

Technical Direction

Surveying

SVTD 2019/01 | RMS.19.1346 – 12 August 2019

Implementation of revised Geocentric Datum of Australia (GDA) GDA 2020

Summary:	Audience:
<p>The purpose of this Technical Direction is to provide guidance on the requirements for the change of spatial datum from GDA 1994 as outlined in RMS Policy PN144 to GDA 2020. This will affect most spatial data sets acquired and held for Transport for NSW.</p>	<ul style="list-style-type: none"> • Surveyors • Designers • Project Managers • Spatial Data Managers • Civil and Bridge Engineers

Background

The technical direction is to be read in conjunction with the existing Roads and Maritime (RTA) Policy PN 144 and advice on relevant sections is included below.

For the purposes of the PN 144 Policy, RTA is to be taken to mean Transport for NSW and its Cluster Agencies.

PN 144 policy statement

There is no change to the statement as the Geocentric Datum of Australia is maintained. The change is from the datum as defined in 1994 to the new definition of 2020.

Approvals:

Owner:	Armen Dervisevic Director Surveying	Review Date:	12 August 2021
Authorised by:	Chris Harrison Director of Engineering Services	Effective Date:	12 August 2019

PN 144 scope and coverage

There is no change to the implementation method, which will be an 'incremental' approach. The implementation date will change to 1 January 2020, where all infrastructure projects currently underway are to maintain the previously set construction datum (i.e. GDA94 or in some instances in Sydney Trains, ISG 56), unless it is cost effective to convert them to GDA2020.

PN 144 purpose and intended outcomes

There is no change to the policy section.

PN 144 background

There are changes to the background Policy Section which are stated below.

Under the *Surveying and Spatial Information Act 2002*, it is a requirement that all public authorities must reference the Geocentric Datum of Australia (GDA1994) with elevations established by reference to Australia Height Datum. The legislation is to be amended to state that from 1 January 2020, all public authorities must reference the Geocentric Datum of Australia (GDA2020) with no change to the elevations datum.

Changes are needed because Australia's national grid of coordinates (MGA) is based on a static datum (GDA1994).

However, due to continental drift, the Australian continent has moved approximately 7 centimetres per year in a north easterly direction. Since 1994 the resultant movement has been approximately 1.5 metres.

In the past these location differences have not been an issue, as stand-alone positioning systems were not accurate enough to detect the resulting differences.

GDA2020 is more closely aligned with the reference frameworks used by modern devices including smart phones, remotely piloted aircraft, autonomous vehicles etc. This will bring Australia's national coordinates in line with global positioning systems, enabling positioning technologies to accurately locate features marked on maps.

GDA2020 will supersede the currently used GDA94 datum that is currently adopted by Roads and Maritime and a majority of other jurisdictions. GDA2020 is defined in the *National Measurement (Recognized-value Standard of Measurement of Position) Determination 2017*.

GDA 2020 logo must be used on all drawings that have adopted the datum.

Australian Height Datum (AHD) is to continue as the height datum for infrastructure projects except where an alternate height datum is required for hydrographic surveys or special projects.

PN 144 responsibilities

There is no change to the requirement that it will be the responsibility of all managers associated with the acquisition, creation, manipulation and storage of spatially referenced data to implement this policy.

There is no change to the requirements listed for all managers associated with construction activities.

The requirement for the GDA Logo will be updated to the sanctioned GD2020 logos and will be available in CADD formats.

Any spatial dataset that is used must have associated datum stated in the metadata file. If it does not, it must be discarded or verified before being used. The metadata file must also state what map projection is used, either Map Grid of Australia (MGA) or Lamberts. The information should also include information regarding the AusGeoid version used in the conversion to obtain AHD from GNSS data.

PN 144 related information

Roads and Maritime IM-POL-302 Policy Number PN 144 – Use of Geocentric Datum of Australia (GDA) <http://home.rta.nsw.gov.au/dts/cserv/os/original/rnim/pn144.pdf>

Transport of NSW Asset Standards Authority document (under development) to be made available at www.transport.nsw.gov.au/industry/asset-standards-authority

Websites:

Geosciences Australia: Datum Modernisation - <http://www.ga.gov.au/scientific-topics/positioning-navigation/datum-modernisation>

Geosciences Australia: Geocentric Datum of Australia 2020 (GDA2020) - <http://www.ga.gov.au/scientific-topics/positioning-navigation/geodesy/datums-projections/gda2020>

Geosciences Australia: What are the limitations of using World Geodetic System 1984 (dynamic datum) in Australia? - <http://www.ga.gov.au/scientific-topics/positioning-navigation/wgs84>

Intergovernmental Committee on Surveying & Mapping (ICSM): Geocentric Datum of Australia 2020 - <http://www.icsm.gov.au/gda2020>

NSW Spatial Services: Geodesy and GDA - <http://spatialservices.finance.nsw.gov.au/surveying/geodesy>

GDA2020 logo

The GDA2020 logos (.jpg and .eps format) are now formally available on the ICMS website at <https://www.icsm.gov.au/gda2020/using-gda2020-logo>

The GDA2020 logo is available for spatial data and application producers to highlight products that use, or are capable of handling GDA2020 coordinate references. There are three logo styles offered. All GDA2020 logos are available to download, subject to agreeing to the GDA2020 Logo Terms and Conditions of Use.

All GDA2020 spatial products should use the logo, or a statement of compliance with GDA2020. Each business area should agree to the terms and conditions and keep a record of the agreement for auditing purposes. The following are examples of the logo and should not be used otherwise.



Contacts

Further advice may be obtained from the cluster Subject Matter Experts (SME). Contact details are listed in table 1.

Agency	Position	Phone number	Email
Transport for NSW	Director Surveying	0476 816 200	armen.dervisevic@rms.nsw.gov.au
Sydney Trains	Principal Surveyor	0413 852 810	alex.burridge@transport.nsw.gov.au
Transport for NSW	Manager, Survey Certification and Compliance	0413 270 190	ray.gilmour@rms.nsw.gov.au
Transport for NSW	Senior Manager Survey & Spatial Services	0414 452 869	glenn.egan1@transport.nsw.gov.au
Transport for NSW	Senior Surveyor, Asset Standards Authority	0413 005 391	david.brown2@transport.nsw.gov.au
Transport for NSW	Survey Manager, NSW Maritime	0405 802 703	Ryan.Fifield@rms.nsw.gov.au

Table 1.subject matter experts contact details

Reference: RMS Corporate Policy PN144 Use of Geocentric Datum of Australia (GDA)



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