Mackay REGIONAL COUNCIL

GDA2020 Fact Sheet 08 >
Transforming GDA94 <> GDA2020 using Geoscience Australia Online Services
Version 1.0 (30 June 2020)

Transforming GDA94 <> GDA2020 using Geoscience Australia Online Services

Assumptions:

- Data falls within the (mainland) Mackay Local Government Area (i.e. UTM Zone 55)
- Dataset is in grid coordinates (i.e. Easting and Northing). NOTE: If the dataset is in geographic coordinates (i.e. Latitude and Longitude), complete only Step 2 of this factsheet
- The coordinate system of the dataset is MGA94 and the user is transforming to MGA2020
- The dataset is in csv format. Refer to attached sample files.

Step 1: Convert MGA94 coordinates to GDA94 coordinates

Complete this step if your coordinates are grid (i.e. eastings and northings, metres). If your coordinates are already geographic (i.e. latitude and longitude, degree) skip to Step 2

1. Visit the **Geoscience Australia Geodetic Calculator**: https://geodesyapps.ga.gov.au/grid-coordinate-batch-processing

2. Select **Convert Grid to Geographic**, leave the Ellipsoid as the default **GRS80**, and select **Decimal Degrees**.

   NOTE: Using Decimal Degrees is the easiest and quickest method, but your final coordinates may be subject to rounding errors. Our testing found using Degrees Minutes Seconds (DD MM SS.sssss) produced more consistent results.

3. Select **Choose File** and browse for the csv file containing the MGA94 coordinates

   Example Format:

Point ID	Easting (MGA94)	Northing (MGA94)	Zone	Hemisphere
57327	732378.564	7609009.377	55	South
66513	726764.982	7660950.662	55	South
89366	654879.983	7662595.236	55	South
125698	666071.28	7709687.394	55	South

   NOTE: Do not include header row

This fact sheet provides an overview of the steps to follow when transforming a few points from the GDA94 datum to the GDA2020 datum using Geoscience Australia's online services.

Further Information

Refer to the Geodesy section on Geoscience Australia's website:

https://www.ga.gov.au/scientific-topics/positioning-navigation/geodesy

For detailed information about GDA94<>GDA2020 transformations refer to the Technical Manuals and Factsheet on the ICSM website: https://www.icsm.gov.au/gda2020-and-gda94-technical-manuals

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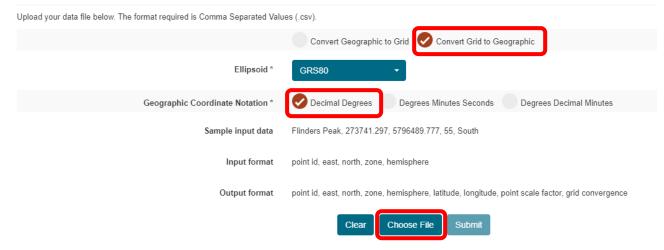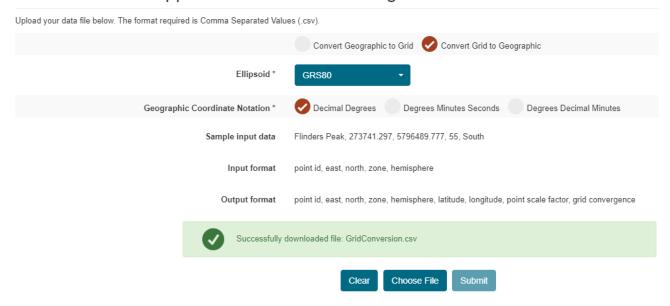**ICSM**
ANZLIC COMMITTEE ON SURVEYING & MAPPING

GDA 2020

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Grid Coordinate Application Batch Processing

Upload your data file below. The format required is Comma Separated Values (.csv).

    ○ Convert Geographic to Grid   ✅ **Convert Grid to Geographic**

Ellipsoid *   GRS80 ▼

Geographic Coordinate Notation *   ✅ Decimal Degrees   ○ Degrees Minutes Seconds   ○ Degrees Decimal Minutes

Sample input data   Flinders Peak, 273741.297, 5796489.777, 55, South

Input format   point id, east, north, zone, hemisphere

Output format   point id, east, north, zone, hemisphere, latitude, longitude, point scale factor, grid convergence

Clear   **Choose File**   Submit

4. Select **Submit**
5. Use the coordinates from the downloaded "GridConversion.csv" in [Step 2](#)

Grid Coordinate Application Batch Processing

Upload your data file below. The format required is Comma Separated Values (.csv).

    ○ Convert Geographic to Grid   ✅ Convert Grid to Geographic

Ellipsoid *   GRS80 ▼

Geographic Coordinate Notation *   ✅ Decimal Degrees   ○ Degrees Minutes Seconds   ○ Degrees Decimal Minutes

Sample input data   Flinders Peak, 273741.297, 5796489.777, 55, South

Input format   point id, east, north, zone, hemisphere

Output format   point id, east, north, zone, hemisphere, latitude, longitude, point scale factor, grid convergence

✅ Successfully downloaded file: GridConversion.csv

Clear   Choose File   Submit

GDA 2020

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Step 2: Transform GDA94 coordinates to GDA2020 coordinates

1. Visit Geoscience Australia's **GDA94 – GDA2020 Online Transformation Service**:
    https://positioning.fsdf.org.au/

2. **Drag and Drop** the csv file containing the GDA94 coordinates

    Example Format:

Point ID	Lat (GDA94)	Lon (GDA94)
57327	-21.60686813	149.2447187
66513	-21.13863193	149.1835551
89366	-21.13128972	148.4914334
125698	-20.70496049	148.5946646

    NOTE: Include a header row

    ### GDA94 – GDA2020 Online Transformation Service

    #### Purpose

    The online transformation service (powered by FME) provides a reference standard that enables software developers and spatial professionals to transform their data from the Geocentric Datum of Australia 1994 (GDA94) to the Geocentric Datum of Australia 2020 (GDA2020). Users can simply drag and drop files onto the page and receive an email with a link to download the output file.

    Please note, this service is not intended to enable users to transform all their data from GDA94 to GDA2020; instead it aims to provide a method of checking systems and processes implemented by government or the spatial industry to ensure the transformation results are correct. The online transformation service accepts the following formats at this time: Shapefiles, CSV, ASCII Grid, GeoTiff, ECW, JPEG2000, GeoJSON.

    Drop File(s) Here

    Allowed input file types

    `CSV` `Shapefile` `JPEG2000` `GeoJSON` `GeoTIFF` `ASCII Grid` `ECW`

3. Select **Conformal***, **Decimal Degrees**, the column containing the **Latitude**, and the column containing the **Longitude**
4. Select that **The data is in EPSG::4283 projection** i.e. GDA94
5. Enter your **email address**
6. Select **Submit**

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Selected GDA94 Geographic DD Coords Sample File.csv (144 bytes)

A few questions about your CSV file named "GDA94 Geographic DD Coords Sample File.csv"

Transformation type: * ○ Conformal 7-Parameter Similarity ● Conformal ○ Conformal and Distortion

Lat/lng fields are in * Decimal degrees (2 cols) ● or Degrees/minutes/seconds (6 cols) ○

Columns   Latitude * [lat ▾]
                                                               Longitude * [lon ▾]

The data is in EPSG::4283 projection *   [✓]

Nominate your notification email address*

| Email | ima.sample@exampleemail.com |

[   ] 📄 ⚙ ✉   [Cancel]   [Submit]

*The GDA94-GDA2020 conformal only transformation grid is recommended for use in Queensland. Refer to the [Geocentric Datum of Australia 2020 Technical Manual](#) for more detail.

7. Use the **lat2020dd** and **lng2020dd** coordinates from the resulting "*_gda2020.csv" and continue to [Step 3](#) if you want your coordinates in MGA2020

Step 3: Convert GDA2020 coordinates to MGA2020 coordinates

1. Visit the **Geoscience Australia Geodetic Calculator**: https://geodesyapps.ga.gov.au/grid-coordinate-batch-processing

2. Select **Convert Geographic to Grid**, leave the Ellipsoid as the default **GRS80**, and select **Decimal Degrees**.

    NOTE: Using decimal degrees is the easiest and quickest method, but remember, rounding errors may have been introduced in Step 1 and further errors may be introduced in this step. Our testing found using Degrees Minutes Seconds (DD MM SS.sssss) produced more consistent results.

3. Select **Choose File** and browse for the csv file containing the GDA2020 coordinates
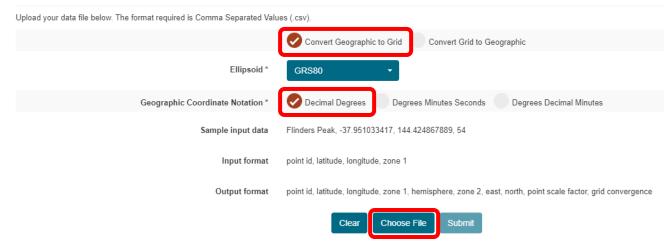
    Example Format:

Point ID	Lat (GDA2020_dd)	Lon (GDA2020_dd)	Zone
57327	-21.60685518	149.2447257	55
66513	-21.13861897	149.1835622	55
89366	-21.1312767	148.4914406	55
125698	-20.70494747	148.5946718	55

    NOTE: Do not include header row

Grid Coordinate Application Batch Processing

4. Select **Submit**

5. The Easting and Northing coordinates from the downloaded "GridConversion.csv" will be in MGA2020