

GDA2020 Legislation Impacts Project Report

1. Background

The GDA2020 Legislation Impacts Sub-Committee (GLIS) of the GDA Modernisation Implementation Working Group (GMIWG) was established to determine and assess the administrative and legal implications associated with implementing the Geocentric Datum of Australia 2020 (GDA2020). To be ready to deliver and receive foundation spatial data on the GDA2020 datum by 30 June 2020, ANZLIC member agencies in Australian states and territories require changes to their respective regulatory framework documents.

The objectives of the project are:

- To work towards a recommended consistent approach to referencing GDA/MGA2020 in regulatory framework documents to enable future revisions of standards of position to be easily and inexpensively updated as required from time to time, and
- To determine the regulatory framework documents that require amendment prior to 30 June 2020 to enable GDA2020 to be the operational datum in each jurisdiction.

2. Overview

Each jurisdiction has identified their respective legislative instruments, policies, standards and guidelines that reference datums and coordinate projections.

The type of documents that define the current operational coordinate reference system in each jurisdiction varies from primary legislation (Acts) to secondary legislative instruments (subordinate legislation such as Regulations) and then to policy directives.

The relevant authority with the responsibility to prescribe the datum also varies in each jurisdiction depending where the description of datum sits in the hierarchy of regulatory framework documents. In some jurisdictions this responsibility may lie with the Surveyor-General or relevant body administering surveying and spatial policy or practice directions. In other cases, the datum may be stipulated by regulations. This subordinate legislation requires the approval of the relevant State's Government and Executive Council (Governor).

Consequently, the level of administration required by each jurisdiction to amend the regulatory documents also varies.

This project specifically focused on primary and secondary legislation (Acts and Regulations) because it was considered that these would require a more rigorous *Departmental level* approach, subsequent consideration by Parliament and lengthy timeframes. It is considered that policy driven standards, directives and guidelines can be managed at a *Section level* and within shorter timeframes.

All jurisdictions have state agencies external to the ANZLIC agencies that have regulatory framework documents that reference location information. It is expected that

ANZLIC agencies will provide guidance and direction to external agencies and inform them of the recommendations of this report. However it is the responsibility of the administering agencies to amend their legislation and supporting statutory instruments as appropriate.

References to location information within regulatory framework documents generally relate to:

- a) Administrative areas defined by coordinates, or
- b) A requirement to collect and provide location information in a specific coordinate reference system.

a) Administrative areas defined by coordinates

Most instruments that define administrative areas by coordinates also define the datum by reference to the Commonwealth Government Gazette No. GN 35 that defined the previous datum, GDA94. In such cases there is no ambiguity in the location of the boundaries of an area to be administered by relevant statute. However, some documents reference coordinates without describing the coordinate reference system and that results, more often than not, in ambiguity of location.

Where coordinates have been used to define an administrative area, with reference to a datum, immediate amendment of the relevant document is not required. This is because the descriptions can be transformed using the resources provided by ICSM¹. This involves transforming and converting the datum to GDA2020, predominately through a desktop exercise. However, this will be dependent on what the co-ordinate descriptions are required for: please see “Other Matters” below for discussion on the issue of relying upon co-ordinate descriptions in legal proceedings.

A continuous approach to amending legislation, as the need arises, can be implemented to update these location descriptions to GDA2020/MGA2020 when the instrument is required for review, or an update. Further, if the situation arises that it is practical for the jurisdictions to amend the relevant legislation then the jurisdictions may wish to grasp the opportunity to do so.

Where an administrative area location description by coordinates is ambiguous because the relevant coordinate reference system is not clearly defined and it is not practical to update to GDA2020/MGA2020 immediately, it is recommended that each ANZLIC agency amend the relevant instrument to specify the relevant coordinate system (i.e. to include reference to the coordinate reference system being used).

When updating instruments to GDA2020/MGA2020, the transformation of coordinates will depend on the accuracy required. The appropriate NTV2 grid shall be used in each jurisdiction as given by table 3.4 of the GDA2020 technical manual². The transformation should be documented for lineage of the data and accuracy of future transformation. It

¹ <https://www.icsm.gov.au/datum/gda-transformation-products-and-tools>

² www.icsm.gov.au/datum/gda2020-and-gda94-technical-manuals

is recognised that the transformation process would be a desk top exercise that, in most circumstances, anticipates the allocation of significant resources and time.

- b) A requirement to collect and provide location information in a specific coordinate reference system.

To enable the GDA2020 datum to be the operational datum for ANZLIC agencies, it is preferred that regulatory documents that prescribe the provision of location information in a specific coordinate reference system are amended to refer to GDA2020/MGA2020.

With respect to surveying and spatial infrastructure, only one jurisdiction, New South Wales, prescribes the datum for location information in its Act. All other jurisdictions prescribe the datum for location information in regulations or directives and standards.

Since the majority of jurisdictions avoid using primary legislation to prescribe the datum for provision of location information, a significant reduction in the administrative effort of each jurisdiction to amend the required legislation is noted.

3. Defining GDA2020 in documentation

The *National Measurement (Recognized-Value Standard of Measurement of Position) Determination 2017* made under the *National Measurement Act 1960* of the Commonwealth (the 2017 Determination) establishes a set of reference nodes as recognised value standards that define the GDA2020 datum.

MGA2020³ can be defined as the system of rectangular co-ordinates derived from a Universal Transverse Mercator projection of latitudes and longitudes based on GDA2020.

The 2017 Determination does repeal previous Determinations but the use of previous datum can still be utilised through a traceability mechanism. Consequently, there is no immediate requirement to update regulatory framework documents to reference a new Recognized-Value Standard of Measurement of Position as there is traceability between the datum as expressed in the previous Determinations and the ability to technically transform between the coordinate systems. Previous datums and coordinates continue to operate in a technical sense hence can be utilised to achieve GDA2020 locations.

However when jurisdictions are updating legislative instruments, some factors need to be considered. In particular, when referring to GDA2020 in each jurisdiction's respective legislative instruments, policies, standards and guidelines, consideration needs to be given to the fact that under the *National Measurement Act*, the Chief Metrologist has the power to vary or repeal Determinations and this includes the 2017 Determination. It is anticipated the 2017 Determination may be updated in future, to include, for example, new geodetic stations or to adjust station co-ordinates and velocities. For these reasons it is recommended that defining GDA2020 in legislation by reference to the specific 2017 Determination, including its date, be avoided. Otherwise, it may become necessary to update legislative instruments each time the Determination is adjusted. It is suggested

³ Refer to the GDA2020 Technical Manual www.icsm.gov.au/datum/gda2020-and-gda94-technical-manuals for a detailed definition of MGA2020.

that the GDA2020 definition be managed by referring to the Commonwealth's Recognized-value Standard of Measurement of Position Determination in more general terms, such as the following:

GDA2020 has the same meaning as that contained in the Determination made as to the Recognized-value Standard of Measurement of Position under section 8A of the *National Measurement Act 1960* (Cwth).

4. Benefits of prescribing GDA2020 in regulatory framework documents

The national surveying and mapping project, *Positioning Australia program*⁴ will deliver accurate, reliable and instantaneous positioning information across Australia and its maritime zones. Regulatory documents aligned with the most accurate and current location information available will be paramount for the success of the *Positioning Australia program*.

Defining the relevant coordinate reference system in subordinate legislation or other regulatory framework documents rather than in the primary legislation allows for the datum and/or projected coordinates to be described in a contemporary form that is easily and inexpensively updated by the relevant authority (as applicable in the jurisdiction) as required from time to time.

Allowing subordinate legislation to define a prescribed coordinate reference system allows for user adoption of the most accurate and current positioning and location information available. In addition, jurisdictions adopting a consistent approach to defining coordinate reference systems will reduce confusion that results from ambiguous coordinates.

5. Risks of not prescribing GDA2020 in regulatory framework documents

The biggest risk of not prescribing GDA2020 in regulatory documents will be in information being provided to agencies in out dated datums and that projections will require transformation to align with existing spatial data sets. This will involve appropriate data management and it is clear that metadata must indicate the applicable datum to enable handling the relationship between different data sets.

It is noted that as the *Positioning Australia program* develops and as accurate location information becomes increasingly ubiquitous in the future, regulatory documents aligned with the most accurate and current location reference framework available will be essential.

⁴ <https://www.ga.gov.au/scientific-topics/positioning-navigation/positioning-australia>

6. Other Matters

The committee noted the matters provided in section 10 of the *National Measurement Act 1960* (Cwth) (NM Act), relevantly:

10. When, for any **legal purpose**, it is necessary to ascertain whether a measurement of a **physical quantity** for which there are Australian legal units of measurement has been made or is being made in terms of those units, that fact shall be ascertained by means of, by reference to, by comparison with or by derivation from:

....

- (d) an appropriate recognized-value standard of measurement;

The effect of the 2017 Determination (made under section 8A of the NM Act) is that GDA2020 is a recognized-value standard of measurement of position in terms of the NM Act.

In terms of section 10, the physical quantity of position to be referred to for any legal purpose (including legal proceedings) is by reference to GDA2020.

Section 10 of the NM Act creates an evidentiary aid. For example, if a person's precise location was disputed in legal proceedings, by using section 10, the person's location can be determined by reference to a *recognized-value standard of measurement* – that is, GDA2020. In effect, the evidence about the person's location would be referred to in terms of GDA2020 co-ordinates.

However, it is currently unclear whether it is still possible to use section 10 of NM Act (and GDA2020) for legal purposes, including Court proceedings, if the State or Territory Act or Regulation you are relying upon in a particular legal purpose situation still explicitly requires the physical quantity of a position to be expressed in terms of GDA94. While these GDA94 co-ordinates can be transformed to GDA2020, the co-ordinates in the State or Territory legislation are still required to be in GDA94. This is unlikely to be an issue that comes up very frequently, if at all.

7. Recommendations

To enable adoption of GDA2020 as the operational datum for ANZLIC agencies in all Australian states and territories, it is recommended that, prior to 30 June 2020:

- GDA2020 is defined in subordinate legislation or other regulatory documents as having the same meaning as that contained in the Determination made as to the Recognized-value Standard of Measurement of Position under section 8A of the *National Measurement Act 1960* (Cwth),
- MGA2020 is defined in subordinate legislation or other regulatory documents as the projected coordinate reference system of rectangular co-ordinates derived from a Universal Transverse Mercator projection of latitudes and longitudes based on GDA2020,
- current regulatory framework documents that prescribe the coordinate reference system for collection and provision of location information that is required for an administrative instrument are amended to reference GDA2020/MGA2020,
- new regulatory documents that specify the coordinate reference system that location information is required to be collected or provided for, define GDA2020/MGA2020 as the prescribed coordinate reference system, and
- new regulatory documents that define administrative areas by coordinates establish GDA2020/MGA2020 as the coordinate reference system.

It is further recommended that as part of each jurisdiction's standard regulatory review processes:

- current regulatory documents that define administrative areas by reference to coordinates using a specific and unambiguous coordinate reference system are amended to reference GDA2020/MGA2020 when there is a business requirement to do so or deferred until the instrument is due for review or updated for some other reason,
- where a current regulatory document is not being updated to GDA2020/MGA2020 it should be revised so that it clearly states the coordinate reference system to which location information applies, and
- consideration be given to undertaking a review of each jurisdiction's legislative framework for implementing changes to datum. This could include identifying the relevant authority empowered to make datum changes in each jurisdiction and exploring the capacity for a more streamlined process.



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