have long held responsibility for establishing, improving and maintaining the State's geodetic and control survey network.

Public and private sector surveyors (including Spatial Services' surveyors) contribute to the currency of the network by placing and coordinating new permanent survey marks that extend the network on the ground. This control survey network is an essential base for a complete and accurate spatial data infrastructure.

The network is represented physically by over 243,000 permanent ground marks and 6,500 beacons trigonometrical stations at varying spacings across NSW.

It is also being represented by a network of Global Navigation Satellite System (GNSS) Continuously Operating Reference Stations (CORS).

Digitally, the network comprises the Survey Control Information Management System (SCIMS) database, the records and archives of adjustments and survey observations, as well as the mechanisms to deliver this information to users.

Administratively, the network comprises legislation, policies, standards and procedures developed at:

- the international level through organisations such as the International Association of Geodesy (IAG), the International Federation of Surveyors (FIG) or the International GNSS Service (IGS)
- the national level through organisations such as the Australian and New Zealand Land Information Council (ANZLIC), the Intergovernmental Committee on Surveying and Mapping (ICSM) or the National Measurement Institute (NMI)
- the state level through instruments such as the Surveying and Spatial Information Act 2002, Regulations and NSW Surveyor-General's Directions

The State Control Survey Network provides certainty and confidence when surveying the location of land for asset management, mapping, establishing property boundaries and constructing public infrastructure.

Continuously Operating Reference Stations (CORS)

CORS sites are comprised of permanent ground-based GNSS receivers at known locations, where the observation data is sent via high-speed communication links to a network data centre for archiving, distribution or processing. CORS are established for many reasons:

- studying movement of the earth's crust, the main function of the CORS networks established in Japan, New Zealand and California
- reference datum research and precise orbit determination, such as the International GNSS Service (IGS) network
- augmentation services to enhance the accuracy of GNSS for navigation, such as those used by the Australian Maritime Safety Authority (AMSA) and the Civil Aviation Safety Authority (CASA).

Spatial Services has established a CORS network for NSW, which provides significant infrastructure support for GNSS activity across the State, and complements similar endeavours in other jurisdictions.

CORSnet-NSW currently provides 2 cm accuracy to key metropolitan, coastal and regional areas with a sub-metre accuracy service for the rest of the State.

For more information visit

<http://corsnet.nsw.gov.au/> or email CORSnet@customerservice.nsw.gov.au



SCIMS online

The Survey Control Information Management System (SCIMS) is an online database that contains all the coordinates, heights and related information for permanent survey marks that form the official State Control Survey Network.

The horizontal coordinates in SCIMS refer to the Geocentric Datum of Australia (GDA94 and GDA2020), which is compatible with the earth-centred datum used by global navigation satellite systems such as the Global Positioning System (GPS). Physical heights in SCIMS refer to the Australian Height Datum (AHD).

Locality Sketch Plans (LSPs) are an essential component of the SCIMS database. Surveyors are required to prepare and lodge LSPs when placing permanent marks as part of a survey.

LSPs assist all users – including land surveyors, local councils and development consultants – to use and maintain the State Control Survey Network. Detailed LSPs can be accessed through the SIX portal www.six.nsw.gov.au.

An essential tool for surveyors, SCIMS data is available to registered users at SCIMS Online www.spatial.nsw.gov.au/surveying/scims_online.

Results of online searches can be viewed on screen, printed or saved to file.

The location of survey marks can also be viewed on the maps at www.six.nsw.gov.au.

For more information, email SCIMS@customerservice.nsw.gov.au.

Cadastral integrity

To assist surveyors in the day-to-day delivery, preparation and lodgement of plans of survey, Spatial Services publishes directions and guidelines on behalf of the Surveyor-General.

These are available online to ensure that registered surveyors can apply the current guidelines to all aspects of survey practice in NSW.

The ever-increasing value of land has caused landowners to become more aware of their common boundaries. In addition, increased accuracy resulting from technological advancements has highlighted issues of boundary fixation, particularly arising from earlier surveys.

For more information email CMU@customerservice.nsw.gov.au.

Setting the standards

The Board of Surveying and Spatial Information (BOSSI) ensures competency standards for surveyors and surveying practices are met in NSW.

These standards are designed to maintain the integrity of land boundaries across the State (i.e. the State's cadastre), which in turn maintains the integrity of the NSW property market and ensures community interests are protected.

All mining surveys are conducted to a high standard to ensure efficiency and safety within the mine.

Spatial Services implements and monitors these standards on behalf of the Surveyor-General for the benefit of the people of NSW. Plans of survey are required when new land parcels are formed through subdivision or when all or part of an existing parcel is to be used for a specific purpose, i.e. easement or lease.

To ensure that a high level of competency in surveying services is provided within NSW, only surveyors registered with BOSSI can undertake cadastral and mining plans of survey.