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Toponymic data files: automated data-processing (ADP) systems

The State Gazetteer in a GIS environment

Submitted by Australia**

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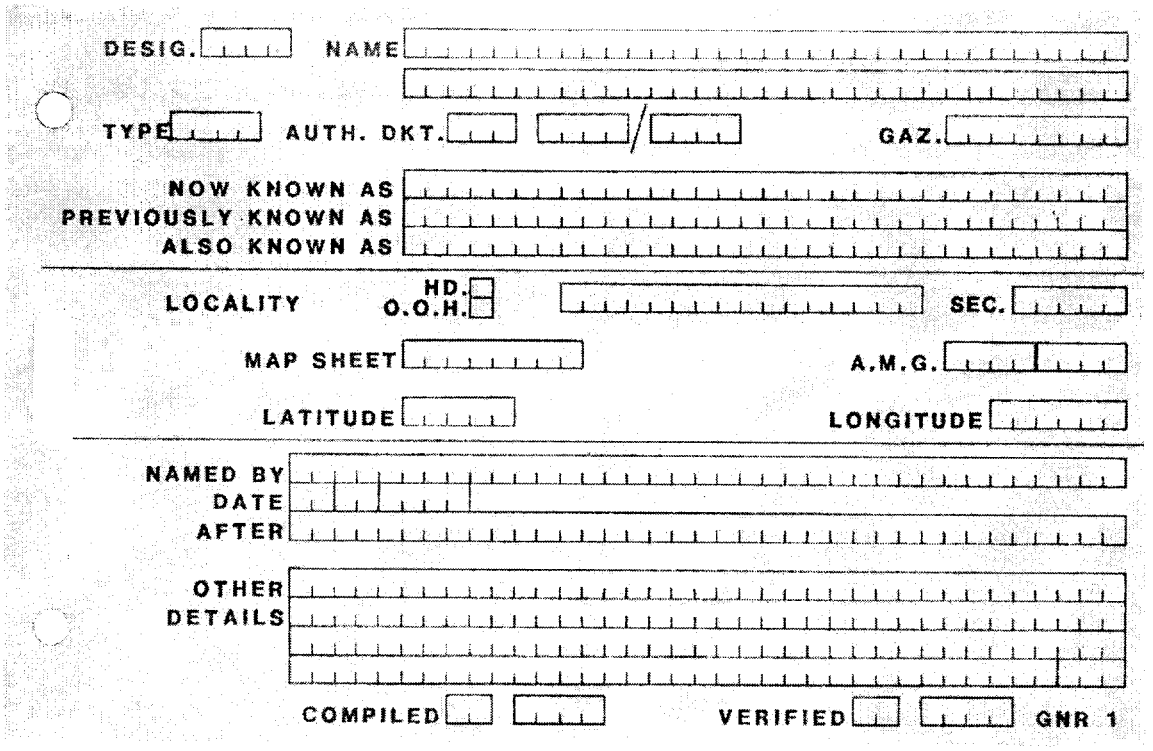
History of Gazetteer

The South Australian Gazetteer is a database containing over 85,000 place names. The aim of the gazetteer is to record any place name that is or has been used in the State, together with a range of information relating to location, derivation and cross referencing with any previous, current or alternative name.

Appendix 1 contains a summary of the structure of the database.

In 1983, I began work in the Geographical Names Section of what was then the Lands Department. This Section maintained the State Gazetteer as part of its duties in the form of a loose-leaf card system on cards that looked like this.

Figure 1 - State Gazetteer Glossary Card



By the time this system was replaced, there was approximately fourteen thousand of these cards. Data entry was obviously manual, with all the potential errors that a manual entry system can have, but without any possible verification systems in place.

The card system was replaced by a computer database in 1985, however, many of the same problems relating to data verification applied to the initial database system as was evident in the manual system.

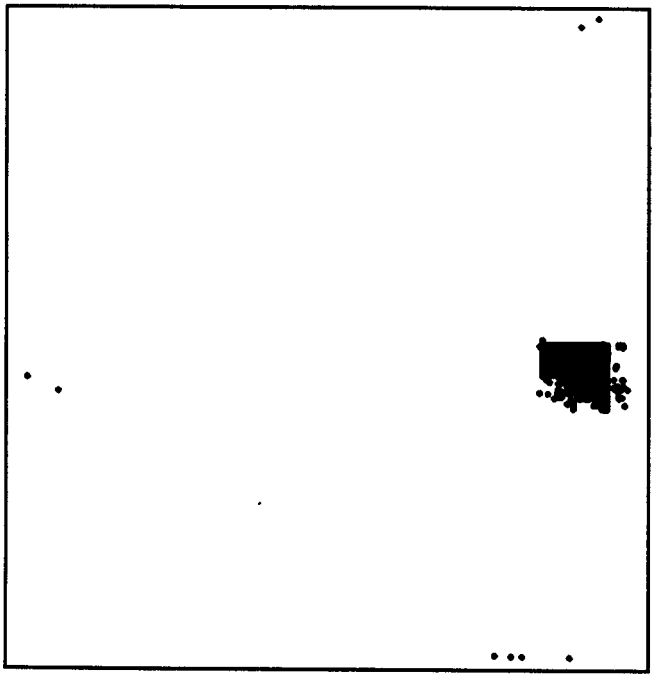
Database into Geographic Information System

In 1998, the first steps were taken to represent the State Gazetteer within a Geographic Information System (GIS).

This immediately showed up some of the major errors in the existing data.

Figure 2 below shows the extent of data entry errors in the latitude / longitude fields at the time of initial import.

Figure 2 - Location Errors is State Gazetteer



This is only one of the input errors that can be easily detected in a GIS environment. Other easy checks include:

- Zone
- Hundred
- County
- Local Government Area
- Map sheet
- Postcode

Functionality of gazetteer in GIS

As good as the error checking may be, of greater importance is the significant increased in the functionality of the data when using GIS in the areas of:

- Input of data
- Immediate validation of data
- Interpretation of the data

Data input

Data input and the spatial verification of existing data is undertaken by displaying the gazetteer information over geocoded images of 1:50 000 or 1:250 000 map sheets, as shown in Figures 3, 4 and 5.

The dots representing the place name locations can be moved to accurately reflect the correct locations. New features are added by placing new dots and filling in the fields on the data table.

Corrected locations are established within the GIS environment and written back to the database, together with any textual corrections to other field as found.

This method is only as accurate as the base map, but will supply sufficient accuracy of location of meet the needs of the greater majority of users of the State Gazetteer.

Locations of features established by Global Positions System technology are also being collected as the opportunity arises. This information is then added to the gazetteer and suitable identified for map production or revision processes.

Figure 3 - Editing method for State Gazetteer

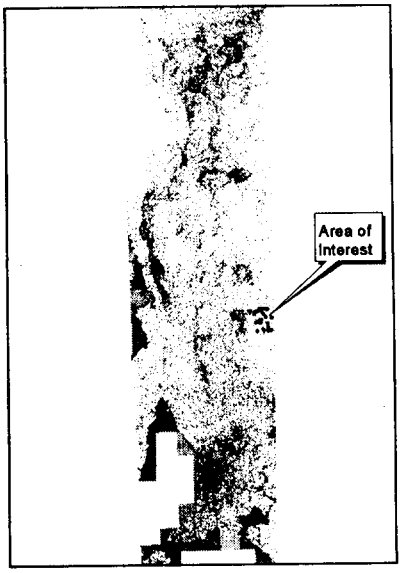


Figure 4 - Editing for State Gazetteer (Enlargement 1)

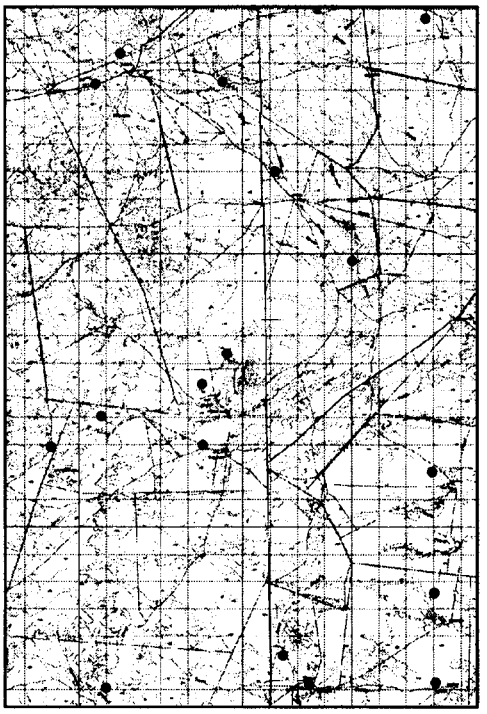
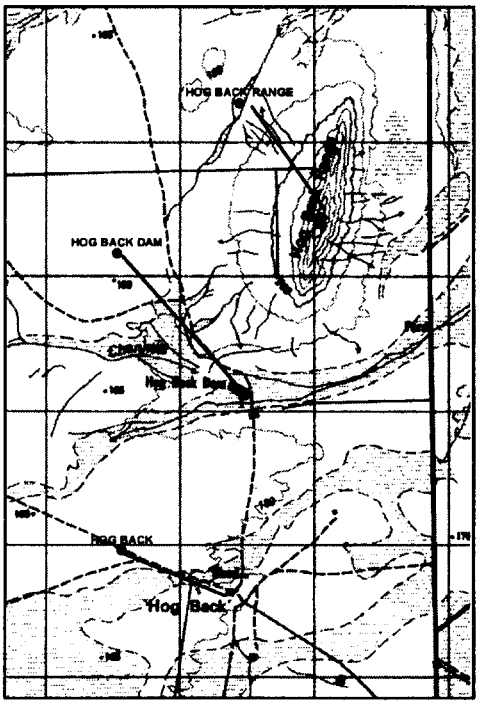


Figure 5 - Editing of State Gazetteer (Enlargement 2 - movements of "dots")



Data editing - Future steps

We are currently formulating the methodology to extract information from other data layers to provide an automatic entry of information into the text fields, using the annotation from the data layer.

As well as avoiding potential input errors, it will also provide consistency between various data sets, and save a considerable amount of staff resources.

Data output and interpretation

Map production.

At the time of the production or revision of a map, the relevant gazetteer data is extracted and edited to remove any name not required for that particular product. Historical and variant names are deleted (based on the Gazetteer field "Class"), as are the names of any feature types not required at the scale of the map in hand (based on the Gazetteer field "Feature Code").

The edited data provides the text layer for map production, removing the possibility of transposition errors and again creating consistency between data sets and the derived or value added products.

Other Uses.

Data from the State Gazetteer has been used in spatial projects in a wide range of activities including:

- Planning of sales routes
- Bird watching records.
- Display of historical based information, such as the places named by Captain Matthew Flinders as part of recent 200 year anniversary celebrations of his expedition in 1802, as show in Figure 6 (taken from the "Namedby" field).
- Display of ethnic origin of place names (based on the "Origcode" field). An example is shown in Figure 7, indicating the locations of features in South Australia whose names are of German origin.
- Of particular interest at the moment is the ability to use the data and methodology to assist in the determination of Native Title claims. Place names data recorded with the name of the language group provides the ability to show the density on the landscape of place names representing a particular people. This can be compared with the claim boundary as part of the determination. An example of this can be seen in Figure 8. The names

representing the claimant language group is shown with a circle and can be visually compared with the claim boundaries.

Figure 6- Flinders Place Names

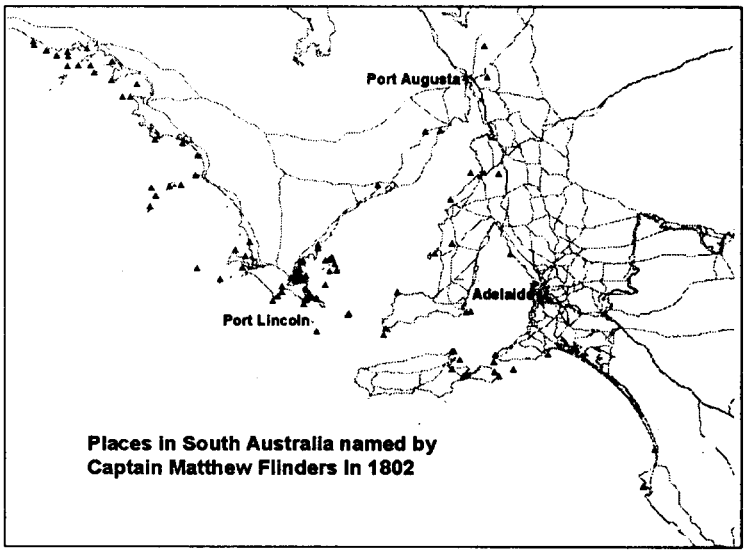


Figure 7 - German Place Names

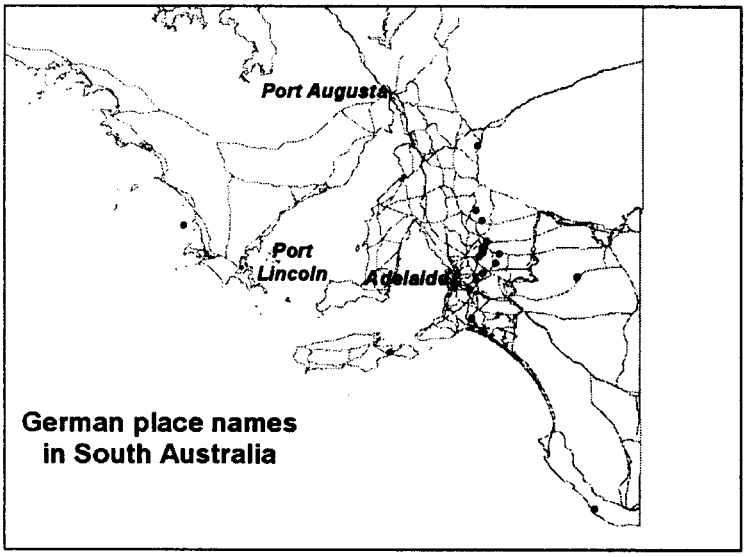
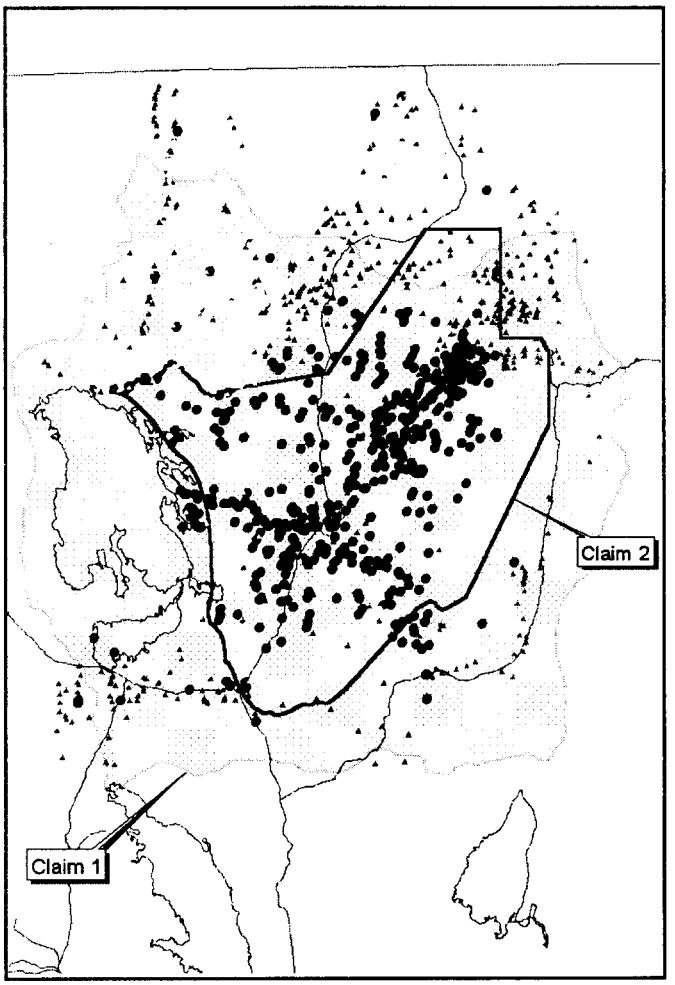


Figure 8 - Native Title



Summary

The information displayed today is only part of the developmental work relating to the State Gazetteer. Remember the basic aim of the gazetteer. We have created and are maintaining a single data set that can be used as the source of place names in a mapping, database, GIS or textual environment.

The functionality of this data will continue to grow as the accuracy and scope improves. Other sources of additional data are accessed and incorporated on a regular basis, and as mentioned above, we can have consistency across government and non government data sets.

The data is free for anyone to use. I encourage those who require South Australia place names to Use the South Australian State Gazetteer.

Appendix 1 - South Australian Gazetteer Structure.

Field Name	Description	Type	Size
Recno	Record number for each feature	Text	10
Recdate	Date record entered or last amended	Date	
Name	Name of feature	Text	80
F_code	Feature designation code	Text	4
Class	Classification of the name – E.g. Historical, Official etc	Text	4
Authority	The authority docket or file for the classification of the name	Text	12
Gazette date	Date of the official proclamation or assigning of the name	Date	
Other details	Any relevant details to large for the fixed length fields, or to explain decision or background information relative to the name.	Memo (non fixed length field)	
Source	A summary of all source information sustaining the use of the name – published maps, books etc.	Memo (non fixed length field)	
Hundred	Name of the Hundred (major land division in South Australia – similar to parish)	Text	50
Section	Section Number (which together with the Hundred name provided a unique land parcel identifier for the land at the time of initial survey)	Text	6
County	Statistical land division	Text	50
LGA	Local Government Authority	Text	50
Datum	Datum of the current published map	Text	6
Mapsheet	1:50 000 map sheet number	Text	8
Coordeast	Coordinate – easting – AMG datum	Text	6
Coordnrth	Coordinate – northing – AMG datum	Text	7
Source CE	Source coordinate (for linier features – particularly streams) – easting – AMG datum	Text	6
Source CN	Source coordinate (for linier features – particularly streams) – northing– AMG datum	Text	7
Lat	Australian Map Grid Latitude	Numeric	13
Long	Australian Map Grid Longitude	Numeric	14
Namedby	Person, authority or language group who named the features	Text	50
Datenamed	Date of naming	Date	
Derivation	Derivation or meaning of the name	Text	50
Origcode	Code indicating the origin of the name	Text	4
Current name	Cross reference with any current name for the feature	Text	25
Previous name	Cross reference with any previous name for the feature	Text	25
Alternative name	Cross reference with any alternative name for the feature	Text	25
Elevation	In metres as taken from mapping or other reliable sources.	Text	6
MGA Coordeast	Coordinate – easting – GDA datum	Text	6
MGA Coordnrth	Coordinate – northing – GDA datum	Text	7
MGA Source CE	Source coordinate (for linier features – particularly streams) – easting – GDA datum	Text	6
MGA Source CN	Source coordinate (for linier features – particularly	Text	7

	streams) – nothing– GDA datum		
GDA Lat	Geocentric Map Grid of Australia Latitude	Numeric	13
GDA Long	Geocentric Map Grid of Australia Longitude	Numeric	14