Australian Government
Geoscience Australia

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GEODATA TOPO 250K
Series 3

USER GUIDE

SPATIAL INFORMATION FOR THE NATION

Contents

1. General Information

1.1 Conditions of Use

The conditions of use for the *GEODATA TOPO 250K Series 3* product are documented in the licence agreement accompanying this product.

1.2 Feedback

Geoscience Australia welcomes feedback on any aspect of this product or services. Please direct your comments or queries regarding this document or data to:

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Internet: www.ga.gov.au

1.3 Geoscience Australia – Geospatial and Earth Monitoring Division

Geoscience Australia is the Commonwealth Government's national agency for geoscience research and spatial information. It serves government and supports the community through its output areas of geoscience for urban centres, oceans and coasts as well as regional and rural areas.

The Geospatial and Earth Monitoring Division (GEMD) of Geoscience Australia was formed in 2005 by the merging of the Geohazards Division and National Mapping Division. The new division's mission is to provide readily accessible and timely national geographic and geoscientific data, information and knowledge that enable Australians to make well-informed decisions particularly in regards to safeguarding our communities and critical infrastructure.

1.4 Contributors

Geoscience Australia (GA) gratefully acknowledges contributions to map and data content. Information supplied by a range of Commonwealth, State, Territory and Local Government as well as private sector agencies and individuals is utilised to update and enhance the spatial and attribute content of map and digital data products. A comprehensive list is available from the Geoscience Australia website www.ga.gov.au/nmd/mapping/acknowledge.htm.

2. About TOPO 250K National Topographic Database (NTDB)

2.1 TOPO 250K NTDB

TOPO 250K NTDB is the third generation of GA's 1:250 000 (250K) topographic digital data and provides a seamless coverage of topographic data across Australia in a geodatabase structure. The NTDB was developed using the ESRI suite of products Version 8.3. The main characteristics of TOPO 250K NTDB are:

- **Seamless Coverage**
  TOPO 250K NTDB is a national seamless dataset compiled by merging 513 250K database tiles which were previously managed and revised individually, into one continuous and complete dataset of Australia.
- **Geodatabase Structure**
  GA's 250K topographic data is stored and provided as a geodatabase. A geodatabase is a relational database that stores the spatial data and related attributes of features.
- **Revised Specification**
  The revision GA's TOPO 250K Topographic Data and Map Specifications v4.0 is reflective of the new geodatabase structure. This includes additional attribution of features, reclassification of some features and removal of void polygons and most boundary line feature classes.

- **Currency of Less Than Five Years**
  The development of TOPO 250K NTDB has run in parallel with GA's revision schedule of 250K data, therefore, the data has a currency of less than five years in any location.

GEODATA TOPO 250K Series 3 is a vector representation of features on the earth's surface, it uses a feature-based data model to represent the real world. Features such as buildings, roads and lakes are spatially represented as points, lines or polygons, and attributes are used to describe them. The combination of its spatial location and attributes enables a feature to be uniquely identified.

The original *GEODATA TOPO 250K Series 1* product was sourced from the 250K National Topographic Map Series (NTMS) and supplementary information and contained vector data relating to hydrography (e.g. drainage, waterpoints, and waterbodies), infrastructure and relief. Following the completion of a national coverage in 1994, work began on the second generation product, *GEODATA TOPO 250K Series 2*. This revised product was built on Series 1 by incorporating additional features using satellite imagery and other supplementary information as revision sources.

Geoscience Australia's TOPO 250K NTDB has been derived from *GEODATA TOPO 250K Series 2* and is effectively the third in a series of topographic data released to the public as *GEODATA TOPO 250K Series 3*. Ten gigabytes of vector data stored as ArcInfo coverages were translated and imported into the new geodatabase structure. This process included data edge matching and the removal of bleed edges which were used for NTMS production.

TOPO 250K NTDB delivers ten feature datasets, or themes of features containing 92 feature classes. The geodatabase structure provides greater efficiencies in the management and revision of GA's 250K topographic data which are now reflected in a more sophisticated data product.

2.2 GEODATA TOPO 250K Series 3 Product Components

The product consists of the following components which combine to give a complete data product:

- **Vector Data** (Folder: Vector_data)
  The data is available in three formats: Personal Geodatabase; Shapefiles; and MapInfo file format (*.tab) in the folders Topo250K_PGDB, Topo250K_SHP and Topo250K_TAB respectively. Each format is available as an individual product for purchase. The Personal Geodatabase reflects the stored environment of the data, therefore this User Guide is predominately focused on this format. SDE export format is also available on request to users requiring data in an enterprise database environment.

- **Symbol Dictionary** (Folder: Symbolisation)
  The *Symbol Dictionary for Topographic Map Production* contains all map symbols used by Geoscience Australia for its topographic map production. It lists the symbol, its number and related feature and is a useful reference source.

- **Symbol Library** (Folder: Symbolisation – For personal geodatabase and Shapefile formats only)
  The symbol library is a collection of symbols and is provided in an .exe format to assist users in symbolising features in accordance with the TOPO 250K Topographic Data and Map Specifications. Go to *Topographic Symbols v1.1* for installation.

- **Layer and MXD Files** (Folders: Layer_files & mxd_files - for personal geodatabase and Shapefile formats only)
  An ArcMap .mxd file is supplied which contains a series of layer files that are stored in a separate directory. Separate MXD and corresponding layer file configurations have been built for geodatabase and shapefile formats only.

- **Fonts** (for Annotation feature classes only)
  In order to display Annotation in accordance with the specifications, the *Zurich* and *Stymie* fonts are required to be installed on the host computer. These fonts are not supplied as part of the *GEODATA TOPO 250K Series 3* product. Once acquired, these fonts should be installed through the Font Manager which can be accessed through the Control Panel.

- **MapInfo custom symbology installation files** (for MapInfo .tab format only)
  To use symbolisation in the MapInfo .tab format, users will need to install three custom symbology files:
  - Geoscience MapInfo True Type Font;
  - update the mires800.dll; and
  - update the MAPINFOW.PEN file.

  Full instructions for the installation of MapInfo symbology files are detailed in section 4.3.3 Symbolisation - MapInfo custom installation files.

- **250K User Guide** (Folder: Documentation)
  This User Guide describes the *GEODATA TOPO 250K Series 3* data, particularly the geodatabase format, with the aim of describing:
  - Important and common geodatabase characteristics;
  - Geodatabase components and data concepts;
  - Hierarchy of feature structure and attributes; and
  - Accuracy of the data.

- **Licence Agreement Office of Spatial Data Management** (Folder: Documentation)

  The licence agreement details the conditions of use for the data including any referencing requirements. The conditions of use reflect the Australian Government policy on spatial data access and pricing.

2.3 GEODATA TOPO 250K Series 3 File Sizes

The following table represents the file size of Themes (pgdb), Shapefiles and MapInfo TAB file formats. There are 10 themes containing 92 feature classes, 604 Shapefiles and 364TAB files.

Table 1: GEODATA TOPO 250K Series 3 file sizes.

1. Themes (PGDB)	Size	2. Shapefile	Size	3. TAB File	Size
CARTOGRAPHY	855 MB	CARTOGRAPHY	268 MB	CARTOGRAPHY	198 MB
ELEVATION	862 MB	ELEVATION	779 MB	ELEVATION	489 MB
FRAMEWORK	95.5 MB	FRAMEWORK	89.5 MB	FRAMEWORK	53 MB
HABITATION	137 MB	HABITATION	160 MB	HABITATION	169 MB
HYDROGRAPHY	853 MB	HYDROGRAPHY	873 MB	HYDROGRAPHY	755 MB
INFRASTRUCTURE	63.1 MB	INFRASTRUCTURE	66.4 MB	INFRASTRUCTURE	67.4 MB
TERRAIN	792 MB	TERRAIN	662 MB	TERRAIN	610 MB
TRANSPORT	226 MB	TRANSPORT	263 MB	TRANSPORT	241 MB
UTILITY	3 MB	UTILITIES	2.3 MB	UTILITY	1.9 MB
VEGETATION	470 MB	VEGETATION	423 MB	VEGETATION	243 MB
Total	4.4 GB	**Total**	3.3 GB	**Total**	2.8 GB

2.4 GEODATA TOPO 250K Series 3 Source Data

The *GEODATA TOPO 250K Series 3* source data is managed and updated in a production geodatabase while data released to the public is stored in and delivered from a distribution geodatabase. Data arrangement in each geodatabase vary in that the production geodatabase consists of 18 themes suitable for production purposes, while the distribution geodatabase consists of ten themes containing 92 feature classes to allow for ease of use and more intuitive access to data. The structure of the distribution geodatabase is detailed in the table below.

Table 2: Distribution GEODATA TOPO 250K Series 3 themes and feature classes

CARTOGRAPHY
- Annotations
- CartographicLines
- CartographicPoints
- GraticuleAnnotations
- Graticules
- GridAnnotations
- Grids

ELEVATION
- BenchMarks
- Contours
- HorizontalControlPoints
- SpotElevations

FRAMEWORK
- FrameworkBoundaries
- GeodataIndexes
- Islands
- LargeAreaFeatures
- Locations
- Mainlands
- MapIndexes
- ProhibitedAreas
- Reserves
- Seas

HABITATION
- BuildingAreas
- BuildingPoints
- BuiltUpAreas
- CemeteryAreas
- CemeteryPoints
- Homesteads
- Place Names
- PopulatedPlaces
- RecreationAreas

HYDROGRAPHY
- Bores
- CanalAreas
- CanalLines
- Flats
- ForeshoreFlats
- Lakes
- Locks
- MarineHazardAreas
- MarineHazardPoints
- PondageAreas
- RapidAreas
- RapidLines
- Reservoirs
- Spillways
- Springs
- WatercourseAreas
- WatercourseLines

HYDROGRAPHY continued
- WaterfallPoints
- Waterholes
- WaterPoints

INFRASTRUCTURE
- AerialCableways
- Conveyors
- DamWalls
- Fences
- MarineInfrastructureLines
- MarineInfrastructurePoints
- MineAreas
- MinePoints
- PetroleumWells
- StorageTanks
- VerticalObstructions
- WaterTanks
- Windpumps
- Yards

TERRAIN
- Caves
- Craters
- DeformationAreas
- Discontinuities
- Pinnacles
- SandRidges
- Sands

TRANSPORT
- AircraftFacilityPoints
- BarrierPoints
- FerryRouteLines
- FootTracks
- RailwayBridgePoints
- RailwayCrossingLines
- Railways
- RailwayStopPoints
- RailwayTunnelLines
- RailwayTunnelPoints
- RoadCrossingLines
- RoadCrossingPoints
- Roads
- RoadTunnelLines
- RoadTunnelPoints

VEGETATION
- ClearedLines
- CultivatedAreas
- NativeVegetationAreas
- Windbreaks

UTILITY
-Pipelines
-Powerlines

Users of the TOPO 250K Topographic Data and Map Specifications should note that the specifications have been written in accordance with the structure and data management rules as they apply to the production geodatabase but also remain relevant in the distribution geodatabase once the translation has been taken into consideration. The translation between the production and distribution schemas is detailed in Appendix A of the User Guide.

3. GEODATA TOPO 250K Series 3 Application Formats

3.1 Delivery Application Formats

GEODATA TOPO 250K Series 3 is supplied as separate products in the following three formats:

- Personal Geodatabase – Version 8.3, supplied as a two tier structure consisting of ten themes and 92 associated feature classes;
- ESRI Shapefile (*.shp), supplied as a single tier structure consisting of 89 Shapefiles. The Shapefile format does not support annotation feature classes, as a result three annotation feature classes have not been provided; and
- MapInfo file format (*.tab), supplied as a two tier structure consisting of ten themes and 91 .tab files. The annotations feature class is not available in the TAB format at this time due to technical issues.

The Enterprise Geodatabase format can be requested from Geoscience Australia's Sales Centre.

4. Data Loading

4.1 Personal Geodatabase (PGDB)

4.1.1 Data Structure

The personal geodatabase has been extracted from GA's distribution database and is a relational database. In the geodatabase environment, data is delivered in a two tier structure where feature datasets, or themes, are the folders (e.g. Framework, Transport) and the feature classes are the geometry layers or tables within the folders (e.g. *FrameworkBoundaries*, *Roads*), as detailed in *Table 2: Distribution GEODATA TOPO 250K Series 3 themes and feature classes.*

All the spatial and attribute data is stored in the same Microsoft Access database (mdb) file format which has a two gigabyte limit. Further information on data structure can be found in *Section 6. Geodatabase Model and Content*.

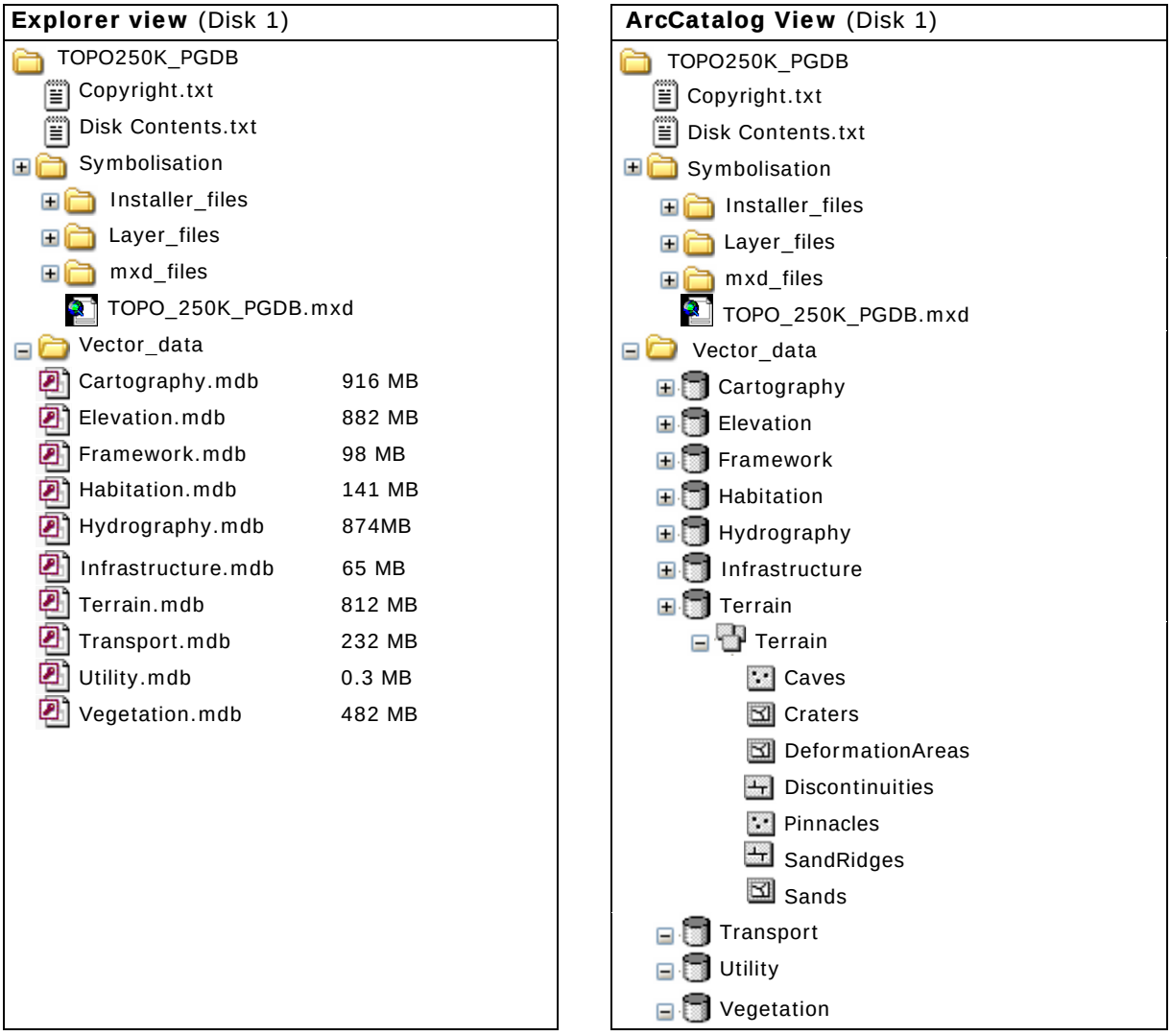
4.1.2 File Size

GEODATA TOPO 250K Series 3 Data in personal geodatabase format is 4.4 gigabytes.

4.1.3 PGDB Naming Convention

The naming convention for data provided on DVD in personal geodatabase format is shown in an Explorer view and ArcCatalog view in *Figure 1: GEODATA TOPO 250K Series 3 personal geodatabase data arrangement.*

Figure 1: GEODATA TOPO 250K Series 3 personal geodatabase data arrangement



Explorer view (Disk 2)
TOPO250K_PGDB
Copyright.txt
Disk Contents.txt
Documentation
250K Licence Packaged Product.pdf
250K User Guide.pdf
Symbol Dictionary for Topographic Map Prod...

ArcCatalog View (Disk 2)
TOPO250K_PGDB
Copyright.txt
Disk Contents.txt
Documentation
250K Licence Packaged Product.pdf
250K User Guide.pdf
Symbol Dictionary for Topographic Map Prod...

4.1.4 Symbolisation - Layer and .mxd Files for PGDB

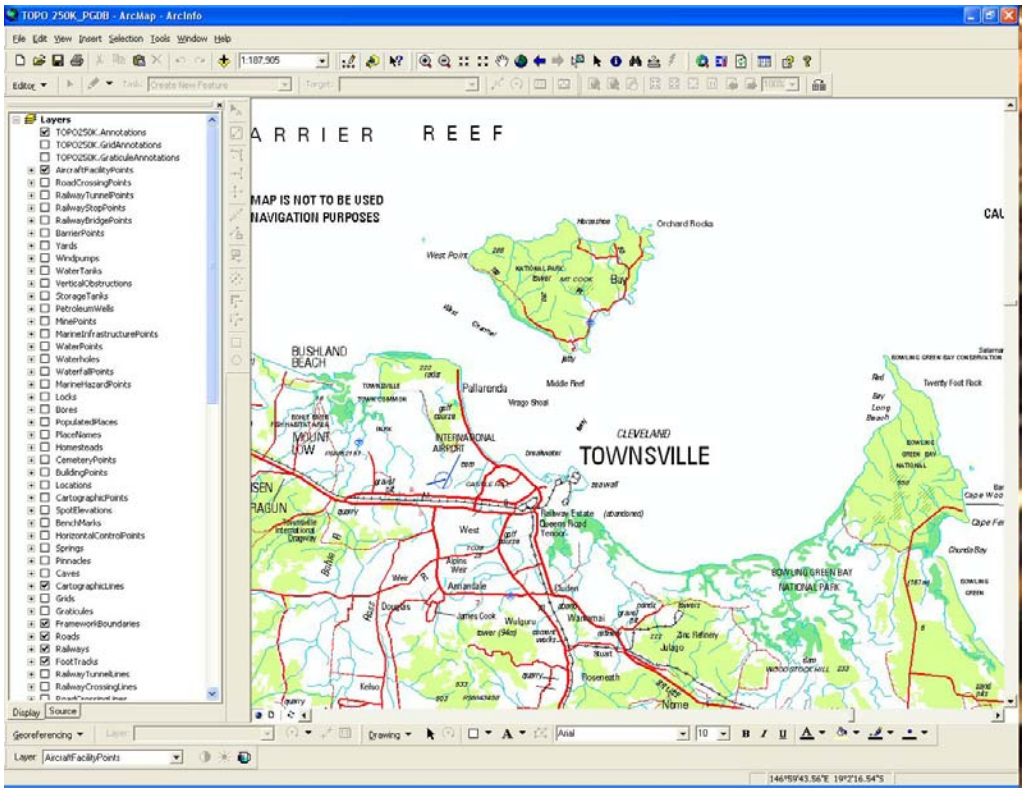
Layer files and ArcMap .mxd files have been supplied together with the data to allow symbolisation of feature types in accordance with TOPO 250K Topographic Data and Map Specifications. Three methods for displaying symbology may be used as follows:

1. **ArcMap .mxd with embedded layer files:** An ArcMap file with a .mxd extension called *TOPO_250K_PGDB.mxd* has been provided with the *GEODATA TOPO 250K Series 3* data for display of features classes. Initially all of the features classes in the .mxd have their display set as unchecked for easier operation. The user then has the choice to select only the features classes they need to view. Users are encouraged to zoom to an area of interest if they intend to turn on all layers.

2. **User import of layer files:** Layer file is a file with a .lyr extension that stores the path to a source dataset and contains layer properties, including symbology. You can think of them as a cartographic view of your geographic data. To add layer files right-click on the feature class or shapefile, and then select properties. Select the symbology tab and click the import button then select the first option and follow the browsers to the location where the files are stored.

3. **User import of data:** To import data select the add button  to navigate to the location of the layer files (.lyr) and select only the layer files you wish to view. For example: *If you select Mainlands.lyr, Roads.lyr WatercourseLines.lyr, FrameworkBoundaries.lyr and PopulatedPlaces.lyr this will give an overview of roads, towns and state boundaries.*

Figure 2: Example of TOPO250K_PGDB.mxd file for the layer files of the pgdb



4.2 Shapefile

4.2.1 Data Structure

Shapefiles have been extracted from the geodatabase, however, files delivered in this structure do not store inter-feature topological relationships. Shapefiles are delivered in a single tier structure and are compatible with most Geographic Information Systems (GIS).

A **Shapefile** is an ESRI vector data storage format and it represents one feature class. Each Shapefile is made up of the following files:

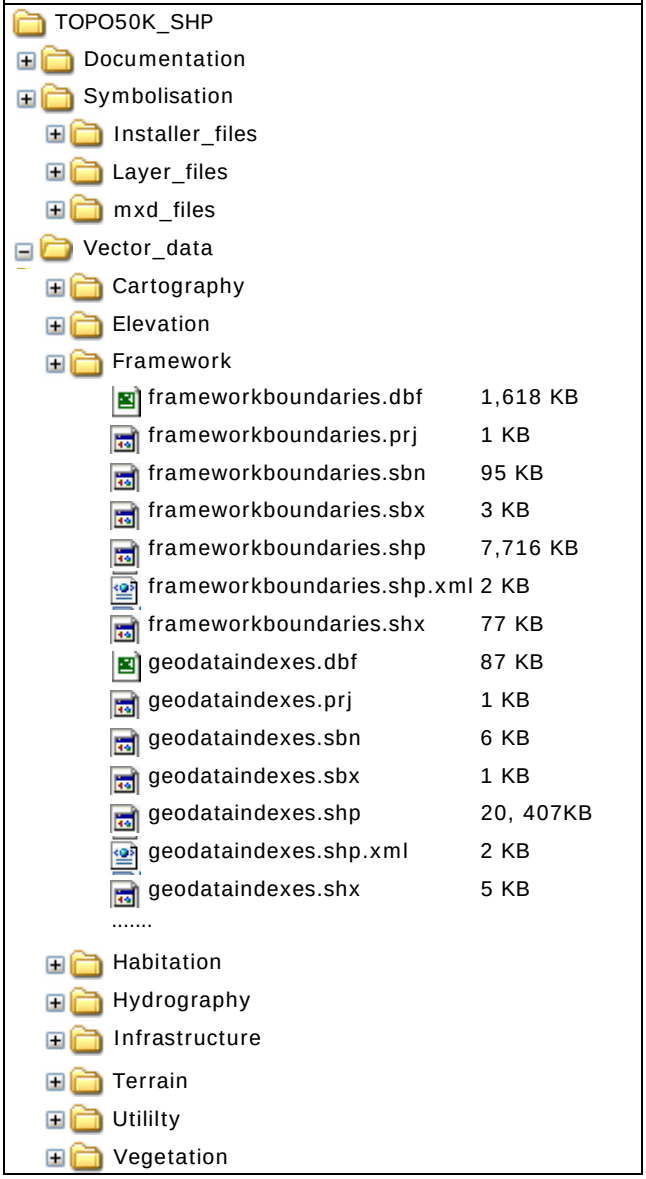
- ***.shp*** – Main file contains feature geometry;
- ***.shx*** – Index file contains look-up index of the feature geometry;
- ***.dbf*** – dBase file contains feature attributes with one record per feature;
- ***.prj*** – Projection file contains the coordinate system information; and
- ***.sbn and *.sbx*** – Spatial index files contain the spatial index of features.

4.2.2 Shapefile Naming Convention

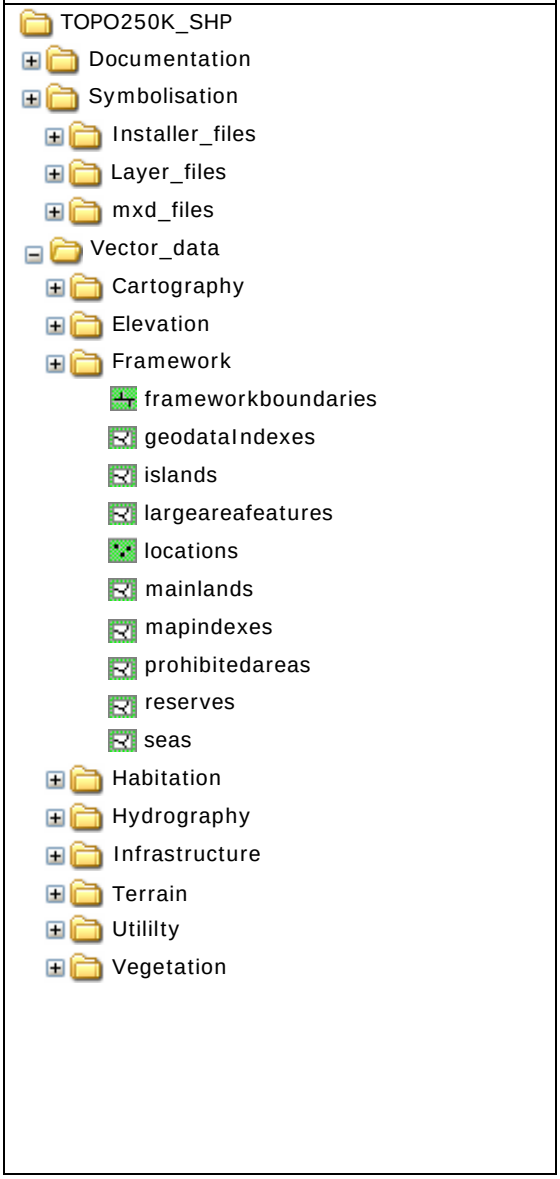
The naming convention for data provided on DVD in Shapefile format is shown in an Explorer view and ArcCatalog view in *Figure 3: GEODATA TOPO 250K Series 3 shapefile data arrangement.*

Figure 3: GEODATA TOPO 250K Series 3 shapefile data arrangement

Explorer view



ArcCatalog View



4.2.3 Symbolisation - Layer and .mxd Files for Shapefiles

Layer files and ArcMap .mxd files have been supplied together with the data to allow symbolisation of feature types in accordance with the TOPO 250K Topographic Data and Map Specifications. An ArcMap file with a .mxd extension called *TOPO_250K_SHP.mxd.* has been provided with the *GEODATA TOPO 250K Series 3* data for display of features classes. Please refer to section 4.1.4 Symbolisation - Layer and .mxd Files for PGDB regarding the full range of options available for symbolisation.

4.3 MapInfo File Format Option

4.3.1 Data Structure

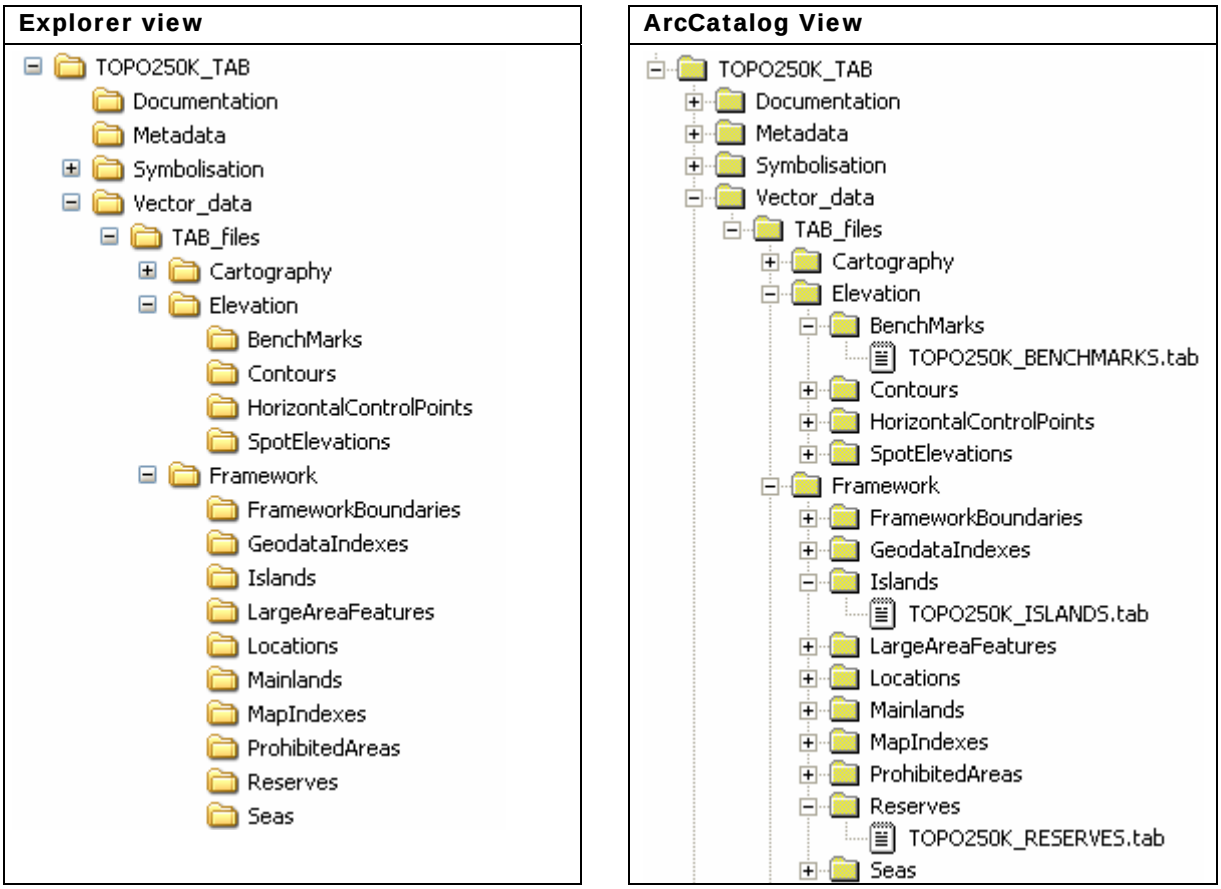
When a file is saved into MapInfo file format (*.tab), multiple files will be listed in the directory for each map or browser that has been created. The file extensions are: .tab, .id, .dat, .map and .ind.

- ***.tab -** is a text file that describes the structure of the table, and the format of the file that contains the data. The .tab file is the file shown in the Open Table dialog;
- ***.id** – is a cross reference file that links the data with the geographic objects;
- ***.dat** – is data, the tabular information that is shown in a browser;
- ***.map** – stores the geographic objects. This file is only there if the table is mappable; and
- ***.ind** – is a tabular index. It enables searching for map objects using the Find command. This file is created if a column in the table is indexed

4.3.2 MapInfo Naming Convention

The naming convention for data provided on DVD in MapInfo TAB file format is shown in an Explorer view and ArcCatalog view in *Figure 4: GEODATA TOPO 250K Series 3 MapInfo TAB data arrangement.*

Figure 4: GEODATA TOPO 250K Series 3 MapInfo TAB file data arrangement



4.3.3 Symbolisation - MapInfo Custom Installation Files

GEODATA TOPO 250K Series 3 data contains symbology that is not included in standard MapInfo symbology libraries. For the correct symbology to appear, users will need to install three custom symbology files:

- Geoscience MapInfo True Type Font;
- update the mires800.dll; and
- update the MAPINFOW.PEN file, as well as copy additional custom bitmap files into the appropriate directory.

This needs to be done once, except for the .PEN file, which will need to be installed once for each new user logon, as it is installed in the user profiles.

Detailed instructions for the installation of these files are available at *Appendix F: Installing TAB Custom Symbology*. The files are located in the 'Symbolisation\Symbology' directory on the DVD.

5. Data Characteristics and Special Features

5.1 Data Characteristics

All the vector data within *GEODATA TOPO 250K Series 3* share the following characteristics:

5.1.1 Datum, Projection and Coordinate Extents

Datum
Geographic Datum of Australia (GDA94)

Projection
Geographical (i.e. latitudes and longitudes)

Resolution of coordinates
Coordinates of all spatial objects are quoted to the nearest 0.00001 degrees (approx. 1m).

Spatial index
Only one spatial index is used for each feature class with a grid of side length 0.5 degrees, for all feature classes except the *Sea*, *Mainland* and *LargeAreaFeatures* feature classes. These feature classes have a side length of 1.5 degrees.

Extent of Geodatabase
-8.9 to -44 degrees of latitude and 112.8 to 154.1 degrees of longitude

5.1.2 Cartographic Generalisation

Some features are located on the earth's surface in such a way that they cannot be separated at the scale of the map. To ensure cartographic clarity, one feature is held in the correct position and the rest are displaced. This is referred to as cartographic generalisation.

During data and map compilation, the following hierarchy is used to determine which features are held in the real-world position and which are displaced when one or more are adjacent. The higher a feature is on the list, the more likely that it has been held in the correct position over those lower on the list. Natural features are given precedence over constructed features.

1. Hydrographic features
2. Railways
3. Principal roads
4. Secondary roads
5. Minor roads
6. Vehicular tracks
7. Buildings
8. Vegetation

Features that do not appear on the list may also be displaced. Their displacement may be due to an adjacent feature either appearing on the list above or having a greater landmark value.

When up to three features are close and adjacent, one may be displaced by as much as 225 metres. As far as possible, the displaced features maintain the correct alignment and spatial relationship to other features.

5.2 Special Features

5.2.1 Persistent Identifier, Creation Date and Retirement Date

The *GEODATA TOPO 250K Series 3* uses a ***Persistent Identifier*** (***PID***) attribute to identify individual features. The ***PID*** is unique on a national basis and is assigned to each feature during the population of the production geodatabase. The ***PID*** is only retired when changes have made it unavoidable (e.g. splitting of a linear feature into two features, or merging of two features). However, the ***PID*** is maintained when a feature's attributes have changed or where the spatial representation of the feature changes but logically the feature is the same (e.g. the start node and end node are the same).

The ***PID*** is replacing the Unique Feature Identifier (UFI) used in the previous series of GEODATA 250K.

GEODATA TOPO 250K Series 3 data stores creation dates in the ***Created*** attribute field and represents the date that the feature was created in the production geodatabase. It has no relation to the date which the feature physically came into existence (e.g. the completion of a building). The ***Created*** attribute field is populated for all features.

The ***Retired*** attribute field represents the date that a feature is marked as retired from the production geodatabase. It has no relation to the date on which the feature was physically destroyed (e.g. the demolition of a building). The ***Retired*** attribute field is only populated with a date once the feature is retired. Active features have a null retirement date.

5.2.2 Orientation Attribute

Some point features contain an orientation attribute so that they can be represented as close to the real word as possible (e.g. orientation of a bridge symbol in relation to a road). The values used to represent the angle of orientation in the ***Orientation*** field follow an anti-clockwise direction starting from 0 degrees and is illustrated in *Figure 5*.

Figure 5: Orientation model

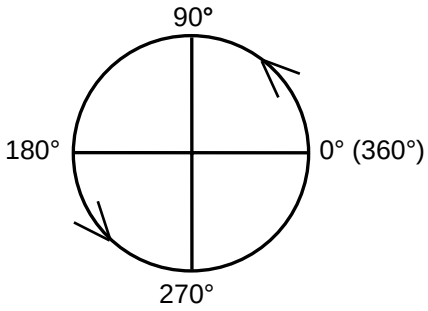
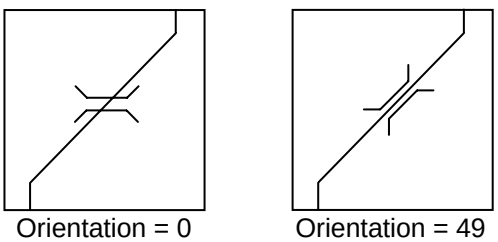


Figure 6 illustrates the effect of orientation on the bridge symbol.

Figure 6: Impact of orientation



6. Geodatabase Model and Content

6.1 Geodatabase Model

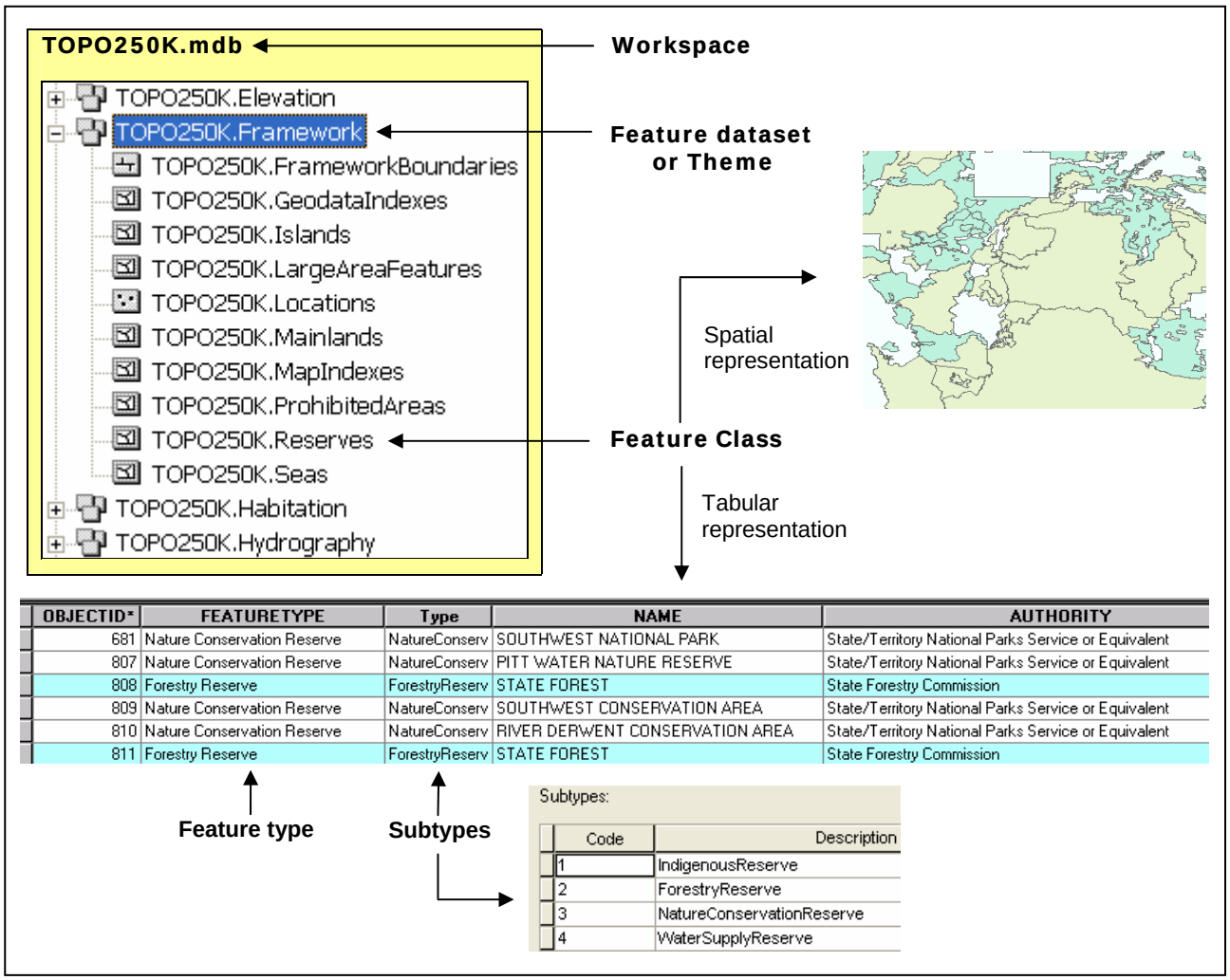
A geodatabase stores spatial data, both vector and raster, and attribute data in a relational database. A geodatabase can exist as either an enterprise geodatabase or a personal geodatabase. Their structure is generally the same, but the differences are in the size restrictions and the ability to edit in a multi-user environment.

- **Enterprise Geodatabase (egdb)**
  The data is stored in a Relational Database Management System (RDBMS) which is accessed through an ArcSDE client via ArcGIS. The powerfulness and potential size of RDBMS' makes transactions faster and allow the data to be viewed and edited by multiple users at once. Enterprise Geodatabases (egdbs) are generally used by organisations that have large centralised datasets. GA uses Oracle's RDBMS through SDE to manage and revise its 250K topographic seamless data. The egdb format can be obtained by users as a customised product.

- **Personal Geodatabase (pgdb)**
  The data is stored in a Microsoft Access database which can be directly accessed by the ArcGIS suite of products. Unlike an egdb, there is a two gigabyte limit of the size of the pgdb due to Microsoft Access database restrictions. This means that *GEODATA TOPO 250K Series 3* format is delivered as a series of pgdb's. Pgdbs are generally intended for a single user and for organisations that cannot store the data in an RDBMS. Although it supports viewing by multiple users at once, it only enables a single user to edit. *GEODATA TOPO 250K Series 3* is provided as a pgdb to users.

The geodatabase structure for *GEODATA TOPO 250K Series 3* is a feature based data model and was developed using Unified Mark-up Language (UML). The features are arranged in a hierarchy of feature classifications including features datasets, feature classes and feature types which are described in more detail in *Figure 7*.

Figure 7: Geodatabase structure and components



6.2 Geodatabase Model Components

- **Feature Dataset**
  A collection of feature classes stored together that share the same spatial reference; that is, they share a coordinate system, and their features fall within a common geographic area. Feature classes with different geometry types may be stored in a feature dataset.

  A feature dataset exists as a container that holds feature classes and provides the association between the feature classes and a common spatial reference. There are ten feature datasets in the *GEODATA TOPO 250K Series 3* sourced from the distribution geodatabase environment.

  1. Cartography
  2. Elevation
  3. Framework
  4. Habitation
  5. Hydrography
  6. Infrastructure
  7. Terrain
  8. Transport
  9. Utility
  10. Vegetation

- **Feature Class**
  A collection of feature types that share common geometry and convey the topological relationships of the data (e.g. Reserves).

  Each feature class has a specific geometry (i.e. point, line or polygon) and exists as a table that includes a geometry column. All features within a feature class have behaviour rules associated with them. There are 92 feature classes in *GEODATA TOPO 250K Series 3* and each exists as either:

  - **Point Feature Classes** that contain point features (e.g. buildings, lighthouses);
  - **Linear Feature Classes** that contain line features (e.g. windbreaks, pipelines);
  - **Polygon Feature Classes** that contain area features (e.g. lakes, built–up areas); or
  - **Annotation Feature Classes** that contain BLOB (Binary Large Object) elements representing textual information required for map face production purposes.

- **Feature Type**
  A collection of features within a feature class that share specific characteristics (e.g. Forestry reserve). In the feature class table, the feature type is defined by the 'FEATTYPE' column.

- **Feature Subtype**
  A subtype is an ESRI implementation and is a way of grouping features within a feature class in order to increase efficiency in editing and maintain the integrity of attributes. The subtypes are based on an attribute value and domains (e.g. a list of acceptable attribute values or value range) can be associated with them. There can only be one subtype field for each feature class.

  In *Figure 7,* the subtype field also happens to be the feature type field (i.e. FEATTYPE). Although the subtype is stored as a numeric value, the subtype (e.g. NatureConservationReserve) is displayed to the user as text via a look-up table.

- **Feature Instance**
  An abstraction of a real world entity represented in digital form. Feature instances can also be referred to as 'Features'. Features exist as a row in a feature class and its associated geometry is stored in a separate table (e.g. Digital representation of Lake Binney Forest Reserve).

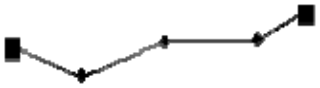
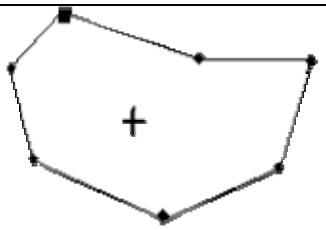
6.3 Feature Instance Details

A feature (or feature instance) in a feature based model such as *GEODATA TOPO 250K Series 3* is structured as:

feature instance = [spatial object + attribute object]

Spatial Object:
The spatial object is defined by the locational attributes of the feature in the form of geometry (*Table 3*) defined by x and y coordinate couplets. The topological relationships are also carried as part of the spatial object whenever the transfer formats support them.

Table 3: Geometry types

Point Geometric representation defined by a single 'x, y' co-ordinate couplet. Three special points are used in the data model. • ***Entity Point*** - used to locate point features or area features represented by a point. • ***Node*** - A point that is an intersection of two or more lines or an end point of a line. • ***Vertex*** - A point that is a change of direction along the length of a line.	
Line A sequence of non-intersecting line segments bounded by nodes (not necessarily distinct) at each end. Lines will reference their start and end nodes. Coordinates along a line are referred to as vertices.	
Polygon A defined continuous region consisting of an interior area. Within a feature class the polygons are mutually exclusive. Multi-polygons are two or more polygons, not abutting each other, treated as a single feature. There are three feature classes where multi-polygon features apply, these are Reserves, Built Up Area and Islands.	

Attribute Object:
The attribute object includes the non-spatial (or aspatial) information about a feature, including the feature type. The attribute object is composed of one or more attributes and is defined by an attribute field(s) and its associated attribute value.

Table 4: Example of attribute object

Spatial Object	***Attribute Object***	
Line x_1,y_1 .....x_n,y_n)	***Attribute***	***Attribute Value***
	OBJECTID	305867
	FEATTYPE	Road
	NAME	BARRIER HIGHWAY
	CLASS	Principal Road
	FORMATION	Sealed
	NRN	32
	SRN	87
	FEATREL	16/11/2004
	ATTRREL	16/11/2004
	PLANACC	100
	SOURCE	GEOSCIENCE AUSTRALIA
	CREATED	9/05/2006
	RETIRED	<null>
	PID	3968237
	SYMBOL	251
	FEATWIDTH	0
	TEXTNOTE	<null>
	SHAPE	Polyline
	SHAPE.LEN	0.003552

6.4 GEODATA TOPO 250K Series 3 Content

Appendix A. Production Schema/Distribution Schema cross-reference table

Appendix B. Item formatting and attribution

Appendix C. Includes a table listing every *GEODATA TOPO 250K Series 3* feature dataset, feature class, feature type and their associated spatial object and attribute fields.

7. Data Quality Information

7.1 Lineage

GEODATA TOPO 250K Series 3 is primarily sourced from *GEODATA TOPO 250K Series 2* and 1:250 000 scale map reproduction material (from the National Topographic Map Series and Defence Joint Operation Graphics). A key revision source for the data is satellite imagery taken from the SPOT Panchromatic and LANDSAT Thematic Mapper Sensors. Revision material has also been gathered from a variety of authoritative sources. More information about the sources for this data can be found in Geoscience Australia's TOPO 250K Topographic Data and Map Specifications.

7.2 Positional Accuracy

The positional accuracy of spatial data is a statistical estimate of the degree to which planimetric coordinates and elevations of features agree with their real world values. The planimetric accuracy of *GEODATA TOPO 250K Series 3* is impacted by three sources of errors:

- **Positional Accuracy of the Source Material**
  It is difficult to verify the planimetric accuracy of the source material (repromat) used for capture of the *GEODATA TOPO 250K Series 3* source data (i.e. the *GEODATA TOPO 250K Series 2* Vector product), as it has already been produced. However, the expectation was that no more than 10% of well defined points were in error by more than 0.5mm measured on the source material. This relates to a standard deviation on the map (S_m) of 0.31mm.

- **Errors Due to the Conversion Processes**
  These errors relate to degradation caused by digitising and scanning processes. They are impacted by errors associated with equipment, software and operator. Therefore, this generally results in a standard deviation of on the map (S_{limit}) of 0.14mm.

- **Errors Due to the Manipulation Processes**
  The processes used during data manipulation introduce an error (S_{man}) of 0.05mm.

7.2.1 Absolute Planimetric (horizontal) Accuracy

The total statistical error from the source material and digitising process discussed above is given by:

$$S_{absolute} = \sqrt{(S_m)^2 + (S_{\lim it})^2 + (S_{man})^2}$$
$$= \sqrt{(0.31)^2 + (0.14)^2 + (0.05)^2}$$
$$= 0.34mm$$

This represents an error of 85m on the ground for 250K data. Alternative and equal ways of expressing this error are:

Not more than 10% of well defined points will be in error by more than 140m.

The planimetric accuracy, stated as a standard deviation in metres, is given at the feature level. The deviation has a standard value unless the source of the feature is known to have a different accuracy. A value of 9999 is used when the positional accuracy of the feature is not definable or not applicable (e.g. connector features).

7.2.2 Absolute Elevation Accuracy

The accuracy of the points captured for the Relief layer varies with the source material and the point determination of each particular point. The following table summarises these accuracies.

Table 5: Summary of absolute elevation accuracy

Type of Feature	Printed Map	Compilation Material	Digital Topographic Data
Spot Elevation	±5 metres	±5 metres	±5 metres
Spot Elevation inside Depression contour	±5 metres	±5 metres	±5 metres
Spot Elevation on Sand ridge	±5 metres	±5 metres	±5 metres
Horizontal Control Point			±15 metres

The accuracy of the contours is defined as 1/2 of the contour interval, for example +/- 25 metres for a 50 metre contour interval and +/- 10 metres for a 20 metre contour interval.

7.3 Feature Level Metadata

GEODATA TOPO 250K Series 3 provides metadata at the feature level. Apart from the standard system generated attribute fields, the following fields always apply for each feature, at the feature level. The exception is for features within the Cartography feature dataset as well as GeodataIndexes and MapIndexes feature classes.

- **Planimetric Accuracy** (PLANACC)
  This is the standard deviation in metres of the position of the feature's horizontal coordinates.
- **Feature Reliability** (FEATREL)
  This is the date of the latest source material where the position of a particular feature was verified, or subsequently changed.
- **Attribute Reliability** (ATTRREL)
  This is the date of the latest source material used to initially assign, or subsequently change the value of, one of the attributes of the feature. A new date is applied only if the feature's attributes are confirmed.
- **Source** (SOURCE)
  This is the official name of the agency that originally captured the spatial object.
- **Elevation Accuracy** (ELEVACC)
  This is the standard deviation in metres of the feature's elevation attribute value. This applies only to those features with an elevation attribute.

7.4 Data Omission

In the *GEODATA TOPO 250K Series 3* data, there has been a need to exclude some information. Detailed below is the data subject to exclusion:

- MapIndexes are supplied with the *GEODATA TOPO 250K Series 3* National product only. Users downloading tiled data through the online download service should note that MapIndexes are not supplied. The reason for this is that the extents of MapIndex features are larger than GeodataIndex features which are used for extracting all other feature classes for delivery of data on a tile basis and extend an additional three minutes to the north and five minutes to the east of GeodataIndex features.
- In the Powerlines feature class, for pgdb, Shapefile and TAB file formats, no powerlines are depicted in South Australia. This is due to restrictions by the supplying agency.
- As the TOPO 250K NTDB is expanded, some new themes or attribution may be restricted. Access to this new information will only be available by direct application to GA and if approval is supplied, use will be limited by licence agreements.
- The Annotation, GridAnnotation and GraticuleAnnotation feature classes have not been provided in Shapefile format, as annotation feature classes are not supported in this format.
- The Annotations feature class is not available in the MapInfo TAB format at this time due to technical issues.

Appendix A: Production Schema/Distribution Schema Cross-Reference Table

PRODUCTION SCHEMA			DISTRIBUTION SCHEMA	
FeatureDataset	**FeatureClass**	**Subtype**	**Theme**	**Feature Class**
ADMINISTRATION	ProhibitedAreas	-	FRAMEWORK	ProhibitedAreas
ADMINISTRATION	Reserves	IndigenousReserve, Forestry Reserve, NatureConservationReserve, WaterSupplyReserve	FRAMEWORK	Reserves (4 subytypes)
FRAMEWORK	FrameworkBoundaries	Junction, Shoreline, StateBorder, LimitOfData	FRAMEWORK	FrameworkBoundaries (4 subtypes)
FRAMEWORK	Islands	-	FRAMEWORK	Islands
FRAMEWORK	LargeAreaFeatures	-	FRAMEWORK	LargeAreaFeatures
FRAMEWORK	Locations	Bay, Beach, Cape, Gorge, Mountain, Pass, RoadJunction, WaterbodyIsland	FRAMEWORK	Locations (8 subtypes)
FRAMEWORK	Mainlands	-	FRAMEWORK	Mainlands
FRAMEWORK	Seas	-	FRAMEWORK	Seas
SERIESINDEX	GeodataIndexes	-	FRAMEWORK	GeodataIndexes
SERIESINDEX	MapIndexes	-	FRAMEWORK	MapIndexes
HABITATION	BuildingAreas	-	HABITATION	BuildingAreas
HABITATION	BuildingPoints	-	HABITATION	BuildingPoints
HABITATION	BuiltUpAreas	-	HABITATION	BuiltUpAreas
CULTURE	CemeteryAreas	-	HABITATION	CemeteryAreas
CULTURE	CemeteryPoints	-	HABITATION	CemeteryPoints
HABITATION	Homesteads	-	HABITATION	Homesteads
FRAMEWORK	Locations	PlaceName	HABITATION	PlaceNames (1 subtype)
HABITATION	PopulatedPlaces	-	HABITATION	PopulatedPlaces
CULTURE	RecreationAreas	CivicSquare, Gardens, GolfCourse, MultipleUse, MiscellaneousArea, OvalArea, RaceCourse, RecreationArea, RifleRange, ShowGround	HABITATION	RecreationAreas (10 subtypes)
AVIATION	AircraftFacilityPoints	Airport, Heliport, LandingGround	TRANSPORT	AircraftFacilityPoints (3 subtypes)
RAILTRANSPORT	RailwayBridgePoints	-	TRANSPORT	RailwayBridgePoints
RAILTRANSPORT	RailwayCrossingLines	RailwayBridgeLine, RailwayCauseway	TRANSPORT	RailwayCrossingLines (2 subtypes)
RAILTRANSPORT	Railways	-	TRANSPORT	Railways
RAILTRANSPORT	RailwayStopPoints	RailwayStation	TRANSPORT	RailwayStopPoints (1 subtype)
RAILTRANSPORT	RailwayTunnelLines	-	TRANSPORT	RailwayTunnelLines
RAILTRANSPORT	RailwayTunnelPoints	-	TRANSPORT	RailwayTunnelPoints
ROADTRANSPORT	BarrierPoints	Gate, Grid	TRANSPORT	BarrierPoints (2 subtypes)
ROADTRANSPORT	FerryRouteLines	-	TRANSPORT	FerryRouteLines
ROADTRANSPORT	FootTracks	-	TRANSPORT	FootTracks
ROADTRANSPORT	RoadCrossingLines	FordLine, RoadBridgeLine, RoadCauseway	TRANSPORT	RoadCrossingLines (3 subtypes)
ROADTRANSPORT	RoadCrossingPoints	FordPoint, RoadBridgePoint	TRANSPORT	RoadCrossingPoints (2 subtypes)
ROADTRANSPORT	Roads	-	TRANSPORT	Roads
ROADTRANSPORT	RoadTunnelLines	-	TRANSPORT	RoadTunnelLines
ROADTRANSPORT	RoadTunnelPoints	-	TRANSPORT	RoadTunnelPoints

PRODUCTION SCHEMA			DISTRIBUTION SCHEMA	
FeatureDataset	**FeatureClass**	**Subtype**	**Theme**	**Feature Class**
DRAINAGE	CanalLines	-	HYDROGRAPHY	CanalLines
DRAINAGE	Locks	-	HYDROGRAPHY	Locks
DRAINAGE	RapidLines	-	HYDROGRAPHY	RapidLines
DRAINAGE	Spillways	-	HYDROGRAPHY	Spillways
DRAINAGE	WatercourseLines	Connector, Watercourse	HYDROGRAPHY	WatercourseLines (2 subtypes)
DRAINAGE	WaterfallPoints	-	HYDROGRAPHY	WaterfallPoints
WATERBODIES	Bores	-	HYDROGRAPHY	Bores
WATERBODIES	CanalAreas	-	HYDROGRAPHY	CanalAreas
WATERBODIES	Flats	LandSubjectToInundation, MarineSwamp, SalineCoastalFlat, Swamp	HYDROGRAPHY	Flats (4 subtypes)
WATERBODIES	Lakes	-	HYDROGRAPHY	Lakes
WATERBODIES	PondageAreas	AquacultureArea, SaltEvaporator, SettlingPond	HYDROGRAPHY	PondageAreas (3 subtypes)
WATERBODIES	RapidAreas	-	HYDROGRAPHY	RapidAreas
WATERBODIES	Reservoirs	FloodIrrigationStorage, TownRuralStorage	HYDROGRAPHY	Reservoirs (2 subtypes)
WATERBODIES	Springs	-	HYDROGRAPHY	Springs
WATERBODIES	WatercourseAreas	-	HYDROGRAPHY	WatercourseAreas
WATERBODIES	Waterholes	-	HYDROGRAPHY	Waterholes
WATERBODIES	WaterPoints	GnammaHole, NativeWell, Pool, Rockhole, Soak	HYDROGRAPHY	WaterPoints (5 subtypes)
MARINE	MarineHazardAreas	Reef, Shoal	HYDROGRAPHY	MarineHazardAreas (2 subtypes)
MARINE	MarineHazardPoints	OffshoreRock, Wreck	HYDROGRAPHY	MarineHazardPoints (2 subtypes)
MARINE	ForeshoreFlats	-	HYDROGRAPHY	ForeshoreFlats
CARTOGRAPHY	Annotations	-	CARTOGRAPHY	Annotations
CARTOGRAPHY	CartographicLines	-	CARTOGRAPHY	CartographicLines
CARTOGRAPHY	CartographicPoints	-	CARTOGRAPHY	CartographicPoints
CARTOGRAPHY	GraticuleAnnotations	-	CARTOGRAPHY	GraticuleAnnotations
CARTOGRAPHY	Graticules	-	CARTOGRAPHY	Graticules
CARTOGRAPHY	GridAnnotations	-	CARTOGRAPHY	GridAnnotations
CARTOGRAPHY	Grids	-	CARTOGRAPHY	Grids
CULTURE	AerialCableways	-	INFRASTRUCTURE	AerialCableways
CULTURE	DamWalls	-	INFRASTRUCTURE	DamWalls
CULTURE	Fences	-	INFRASTRUCTURE	Fences
MARINE	MarineInfrastructureLines	Breakwater, Jetty, SeaWall, WharfLine	INFRASTRUCTURE	MarineInfrastructureLines (4 subtypes)
MARINE	MarineInfrastructurePoints	Lighthouse	INFRASTRUCTURE	MarineInfrastructurePoints (1 subtype)
CULTURE	VerticalObstructions	-	INFRASTRUCTURE	VerticalObstructions
CULTURE	WaterTanks	-	INFRASTRUCTURE	WaterTanks
CULTURE	Windpumps	-	INFRASTRUCTURE	Windpumps
CULTURE	Yards	-	INFRASTRUCTURE	Yards
INDUSTRY	Conveyors	-	INFRASTRUCTURE	Conveyors
INDUSTRY	MineAreas	-	INFRASTRUCTURE	MineAreas
INDUSTRY	MinePoints	-	INFRASTRUCTURE	MinePoints
INDUSTRY	PetroleumWells	-	INFRASTRUCTURE	PetroleumWells
INDUSTRY	StorageTanks	-	INFRASTRUCTURE	StorageTanks

PRODUCTION SCHEMA			DISTRIBUTION SCHEMA	
FeatureDataset	**FeatureClass**	**Subtype**	**Theme**	**Feature Class**
RELIEF	Contours	ConnectorDiscontinuity, ConnectorStandard, DepressionContour, InterpolatedContour, StandardContour, LimitOfData	ELEVATION	Contours (6 subtypes)
RELIEF	SpotElevations	-	ELEVATION	SpotElevations
SURVEYMARKS	BenchMarks	-	ELEVATION	BenchMarks
SURVEYMARKS	HorizontalControlPoints	-	ELEVATION	HorizontalControlPoints
PHYSIOGRAPHY	Caves	-	TERRAIN	Caves
PHYSIOGRAPHY	Craters	-	TERRAIN	Craters
PHYSIOGRAPHY	DeformationAreas	DistortedSurface, Outcrop	TERRAIN	DeformationAreas (2 subtypes)
PHYSIOGRAPHY	Discontinuities	Cliff, Cutting, Embankment, Levee	TERRAIN	Discontinuities (4 subtypes)
PHYSIOGRAPHY	Pinnacles	-	TERRAIN	Pinnacles
PHYSIOGRAPHY	SandRidges	-	TERRAIN	SandRidges
PHYSIOGRAPHY	Sands	SandArea, SandDune	TERRAIN	Sands (2 subtypes)
VEGETATION	ClearedLines	-	VEGETATION	ClearedLines
VEGETATION	CultivatedAreas	Orchard, Plantation	VEGETATION	CultivatedAreas (2 subtypes)
VEGETATION	NativeVegetationAreas	ForestOrShrub, Mangrove, Rainforest	VEGETATION	NativeVegetationAreas (3 subtypes)
VEGETATION	Windbreaks	-	VEGETATION	Windbreaks
UTILITY	Pipelines	-	UTILITY	Pipelines
UTILITY	Powerlines	-	UTILITY	Powerlines

Appendix B: Item Formatting and Attribution

Feature class item names, aliases and item types are listed below, together with a sample attribute and the case of the attribute where applicable (i.e. for text strings).

Note: The following list represents the total number of items existing for all Feature Classes in the Geodatabase. Therefore, more items are shown than what would normally appear against each individual Feature Class. This list is intended to provide information on the format and attribution of all attribute items in the Geodatabase. The items are alphabetically ordered for ease of reference, and are not shown in the order they appear in the Geodatabase model.

Case is to be assigned as per the following abbreviations in the table:
C (Caps only)
CL (Caps & Lower)
L (Lower case)
N/A (Not Applicable)
MR (Annotation item - to be shown in the same case as required for map production)

Feature Class Item Name	Feature Class Item Name Alias	Item Type	Allow Nulls	Precision	Scale	Length	Example attribute	Case
ANNOTATIONCLASSID	ANNOTATIONCLASSID	Long Integer	Yes	10			<null>	N/A
ATTRREL	ATTRIBUTERELIABILITY	Date	Yes	0	0	36	1/10/2000	N/A
AUTHORITY	AUTHORITY	String	Yes			100	State Forestry Commission	CL
AVGHEIGHT	AVERAGEHEIGHT	Short Integer	Yes	2			6	N/A
CLASS	CLASS	String	No			40	Secondary Road	CL
CODE	CODE	String	Yes			24	NSW1274	C
CREATED	CREATIONDATE	Date	Yes	0	0	36	16/11/2003	N/A
DESCRIPTN	DESCRIPTION	String	Yes			30	tower	L
ELEVATION	ELEVATION	Double	No	7	2		250	N/A
ELEVACC	ELEVATIONACCURACY	Short Integer	No	4			25	N/A
FEATUREID	FEATUREID	Long Integer	Yes	10			14744	N/A
FEATREL	FEATURERELIABILITY	Date	Yes	0	0	36	1/02/2000	N/A
FEATTYPE	FEATURETYPE	String	No			32	Pipeline	CL
FEATWIDTH	FEATUREWIDTH	Double	Yes/No (variable)	8	4		0.25	N/A
FORMATION	FORMATION	String	No			18	Unsealed	CL
GAUGE	GAUGE	String	No			20	Standard: 1435mm	CL
HEIGHT	HEIGHT	Float	Yes	6	2		51.82	N/A
HIERARCHY	HIERARCHY	String	No			14	Minor	CL
LAYOUTGD	LAYOUTGUIDE	String	Yes			2	1B	C
MAPNAME	MAPNAME	String	Yes			60	PORT PHILLIP SPECIAL	C
MAPNUMBER	MAPNUMBER	String	Yes/No (variable)			8	H5002	C
NAME	NAME	String	Yes/No (variable)			60	ALBURY	C
NRN	NRN	String	Yes			12	A31, 26	N/A

Feature Class Item Name	Feature Class Item Name Alias	Item Type	Allow Nulls	Precision	Scale	Length	Example attribute	Case
OBJECTID	OBJECTID (*system generated)*	Object ID					2453	N/A
OCEANNAME	OCEANNAME	String	Yes			60	INDIAN OCEAN	C
ORDEROFACC	ORDEROFACCURACY	String	Yes			6	3	N/A
ORIENTATN	ORIENTATION	Short Integer	Yes	3			135	N/A
OTHWATERNM	OTHERWATERNAME	String	Yes			60	<null>	C
PERENNIAL	PERENNIALITY	String	No			14	Non-perennial	CL
PID	PID	Long Integer	Yes	8			83202692	N/A
PLANACC	PLANIMETRICACCURACY	Short Integer	No	4			100	N/A
PRODUCT	PRODUCT	String	Yes			35	Gas	CL
RELATION	RELATIONSHIP	String	Yes			12	Underground	CL
RETIRED	RETIREMENTDATE	Date	Yes	0	0	36	12/01/2004	N/A
SEANAME	SEANAME	String	Yes			60	TIMOR SEA	C
SHAPE	SHAPE	Geometry	Yes				Polygon	N/A
SHAPE.AREA	SHAPE.AREA	Double	No	0	0		0.738476	N/A
SHAPE.LEN	SHAPE.LEN	Double	No	0	0		0.409136	N/A
SOURCE	SOURCE	String	No	0	0	50	GEOSCIENCE AUSTRALIA	C
SOURCETYPE	SOURCETYPE	String	No			24	PRINTED MAP	C
SRN	SRN	String	Yes			12	M13, 64	N/A
STATE	STATE	String	No			3	NSW	C
STATUS	STATUS	String	No			18	Operational	CL
SYMBOL	SYMBOL	Short Integer	No	4			209	N/A
TEXTNOTE	TEXTNOTE	String	Yes			50	gauge 1435mm	L
TILENAME	TILENAME	String	Yes			60	MELBOURNE	C
TILENUMBER	TILENUMBER	String	No			8	F5416	C
TRACKS	TRACKS	String	No			8	One	CL
TYPE	TYPE	Long Integer	No	5			2	N/A
ZORDER	ZORDER	Long Integer	Yes	10			0	N/A

Appendix C: Geodatabase Features

1. Feature Types within GEODATA TOPO 250K Series 3

The following hyperlinks are links to the relevant features in the Data Dictionary that are contained within *GEODATA TOPO 250K Series 3*.

2. Data (feature type) Dictionary table

Data dictionary layout

Feature dataset (The Distribution feature dataset in which the feature classification is contained)

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
The feature class in which the feature type classification is contained.	The spatial object type (i.e. polygon, line, point, annotation	The feature type classification to which the entry relates. **Please note:** • Where a feature subtype exists, the name is followed by the subtype name (e.g. 'Heliport') • Shapefiles and MapInfo TAB files contain the numeric subtype values, not the text. • Not all feature classes have subtypes.	The definition which applies to the feature type.	The size criteria for inclusion.	The applicable fields for each feature class.	Specifies the Distribution geodatabase feature dataset the feature class exists within.	Specifies the Production geodatabase feature dataset the feature class exists within.

Common attributes across feature classes

The following are attributes which are common to all feature classes.

FEATTYPE:	Feature type classification to which the entry relates.
FEATREL:	Reliability date of the spatial object. Date is only adjusted during spatial change/verification of an existing feature or capture of a new feature.
ATTRREL:	Reliability date of the attribute object. Date is only adjusted during attribute change/verification of an existing feature or capture of a new feature.
PLANACC:	Standard deviation of the horizontal positional accuracy.
***CREATED*:**	Date of creation of the feature in the database.
RETIRED:	Date of retirement of the feature in the database (currently empty as no data has been retired yet).
PID:	Persistent identifier.
SYMBOL:	Symbol number that relates to the feature. (Refer to the Symbol Dictionary).
MAPNUMBER:	Number that defines the map index to which the feature is related.

Data dictionary

Cartography

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Annotations	Anno	Annotation	Type that appears on the map not related to the graticule or grid feature classes.		FEATTYPE MAPNUMBER CREATED RETIRED PID	Cartography	Cartography
GraticuleAnnotations		Graticule Annotation	Type that appears on the map related to the Graticule feature class.			Cartography	Cartography
GridAnnotations		Grid Annotation	Type that appears on the map related to the Map Grid feature type.			Cartography	Cartography
CartographicLines	Line	International Boundary*(InternationalBoundary)*	Boundaries defining the territorial sovereignty of a country. The international boundary will be taken to be the line of sea bed jurisdictions.		FEATTYPE TYPE MAPNUMBER CREATED RETIRED PID SYMBOL TEXTNOTE	Cartography	Cartography
		Pointer*(Pointer)*	A symbol used to graphically link text to a feature where the density of detail may result in ambiguity.			Cartography	Cartography
		Runway Centreline *(RunwayCentreline)*	A symbol used to indicate the length and orientation of an airport's runway.			Cartography	Cartography
		Salt Evaporator Internal Line*(SaltEvaporatorInternalLine)*	A levee bank or small canal within a salt evaporator.	1,250 metres		Cartography	Cartography
		Settling Pond Internal Line*(SettlingPondInternalLine)*	Levee banks within settling ponds.	1,250 metres		Cartography	Cartography
		Tropic Of Capricorn*(TropicOfCapricorn)*	The parallel of latitude 23°26.5'S.			Cartography	Cartography
CartographicPoints	Point	Distance Indicator*(DistanceIndicator)*	A symbol used to indicate points between which road distances are given (in kilometres).		FEATTYPE TYPE MAPNUMBER CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Cartography	Cartography
		Flow Direction Arrow*(FlowDirectionArrow)*	A symbol used to indicate the direction of flow of water through a river system where it is unclear using the topological relationships shown on the map face.			Cartography	Cartography
		Road Marker National *(RoadMarkerNational)*	The symbol printed over a road indicating a national route.			Cartography	Cartography

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
		Road Marker State*(RoadMarkerState)*	The symbol printed over a road indicating a state route.			Cartography	Cartography
		Transition Point*(TransitionPoint)*	The point where a road or railway enters/exits a tunnel.			Cartography	Cartography
Graticules	Line	Graticule	A line on a map or chart representing a parallel of latitude or a meridian of longitude including cross ticks.		FEATTYPE MAPNUMBER CREATED RETIRED PID SYMBOL	Cartography	Cartography
Grids		Map Grid	A line forming part of a rectangular Cartesian coordinate system that is superimposed on maps and charts to permit identification of ground locations with respect to other locations and the computation of direction and distance to other points.			Cartography	Cartography

Elevation

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Contours	Line	Connector Discontinuity*(ConnectorDiscontinuity)*	A line which represents an imaginary line on the ground joining points of equal elevation in relation to the Australian Height Datum. Connector Discontinuity is to be utilised where contours on the repromat were broken for either a cliff, cutting, embankment or razorback symbol.		FEATTYPE TYPE ELEVATION FEATREL ATTREL PLANACC ELEVACC SOURCE CREATED RETIRED PID SYMBOL	Elevation	Relief
		Connector Standard*(ConnectorStandard)*	A line which represents an imaginary line on the ground joining points of equal elevation in relation to the Australian Height Datum. Connector Standard is to be utilised where the contour's position is not known, for example in a Watercourse Area or Mine Area.			Elevation	Relief
		Depression Contour*(DepressionContour)*	A line which represents an imaginary line on the ground joining points of equal elevation in relation to the Australian Height Datum. Depression contours are to be utilised where a portion of a landform dips below its surrounding area crossing a contour interval. The depression must be fully contained within the surrounding landform.			Elevation	Relief
		Interpolated Contour*(InterpolatedContour)*	A line which represents an imaginary line on the ground joining points of equal elevation in relation to the Australian Height Datum. Interpolated contour to be utilised to join discontinued contours or to replace a contour absent in the source material for cartographic reasons. This feature type is not to be utilised where contours have been broken for features from the discontinuity feature class.			Elevation	Relief
		Standard Contour*(StandardContour)*	A line which represents an imaginary line on the ground joining points of equal elevation in relation to the Australian Height Datum.			Elevation	Relief
		Limit Of Data*(LimitOfData)*	The line bounding the limits of known source material or the edge of the defined NTDB.			Elevation	Relief

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
SpotElevations	Point	Spot Elevation	A point on the earth's surface, of known elevation, above or below the Australian Height Datum (AHD66).		FEATTYPE CLASS ELEVATION SOURCETYPE FEATREL ATTREL PLANACC ELEVACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN	Elevation	Relief
BenchMarks	Point	Bench Mark	A permanently marked point, the elevation of which above sea level has been determined by levelling.		FEATTYPE ELEVATION CODE FEATREL ATTREL PLANACC ELEVACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Elevation	SurveyMarks

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
HorizontalControlPoints	Point	Horizontal Control Point*(HorizontalControlPoint)*	A point on the ground, the geographical position of which has been determined by geodetic survey.		FEATTYPE NAME ELEVATION CODE ORDEROFACC FEATREL ATTREL PLANACC ELEVACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Elevation	SurveyMarks

Framework

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
FrameworkBoundaries	Line	Junction*(Junction)*	An artificial line used to separate adjacent hydrographic areas which have differing attributes and across which flow can occur.		FEATTYPE TYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Framework	Framework
		Shoreline*(Shoreline)*	A line depicting the boundary of a mainland, island or sea.			Framework	Framework
		State Border*(StateBorder)*	The boundary defining the division of the Commonwealth of Australia into State/Territory administrations.			Framework	Framework
		Limit Of Data*(LimitOfData)*	The line bounding the limits of known source material or the edge of the defined NTDB.			Framework	Framework
Mainlands	Polygon	Mainland*(Mainland)*	The area of continental Australia including Tasmania.		FEATTYPE STATE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Framework	Framework

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Islands	Polygon	Island*(Island)*	An area of land fully surrounded by the sea.	3,906 sq metres	FEATTYPE NAME STATE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Framework	Framework
Seas	Polygon	Sea*(Sea)*	The water area surrounding the Australian continent and its offshore islands.		FEATTYPE OCEANNAME SEANAME OTHERWATERNAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Framework	Framework
Locations	Point	Bay*(Bay)*	A named wide, open and curving indentation into the land formed by the sea or inland waterbody.		FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Framework	Framework
		Beach*(Beach)*	A named strip of land or terrace bordering the sea, usually lying between high and low tides.			Framework	Framework
		Cape*(Cape)*	A named prominent headland projecting into the sea or inland waterbody.			Framework	Framework
		Gorge*(Gorge)*	A named deep and narrow, steep-sided, usually rocky river valley.			Framework	Framework
		Mountain*(Mountain)*	A named markedly elevated landform bounded by steep slopes and rising to prominent ridges and individual peaks.			Framework	Framework
		Pass*(Pass)*	A named low and passable gap through a mountain range.			Framework	Framework
		Road Junction*(RoadJunction)*	A named intersection of two or more roads.			Framework	Framework
		Waterbody Island*(WaterbodyIsland)*	A named island within an inland waterbody or forming part of the shoreline.			Framework	Framework

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
LargeAreaFeatures	Polygon	Large Area Feature	A representation that is indicative of the extent of nationally recognized significant regions.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Framework	Framework
Reserves	Polygon	Indigenous Reserve*(IndigenousReserve)*	Land reserved due to its Indigenous significance excluding freehold land.	3,125,000 sq metres	FEATTYPE TYPE NAME AUTHORITY FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Framework	Administration
		Forestry Reserve*(ForestryReserve)*	Public land reserved for forestry purposes.	3,125,000 sq metres		Framework	Administration
		Nature Conservation Reserve*(NatureConservationReserve)*	Land reserved for the conservation of native species.	3,125,000 sq metres		Framework	Administration
		Water Supply Reserve*(WaterSupplyReserve)*	Land reserved to protect water supply catchments.	3,125,000 sq metres		Framework	Administration
ProhibitedAreas	Polygon	Prohibited Area	Area into which entry is prohibited without permission from the controlling authority.	3,125,000 sq metres	FEATTYPE NAME AUTHORITY FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Framework	Administration
GeodataIndexes	Polygon	GeodataIndex	The line defining the limits of each GEODATA product tile supplied to the public.		FEATTYPE TILENAME TILENUMBER CREATED RETIRED PID	Framework	SeriesIndex

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
MapIndexes	Polygon	Map Index	A area defined for the production of a single map sheet whether as a singular production or as part of a series such as the National Topographic Map Series.		FEATTYPE LAYOUTGUIDE MAPNAME MAPNUMBER CREATED RETIRED PID	Framework	SeriesIndex

Habitation

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
PopulatedPlaces	Point	Populated Place	A named settlement with a population of 200 or more persons.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Habitation	Habitation
BuiltUpAreas	Polygon	Built Up Area	An area where buildings are close together and have associated road and other infrastructure networks.	390,625 sq metres	FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Habitation	Habitation

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Locations	Point	Place Name*(PlaceName)*	A named place or area.		FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Habitation	Framework
Homesteads	Point	Homestead	A named prominent building or set of buildings which is/are the place of permanent residence in rural areas.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Habitation	Habitation
BuildingPoints	Point	Building Point	A permanent walled and roofed construction or the ruin of such a construction.		FEATTYPE NAME CLASS FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Habitation	Habitation

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
BuildingAreas	Polygon	Building Area	A permanent walled and roofed construction or the ruin of such a construction, capable of being represented at scale.	140,625 sq metres	FEATTYPE NAME CLASS FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Habitation	Habitation
RecreationAreas	Polygon	Civic Square*(CivicSquare)*	A normally rectangular formal open area within a town centre, usually surrounded by buildings, designated by the towns governing body for use by its citizens.	140,625 sq metres	FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Habitation	Culture
		Gardens*(Gardens)*	Formally laid out public botanical or ornamental grounds.	140,625 sq metres		Habitation	Culture
		Golf Course*(GolfCourse)*	An area of land developed and purposely designed for the playing of golf.	140,625 sq metres		Habitation	Culture
		Multiple Use*(MultipleUse)*	An area of land developed for a combination of recreational purposes.	140,625 sq metres		Habitation	Culture
		Miscellaneous Area*(MiscellaneousArea)*	An area of land developed for miscellaneous or undefined recreational purposes.	140,625 sq metres		Habitation	Culture
		Oval Area*(OvalArea)*	An area of land developed as a sporting ground for the playing of football, athletics, cricket and the like.	140,625 sq metres		Habitation	Culture
		Race Course*(RaceCourse)*	An area of land allocated & developed for the racing of horses.	140,625 sq metres		Habitation	Culture
		Recreation Area*(RecreationArea)*	A general purpose or large park in a residential area.	140,625 sq metres		Habitation	Culture
		Rifle Range*(RifleRange)*	An area specifically designated for rifle shooting.	140,625 sq metres		Habitation	Culture
		Show Ground*(ShowGround)*	Show ground arenas and buildings for the formal presentation of primary production and related activities.	140,625 sq metres		Habitation	Culture

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
CemeteryPoints	Point	Cemetery Point	An area of land for burying the dead		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Habitation	Culture
CemeteryAreas	Polygon	Cemetery Area	An area of land for burying the dead.	140,625 sq metres	FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Habitation	Culture

Hydrography

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
WatercourseLines	Line	Connector*(Connector)*	An artificial line used to connect linear Hydrographic features across an area feature to allow network analysis of riverine networks.		FEATTYPE TYPE NAME PERENNIAL HIERARCHY FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Drainage
		Watercourse*(Watercourse)*	A natural channel along which water may flow from time to time.	2,500 metres		Hydrography	Drainage

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
WatercourseAreas	Polygon	Watercourse Area	A natural channel along which water may flow from time to time.	625,000 sq metres	FEATTYPE NAME PERENNIAL HIERARCHY FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Waterbodies
Lakes	Polygon	Lake	A naturally occurring body of mainly static water surrounded by land.	62,500 sq metres	FEATTYPE NAME PERENNIAL FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Waterbodies
Reservoirs	Polygon	Town Rural Storage*(TownRuralStorage)*	A body of water collected and stored behind a constructed barrier for some specific use (with the exception of Flood Irrigation Storage).	140,625 sq metres	FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Waterbodies
		Flood Irrigation Storage*(FloodIrrigationStorage)*	A body of water collected and stored behind a constructed barrier for the specific use of Flood Irrigation Farming	140,625 sq metres		Hydrography	Waterbodies

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
WaterPoints	Point	Gnamma Hole*(GnammaHole)*	Small holes of varying shape, diameter and depth, found in hard granite outcrops and in the decomposed granite of a breakaway, which can and usually does hold water.		FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Hydrography	Waterbodies
		Native Well*(NativeWell)*	An isolated natural depression which holds water, not within Watercourses. The natural phenomena are sometimes improved by indigenous persons for their own water collection purposes.			Hydrography	Waterbodies
		Pool*(Pool)*	A small body of still or standing water, permanent or temporary in an isolated natural depression, not within Watercourses.			Hydrography	Waterbodies
		Rockhole*(Rockhole)*	A hole excavated in solid rock by water action.			Hydrography	Waterbodies
		Soak*(Soak)*	A depression holding moisture after rain, especially the damp or swamp spots around the base of granite rocks.			Hydrography	Waterbodies
Waterholes	Point	Waterhole*(Waterhole)*	A natural depression which holds perennial water, within a non-perennial watercourse or a non-perennial lake.		FEATTYPE NAME PERENNIAL FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Hydrography	Waterbodies
Springs	Point	Spring	A place where water issues from the ground naturally.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Hydrography	Waterbodies
Bores	Point	Bore	A small diameter hole in the ground for the purpose of obtaining subterranean water by natural flow or mechanical pumping.			Hydrography	Waterbodies

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Locks	Point	Lock	An enclosure in a water body with gates at both ends to raise or lower the water level to enable vessels to pass from one level to another.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Hydrography	Drainage
WaterfallPoints	Point	Waterfall Point	A sudden descent of water over a step or ledge in the bed of a watercourse.			Hydrography	Drainage
CanalAreas	Polygon	Canal Area	An artificial watercourse conveying water for inland navigation, irrigation or drainage purposes.	312,500 sq metres	FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Waterbodies
CanalLines	Line	Canal Line	An artificial watercourse conveying water for inland navigation, irrigation or drainage purposes.	1,250 metres	FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Drainage
RapidAreas	Polygon	Rapid Area	An area of broken, fast flowing water in a watercourse, where the slope of the bed increases (but without a prominent break of slope which might result in a waterfall), or where a gently dipping bar of harder rock outcrops.	250 metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Waterbodies

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
RapidLines	Line	Rapid Line	An area of broken, fast flowing water in a watercourse, where the slope of the bed increases (but without a prominent break of slope which might result in a waterfall), or where a gently dipping bar of harder rock outcrops.	250 metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Drainage
Spillways	Line	Spillway	A channel or duct formed around the side of a reservoir past the end of the dam, to convey flood discharge from the watercourse above the reservoir into the watercourse below the dam.	250 metres		Hydrography	Drainage
PondageAreas	Polygon	Aquaculture Area*(AquacultureArea)*	Shallow beds, usually segmented by constructed walls, for the use of aquaculture.	390,625 sq metres	FEATTYPE TYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Waterbodies
		Salt Evaporator*(SaltEvaporator)*	A flat area, usually segmented, used for the commercial production of salt by evaporation.	390,625 sq metres		Hydrography	Waterbodies
		Settling Pond*(SettlingPond)*	Shallow beds, usually segmented by constructed walls, for the treatment of sewage or other wastes.	390,625 sq metres		Hydrography	Waterbodies
Flats	Polygon	Land Subject To Inundation*(LandSubjectToInundation)*	Low lying land usually adjacent to lakes or watercourses, which is regularly covered with flood water for short periods.	390,625 sq metres	FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Waterbodies
		Marine Swamp*(MarineSwamp)*	That low lying part of the backshore area of tidal waters, usually immediately behind saline coastal flat, which maintains a high salt water content, and is covered with characteristic thick grasses and reed growths.	250,000 sq metres		Hydrography	Waterbodies
		Saline Coastal Flat*(SalineCoastalFlat)*	That nearly level tract of land between mean high water and the line of the highest astronomical tide.	390,625 sq metres		Hydrography	Waterbodies
		Swamp*(Swamp)*	Land which is so saturated with water that it is not suitable for agricultural or pastoral use and presents a barrier to free passage.	1,562,500 sq metres		Hydrography	Waterbodies

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
ForeshoreFlats	Polygon	Foreshore Flat	That part of the seabed or estuarine areas, between mean high water and the line of lowest astronomical tide.	390,625 sq metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Hydrography	Marine
MarineHazardAreas	Polygon	Reef*(Reef)*	An area of rock or coral that is exposed between mean high water and lowest tide, or just below approximate lowest tide, which is visually prominent or a hazard to shipping.	390,625 sq metres	FEATTYPE TYPE NAME RELATION FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Hydrography	Marine
		Shoal*(Shoal)*	A detached area of any material the depth over which constitutes a danger to surface navigation of marine craft. The term shoal is not generally used for dangers which are composed entirely of rock or coral.	390,625 sq metres		Hydrography	Marine
MarineHazardPoints	Point	Offshore Rock*(OffshoreRock)*	A rock located offshore that represents a hazard to shipping.		FEATTYPE TYPE NAME RELATION FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Hydrography	Marine
		Wreck*(Wreck)*	A disabled vessel, either submerged or visible, which is attached to, or foul of, the bottom or cast up on the shore.			Hydrography	Marine

Infrastructure

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
AerialCableways	Line	Aerial Cableway	A conveyor system in which carrier units run on wire cables strung between supports.	750 metres	FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Infrastructure	Culture
Conveyors	Line	Conveyor	A continuous belt or series of belts mounted on rollers and used to move large quantities of goods, especially grain or ore.	750 metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Infrastructure	Industry
DamWalls	Line	Dam Wall	A barrier of earth and rock, concrete or masonry constructed to form a reservoir for water storage purposes or to raise the water level.	250 metres	FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH TEXTNOTE	Infrastructure	Culture

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Fences	Line	Fence	A structure which encloses bounds or divides a property or part thereof. Includes vermin proof fences.	2,500 metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Infrastructure	Culture
PetroleumWells	Point	Petroleum Well	A pipe sunk in the ground for the purpose of obtaining subterranean oil or gas.		FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Infrastructure	Industry
StorageTanks	Point	Storage Tank	Large vessel for the storage of liquids (not water) or gases usually associated with refineries or chemical plants.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Infrastructure	Industry

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Windpumps	Point	Windpump	A tower fitted with a wind-driven pump.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Infrastructure	Culture
WaterTanks	Point	Water Tank	A feature constructed on or below the ground for the storage of water.			Infrastructure	Culture
VerticalObstructions	Point	Vertical Obstruction	Prominent man-made features of a permanent nature that either have landmark value are useful for navigation or may constitute a danger to aircraft. Such features will have a height above the local terrain.		FEATTYPE NAME DESCRIPTN HIEGHT FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Infrastructure	Culture
Yards	Point	Yard	A small area of land enclosed by a fence and generally used for confining stock.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Infrastructure	Culture

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
MinePoints	Point	Mine Point	An excavation for the extraction of minerals.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Infrastructure	Industry
MineAreas	Polygon	Mine Area	An excavation made by the removal of stone, gravel, clay or mineral from the ground for commercial or industrial purposes and tailings dumps from mining operations.	140,625 sq metres	FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Infrastructure	Industry
MarineInfrastructureLines	Line	Breakwater*(Breakwater)*	A solid structure to break the force of the waves, sometimes detached from the coast, protecting a harbour or anchorage.	250 metres	FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Infrastructure	Marine
		Jetty*(Jetty)*	A structure projecting into a body of water for use as a promenade or as a platform alongside which vessels may be secured for loading and unloading passengers and cargo.	250 metres		Infrastructure	Marine
		Sea Wall*(SeaWall)*	A solid structure usually of concrete masonry or earth, built to prevent erosion or encroachment by the sea.	250 metres		Infrastructure	Marine
		Wharf Line*(WharfLine)*	A structure built from the land parallel to shore to provide for the berthing of vessels.	250 metres		Infrastructure	Marine

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
MarineInfrastructurePoints	Point	Lighthouse*(Lighthouse)*	A building or structure housing a light used as a navigation aid to shipping.		FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Infrastructure	Marine

Terrain

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Discontinuities	Line	Cliff*(Cliff)*	A high, steep, significant or overhanging face of rock.	1,250 metres	FEATTYPE TYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Terrain	Physiography
		Cutting*(Cutting)*	An open excavation of the Earth's surface to provide passage for a road, railway, canal or similar entity.	500 metres (length) 25 metres (height)		Terrain	Physiography
		Embankment*(Embankment)*	An artificial bank of earth and or stone built above the natural surface.	500 metres (length) 25 metres (height)		Terrain	Physiography
		Levee*(Levee)*	A low earth wall erected to restrain flood waters or to contain irrigation water.	500 metres (length) 2 metres (height)		Terrain	Physiography
SandRidges	Line	Sand Ridge	Sand drifts in long ridges tending parallel to and elongating in the direction of the prevailing winds.	250 metres	FEATTYPE AVGHEIGHT FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Terrain	Physiography

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Caves	Point	Cave	A naturally formed, subterranean open area or chamber.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Terrain	Physiography
Pinnacles		Pinnacle	A tall, slender spire shaped rock; projecting from a level or gently sloping surface, or the top of a mountain.			Terrain	Physiography
DeformationAreas	Polygon	Distorted Surface*(DistortedSurface)*	An area over which vehicular movement is difficult or impossible due to the fractured nature of the ground, or rock debris lying on the surface.	390,625 sq metres	FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Terrain	Physiography
		Outcrop*(Outcrop)*	An area of land where large rocks or boulders protrude from or rest on the surface.	390,625 sq metres		Terrain	Physiography
Sands	Polygon	Sand Area*(SandArea)*	An area predominantly covered with sand and devoid of vegetation.	390,625 sq metres	FEATTYPE TYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Terrain	Physiography
		Sand Dune*(SandDune)*	Mounds of loose sand usually crescent shaped transverse to the prevailing winds.	390,625 sq metres		Terrain	Physiography
Craters	Polygon	Crater	A bowl shaped natural depression with steep slopes at the rim, formed by volcanic activity or meteor impact.	62,500 sq metres	FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Terrain	Physiography

Transport

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
AircraftFacilityPoints	Point	Airport *(Airport)*	A facility licensed by the Civil Aviation Safety Authority for the movement of aircraft and the receipt and discharge of cargo and passengers.		FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN	Transport	Aviation
		Heliport*(Heliport)*	A constructed and maintained area for Helicopter take off and landing.			Transport	Aviation
		Landing Ground *(LandingGround)*	A paved or cleared strip on which aircraft take off and land.			Transport	Aviation
Roads	Line	Road	A route for the movement of vehicles, people or animals.	1,250 metres	FEATTYPE NAME CLASS FORMATION NRN SRN FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH TEXTNOTE	Transport	RoadTransport
RoadCrossingPoints	Point	Ford Point*(FordPoint)*	A shallow or flat portion of the bed of a watercourse or lake where a crossing may be effected.		FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Transport	RoadTransport
		Road Bridge Point*(RoadBridgePoint)*	A structure erected over a depression or obstacle to carry road traffic.			Transport	RoadTransport

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
RoadCrossingLines	Line	Ford Line*(FordLine)*	A shallow or flat portion of the bed of a watercourse or lake where a crossing may be effected.		FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH TEXTNOTE	Transport	RoadTransport
		Road Bridge Line*(RoadBridgeLine)*	A structure erected over a depression or obstacle to carry road traffic.	100 metres		Transport	RoadTransport
		Road Causeway*(RoadCauseway)*	An embankment of earth or masonry erected across open water or an area subject to inundation and carrying a road.	500 metres		Transport	RoadTransport
RoadTunnelPoints	Point	Road Tunnel Point	An artificial underground or underwater passage carrying a road.		FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Transport	RoadTransport
RoadTunnelLines	Line	Road Tunnel Line	An artificial underground or underwater passage carrying a road.	250 metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH TEXTNOTE	Transport	RoadTransport
BarrierPoints	Point	Gate*(Gate)*	An opening in a fence or wall for the passage of vehicles, people or animals and which may contain a device to limit		FEATTYPE TYPE FEATREL	Transport	RoadTransport

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
			passage.		ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE		
		Grid*(Grid)*	A grid at the opening in a fence to prevent livestock crossing but allowing for the free passage of vehicles.			Transport	RoadTransport
FerryRouteLines	Line	Ferry Route Line	A route across a river, lake, reservoir or sea used by a vessel for the regular transport of vehicles or passengers from one terminal point to another.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Transport	RoadTransport
FootTracks		Foot Track	A track designed to carry pedestrian traffic only.	1,250 metres		Transport	RoadTransport
Railways	Line	Railway	A transportation system using one or more rails to carry freight or passengers.	1,250 metres	FEATTYPE NAME GAUGE STATUS TRACKS FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Transport	RailTransport

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
RailwayBridgePoints	Point	Railway Bridge Point	A structure erected over a depression or obstacle to carry rail traffic.		FEATTYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Transport	RailTransport
RailwayCrossingLines	Line	Railway Bridge Line*(RailwayBridgeLine)*	A structure erected over a depression or obstacle to carry rail traffic.	100 metres	FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH TEXTNOTE	Transport	RailTransport
		Railway Causeway*(RailwayCauseway)*	An embankment of earth or masonry erected across open water or area subject to inundation and carrying a railway.	500 metres		Transport	RailTransport
RailwayTunnelPoints	Point	Railway Tunnel Point	An artificial underground or underwater passage carrying a railway.		FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Transport	RailTransport

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
RailwayTunnelLines	Line	Railway Tunnel Line	An artificial underground or underwater passage carrying a railway.	250 metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH TEXTNOTE	Transport	RailTransport
RailwayStopPoints	Point	Railway Station*(RailwayStation)*	A recognised stopping place for trains where passengers may board or alight or freight is loaded or unloaded. There may or may not be a platform. The railway station may not be in use.		FEATTYPE TYPE NAME FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL FEATWIDTH ORIENTATN TEXTNOTE	Transport	RailTransport

Utility

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Powerlines	Line	Powerline	Wire or wires supported on poles, towers or pylons, used for the transmission of high voltage electricity.	2,500 metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Utility	Utility

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Pipelines	Line	Pipeline	A pipe used for carrying gases and/or liquids.	1,250 metres	FEATTYPE NAME PRODUCT RELATION FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Utility	Utility

Vegetation

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
NativeVegetationAreas	Polygon	Forest Or Shrub*(ForestOrShrub)*	An area of land with woody vegetation greater than 10% foliage cover (includes trees and shrubs).	250,000 sq metres	FEATTYPE TYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Vegetation	Vegetation
		Mangrove*(Mangrove)*	A dense growth of mangrove trees, which grow to a uniform height on mud flats in estuarine or salt waters. The land upon which the mangrove is situated is a nearly level tract of land between the low and high water lines.	390,625 sq metres		Vegetation	Vegetation
		Rainforest*(Rainforest)*	Vegetation community which contains key rainforest species, with foliage cover greater than 70%.	390,625 sq metres		Vegetation	Vegetation
CultivatedAreas	Polygon	Orchard*(Orchard)*	An area covered by an orderly planting of trees, vines or bushes which yield fruits, nuts or other edible products.	390,625 sq metres	FEATTYPE TYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Vegetation	Vegetation
		Plantation*(Plantation)*	Intensively managed stands of trees of either native or exotic species, created by the regular placement of seedlings or seeds.	390,625 sq metres		Vegetation	Vegetation

Feature Class	Geometry	Feature Type *(SubType)*	Feature Type Definition	Minimum Size Criteria	Associated Attributes	Distribution Feature Dataset	Production Feature Dataset
Windbreaks	Line	Windbreak	A narrow strip of natural or planted trees, or scrub, positioned so as to break the force of the prevailing wind.	1,250 metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL	Vegetation	Vegetation
ClearedLines	Line	Cleared Line	A graded path in a straight line.	2,500 metres	FEATTYPE FEATREL ATTREL PLANACC SOURCE CREATED RETIRED PID SYMBOL TEXTNOTE	Vegetation	Vegetation

Appendix D: Metadata

GEODATA TOPO 250K Series 3 Topographic Data

Note: This metadata describes the dataset in accordance with the ANZLIC (Australia New Zealand Land Information Council) Core Metadata Guidelines Version 2.

DATASET CITATION

Title: GEODATA TOPO 250K Series 3 Topographic Data

Custodian: Geoscience Australia

Jurisdiction: Australia

DESCRIPTION

Abstract: Series 3 contains a medium scale vector representation of the topography of Australia. The data include the following ten themes and 92 feature classes:

Cartography: Annotations, CartographicLines, CartographicPoints, GraticuleAnnotations, Graticules, GridAnnotations and Grids

Elevation: Contours, BenchMarks, HorizontalControlPoints and SpotElevations

Framework: ProhibitedAreas, Reserves, FrameworkBoundaries, Islands, LargeAreaFeatures, Locations, Mainlands, Seas, GeodataIndexes and MapIndexes

Habitation: BuildingAreas, BuildingPoints, BuiltUpAreas, CemeteryAreas, CemeteryPoints, Homesteads, PlaceNames, PopulatedPlaces and RecreationAreas

Hydrography: CanalLines, Locks, RapidLines, Spillways, WatercourseLines, WaterfallPoints, Bores, CanalAreas, Flats, Lakes, PondageAreas, RapidAreas, Reservoirs, Springs, WatercourseAreas, Waterholes, WaterPoints, MarineHazardAreas, MarineHazardPoints and ForeshoreFlats

Infrastructure: AerialCableways, DamWalls, Fences, MarineInfrastructureLines, MarineInfrastructurePoints, VerticalObstructions, WaterTanks, Yards, Conveyors, MineAreas, MinePoints, PetroleumWells and StorageTanks

Terrain: Caves, Craters, DeformationAreas, Discontinuities, Pinnacles, SandRidges and Sands

Transport: AircraftFacilityPoints, RailwayBridgePoints, RailwayCrossingLines, Railways, RailwayStopPoints, RailwayTunnelLines, RailwayTunnelPoints, BarrierPoints, FerryRouteLines, FootTracks, RoadCrossingLines, RoadCrossingPoints, Roads, RoadTunnelLines and RoadTunnel Points

Utility: Pipelines and Powerlines

Vegetation: ClearedLines, CultivatedAreas, NativeVegetationAreas and Windbreaks

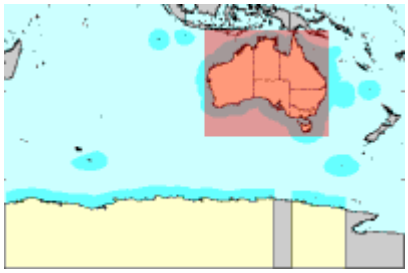
ANZLIC SEARCH WORDS:

- BOUNDARIES Mapping
- ENERGY Mapping
- FORESTS Mapping
- HERITAGE Natural Mapping
- HUMAN ENVIRONMENT Mapping
- LAND Mapping
- MARINE Mapping
- TRANSPORTATION Mapping
- UTILITIES Mapping
- VEGETATION Mapping
- WATER Mapping

SPATIAL DOMAIN - In a Geodatabase environment the spatial domain is set as:

Minimum X: 108.000000
Minimum Y: -48.000000
Maximum X: 21582.83645
Maximum Y: 21426.83645
Precision: 100000.000000

The precision of the NTDB is 0.00001 degrees, which equates to approximately 1 metre on the ground. This value is determined by dividing 1 coordinate system unit (degree) by the scale of the data. 1 degree / 100000 = 0.00001 degrees.



GEOGRAPHIC EXTENT NAME: AUSTRALIA EXCLUDING EXTERNAL TERRITORIES - AUS - Australia - Australia

Note: The format for each Geographic extent name is: Name - Identifier - Category - Jurisdiction (as appropriate) See GEN Register

GEOGRAPHIC BOUNDING BOX:

North bounding latitude:	-8.9 °
South bounding latitude:	-44 °
East bounding longitude:	154.1 °
West bounding longitude:	112.8 °

DATA CURRENCY

Beginning date**:** 9/05/06

Ending date**:** Current

DATA STATUS

Progress**:** 9/05/06

Maintenance and update frequency: Irregular

ACCESS

Stored data format:

DIGITAL - Personal Geodatabase (pgdb) Geographic GDA94
DIGITAL - MapInfo file format (.tab) MapInfo Geographic GDA94
DIGITAL - ArcView shape file (.shp) Geographic GDA94

Available format type:

DIGITAL - Personal Geodatabase (pgdb) Geographic GDA94
DIGITAL - MapInfo file format (.tab) MapInfo Geographic GDA94
DIGITAL - ArcView shape file (.shp) Geographic GDA94

Access constraints:

The data are subject to Commonwealth of Australia Copyright. A licence agreement is required and a licence fee is also applicable for packaged data (included in the purchase price). *GEODATA TOPO 250K Series 3* replaces Series 1 and 2.

Download or Order Product

DATA QUALITY

Lineage:

GEODATA TOPO 250K Series 3 is primarily sourced from *GEODATA TOPO 250K Series 2* and 1:250 000 scale map reproduction material (from the National Topographic Map Series and Defence Joint Operation Graphics). A key revision source for the data is satellite imagery taken from the SPOT Panchromatic and LANDSAT Thematic Mapper Sensors. Revision material has also been gathered from a variety of authoritative sources. More information about the sources for this data can be found in Geoscience Australia's Topographic Data and Map Specifications.

Positional accuracy:

Geoscience Australia has carried out both error budget analysis and limited field tests to verify the positional accuracy of the data. *GEODATA TOPO 250K Series 3* data complies with the following statement of horizontal accuracy: "The summation of errors from all sources results in data with a standard deviation of 85 metres for well defined features". Alternative and equal ways of expressing this error are: Not more than 10% of well-defined points are in error by more than 140 metres; and, in the worst case, a well defined point is out of position by 300 metres. As the *GEODATA TOPO 250K Series 3* data were digitised from existing map production material, some features may be subject to cartographic displacement.

Vertical Accuracy: The accuracy of the spot elevations in the relief layer varies with the type of source material from which they were captured and the point determination for each particular point. Most spot heights have an accuracy of + or - 5 metres, however bench marks and horizontal control points have an accuracy of + or - 1 metre. The accuracy of contours is defined as 1/2 of the contour interval, for example + or - 25 metres for a 50 metre contour interval.

Attribute accuracy:

For the TOPO 250K product, attribute accuracy is a measure of the degree to which the attribute values of features agree with the information on the source material. The allowable error in attribute accuracy ranges from 0.5% to 5%, at a 99% confidence level. Where less than 1% of attribute errors are permissible the entire population is tested. Where a less stringent limit is set for allowable errors a random subset of the relevant features in the tile is generally tested. The sample size is determined from statistical tables using the known population size of the relevant feature. Further information on the validation and testing methodology used by Geoscience Australia can be found in Appendix J of the Topographic Data and Map Specifications.

Logical Consistency:

Validating logical consistency may involve tests to check that table and file names are set out as in the Data Dictionary. Also included are graphical tests which check such things as intersections, polygon closure, minimum sizes of polygons and topological relationships. The allowable error in logical consistency ranges from 0% to 5%. Further information on the validation and testing methodology used by Geoscience Australia can be found in Appendix J of the Topographic Data and Map Specifications.

Completeness:

All instances of a feature and its attribute values that appear on the source material are captured unless otherwise indicated in the selection criteria for that feature.

CONTACT INFORMATION

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METADATA INFORMATION

Metadata date: 2006-06-15

ADDITIONAL METADATA

Metadata reference XHTML: http://www.ga.gov.au:88/newintranet/meta/ANZCW0703005458.html

Metadata reference XML: http://www.ga.gov.au:88/newintranet/meta/ANZCW0703005458.xml

Scale/resolution: 1:250 000

Projection/datum:

- Datum: GDA94
- Projection: Geographical - latitude and longitude

Appendix E: Glossary

Term	Meaning
Abandoned	A feature, which is no longer in normal use and is not maintained. Future use is not anticipated, although operations could possibly be resumed after repair. The term is applied to roads, railways and airfields, quarries etc. all of which, although not immediately useable for the original purpose, are still landmark features.
Indigenous (Aboriginal) lands	Land set aside for use of Indigenous people, access to which is controlled by Federal or State authorities or by Indigenous/Aboriginal Land Councils.
Accuracy	The degree of conformity with a standard, or the degree of perfection attained in a measurement. Accuracy relates to the quality of a result, and is distinguished from precision, which relates to the quality of the operation by which the result is obtained.
AGD66	Australian Geodetic Datum 1966. The datum used for the determination of co-ordinates for Geoscience Australia topographic map products and data of medium scale prior to the introduction of the GDA94 datum (see marginalia detail for further information on which datum was used for a particular map & projection information internal to data coverages for digital products).
AGDB	Australian Geographic Data Base program. A program initiated by AUSLIG to produce GIS quality digital spatial data from its map production material.
Aerodrome	An area for the movement of aircraft and for the receipt and discharge of cargo. Aerodromes may be licensed by Airservices Australia.
Airport	Technically an aerodrome at which facilities exist for the shelter, servicing and repair of aircraft, and at which major navigation aids are installed. Note: Airport is used generically in these specifications to include licensed Aerodromes.
Alignment	The direction or position of a linear feature (e.g., road or railway), on a map in relation to surrounding topographic detail.
Altitude	The vertical distance of a level, a point or an object considered as a point, measured from Mean Sea Level.
AMG	See Australian Map Grid.
AMG66	The grid (metres) coordinate set based on the AMG and the 1966 national geodetic adjustment.
Approximate	Very near, fairly correct, near to the actual. 'Approximate Position' is used as a descriptive note on a map to indicate detail, the position of which cannot be determined to the accuracy of the map accuracy statement.
Area feature	A feature, which is portrayed as a region or surface. An area feature is bounded by one or more polygons.
Area symbol	A continuous and distinctive shading, tone or repetitive pattern employed on a map (or chart) to cover an area (or areas) where a particular phenomenon occurs, or to which a particular value is attributed.
Attribute	A descriptive characteristic of a feature. An attribute has a defined set of attribute values.
Attribute object	The attribute object holds the non-locational information about the feature instance
AUSLIG	The Australian Surveying and Land Information Group, which subsequently amalgamated with Australian Geological Survey Organisation (AGSO) to form Geoscience Australia.
Australian Geodetic Datum (AGD)	The geodetic datum adopted by Australia in 1966, defined by the parametres of the Australian National Spheroid and the coordinates of the Johnston Geodetic Station.
Australian Height Datum (AHD)	The datum used for the determination of elevation in Australia. The determination Used a national network of benchmarks and tide gauges and set Mean High Water as zero elevation.
Australian Map Grid (AMG)	A cartesian coordinate system based on the Universal Transverse Mercator projection and the Australian Geodetic Datum. The unit of measure is the metre. (see also AMG66)

Term	Meaning
Australian National Spheroid	A reference spheroid for the computation of surveys, with specific application to Australia and the territories administered by Australia, with exceptions, having the following dimensions: Semi-major axis 6 378 160.0 metres Flattening or ellipticity of 1/ 298.25. and whose minor axis is defined to be parallel to the earth's mean axis of rotation at the start of 1962, and whose plane of zero geodetic longitude is parallel to the vertical through the Bureau International del Heure (BIH) mean observatory near Greenwich; that is to say, 149°00' 18.855'' west of the vertical through the photo zenith tube at Mount Stromlo. The position of the centre of the spheroid is defined by the coordinates of the Johnston Geodetic Station. (c.f., Australian Geodetic Datum).
Azimuth	The azimuth of a point is the angle reckoned clockwise in a horizontal plane between the local meridian and that point.
Base map	A map or chart showing certain fundamental information, used as a base upon which additional data of specialised nature are compiled or overprinted.
Base material/digital data	This is hardcopy material or digital data which Geoscience Australia has designated as the starting point on which producers build a new dataset and apply any appropriate revision source material. This includes entities such as repromat, latest previous edition map produced by GA, Maps produced by other mapping authorities, GEODATA 250K series 3, State mapping authority digital data or the existing TOPO100K & TOPO 250K NTDBs.
Bearing	The horizontal angle at a given point measured clockwise from a specific reference datum to a second point.
Bleed (Printing)	Where the printed area extends beyond the trim line so that once trimmed the ink extends to the edge of the paper.
Bleed edge (cartography)	That edge of a map or chart on which detail is extended to the edge of the sheet. Maps, which have a bleed edge, overlap the adjoining maps and generally duplicate the detail thereon, along their northern and eastern edges.
BLOB (Binary Large Object)	Acronym for *binary large object*. A large block of data, such as an image, a sound file, or geometry, stored in a database. The database cannot read the BLOB's structure and only references it by its size and location.
Boundary description	A written description of the alignment of a boundary which enables its position to be correctly located on the ground and plotted to scale on graphics. The boundary is said to be described by metres and bounds.
Boundary disclaimer	A note usually in the marginal area of a map or chart proclaiming that boundaries portrayed on the face of the map or chart are not necessarily authoritative.
Braided Stream	A watercourse comprised of a number of interlaced channels resulting from irregular stream discharge and deposition of course material.
Central meridian	The longitude of origin at the centre of each zone of the Universal Transverse Mercator (UTM) grid. The central meridian is arbitrarily given the value 500 000 metres.
Chart	A special purpose-map, generally designed for navigation or other particular purposes, in which essential map information is combined with other data critical to the intended use.
Clone	An exact copy of a point, line or polygon feature which has precisely the same co-ordinate position as the original feature.
	Cloned linear or polygon features will have exactly the same number of arcs and associated vertices and nodes.
Coincident	Where a feature location matches exactly the same co-ordinate position as another feature. The coincidence may be either at a single point or along a line feature. Where the endpoints of a linear feature leave the coincident section of line (i.e. to change direction) and fall within 1 metre of that line, they are considered to be coincident for data purposes.

Term	Meaning
Colour Control	Blocks of colour of known density to assist the printer to maintain consistent colours across the sheet.
Colour Separations	Film separations - one for each colour, which will be reproduced by a separate plate.
Compilation	The production of a new or revised map or chart, or portion thereof, from existing maps, aerial photographs, satellite imagery; surveys, and other source data.
Connector feature	An artificial linear feature used to connect a linear network across an area feature. This allows continuity of the feature and assists the process of linear network analysis.
Control	A collective term for a system of marks or objects on the earth or on a map or photograph, who's positions or elevations, or both, has been determined.
Convergence of meridians	The angular drawing together of the geographic meridians in passing from the equator to the poles. At the equator, all meridians are mutually parallel; passing from the equator, they converge until they meet at the poles, intersecting at angles that are equal to their differences in longitude.
Datum	A point, plane, or surface to which systems of measurement are referred or related to one another. Hence: 1. GEOCENTRIC DATUM A reference frame which has its origin as the Earth's centre of mass, which is directly related to the orbits of satellites. Positioning from these satellites is a critical element in modern surveying, mapping, geographic information systems, navigation, aviation, land and sea transport, emergency services, law enforcement and recreation. 2. GEODETIC DATUM The position of a reference spheroid as defined by the position of one selected station, usually near the centre of the survey area, known as the origin, and the azimuth from the origin to an adjoining station. 3. VERTICAL DATUM A level surface to which elevations are referred, usually, but not always, mean sea level.
Definite	Exact, precise, defined. Especially that detail which is unambiguous to the map user and may be accurately plotted
DEM	See Digital Elevation Model.
Descriptive name or term	Written information on a map or chart used to specify the nature of a physical or cultural feature. Also called toponym.
Digital Elevation Model	A depiction of relief using points and lines, which contain the elevation of each point or the elevation of each point in a line. The data may be in a regular grid or have an irregular spacing.
Dismantled	A feature, such as a railway, from which vital components have been removed and the remaining evidence of a railway is primarily the cleared right of way.
Disused	A feature components of which are still in place but which is no longer in use.
Easting	A linear distance eastwards from the vertical grid line, which passes through the Origin (or False Origin) of a Grid system.
Edge	The interior and exterior definition of polygon extents inherent in the construction of the polygon. (In terms of this specification it is not used to indicate the related bounding line feature (geometry type line))
Edition number	A higher number indicates that a map contains later information than a similar map bearing a lower number, and the highest edition number is therefore the current edition of a map.
Elevation	Vertical distance from a datum, usually Mean Sea Level to a point or object on the earth's surface.

Term	Meaning
Ellipsoid	A mathematically defined surface to which positions and measurements are referred.
Extension	The extension of detail outside the neatline of a map.
Enterprise geodatabase (egdb)	A geodatabase stored in a Relational Database Management System (RDBMD) which is accessed through an ArcSDE client via ArcGIS. It enables multi-user viewing and editing. Geoscience Australia's working national topographic geodatabase is stored as an egdb.
False origin	A datum point chosen to the south and west of the TRUE Origin of a grid to ensure that all points have positive grid co-ordinate values.
Feature	Cartographic feature. Spatial data feature. An abstraction of a real world phenomenon selected properties of which are illustrated on a map or held as spatial digital data.
Feature class	A group of features defined by a set of rules and which have common characteristics and relationships that are properties of the corresponding real world phenomena.
Feature instance	An occurrence of a feature class that has a unique set of attribute and relationship values.
Field check	The operation of checking a map compilation manuscript on the ground. Also called Field completion.
Gauge	A dimensional standard, especially the distance between the two inside edges of the rails of a railway line.
Gauge (railway)	Broad Gauge 1600 mm Narrow gauge 1067 mm Standard Gauge 1435 mm
Gazetteer	A list of geographic names, together with references to their positions and, sometimes, descriptive information.
GDA94	See Geocentric Datum of Australia (GDA94)
Generalisation	A process by which features which cannot be separated at a given map scale are displaced from their true positions or simplified for the sake of cartographic clarity.
Generic term	That part of a name which describes the kind of feature to which the name is applied, and which has the same meaning in current local usage; e.g., the generic term 'cape' in Cape York.
Geocentric Datum of Australia (GDA94)	Geocentric Datum of Australia 1994. A geocentric datum used for the determination of geographic co-ordinates. GDA94 is now in use for *GEODATA TOPO 250K Series 3* as well as associated topographic map products. See Appendix M (for technical description).
GEODATA	The commercial name adopted by Geoscience Australia (formally AUSLIG), for its range of quality digital data products.
Geodesy	The science concerned with the determination of the size and figure of the earth (Geoid) by such direct measures as triangulation levelling and gravimetric observations; which determines the external gravitational field of the earth and to a limited degree the internal structure.
Geographical coordinates	A position given in terms of latitude and longitude.
Geographical sheet lines	The lines of latitude and longitude bordering the area of a map or chart and so form the edge of the map sheet.
Geoid	The equipotential surface in the gravity field of the earth, which coincides, with the imaginary extension of mean sea level continuously through the continents. The direction of gravity (the plumbline) is perpendicular to the geoid at every point. The geoid is the surface of reference for astronomical observations and for geodetic levelling.
Georef (Geographic Reference)	A world wide positional reference system that may be applied to any map or chart graduated in latitude and longitude regardless of projection.
Geoscience Australia	An Australian Government Agency responsible for geoscience research and geospatial information. It was created in November 2001 through the amalgamation of the Australian Survey and Land Information Group (AUSLIG) and the Australian Geological Survey Organisation (AGSO).

Term	Meaning
GIS	Geographic Information System. A spatial database, which is manipulated with a set of spatial operators or commands.
Graticule	A network of lines on a map or chart representing the parallels of latitude and meridians of longitude of the earth.
Great circle	A circle on the surface of the earth, the plane of which passes through the centre of the earth. The equator and all the meridians of longitude are Great Circles.
Greenwich meridian	The meridian through Greenwich, England, serving as the reference for Greenwich time, in contrast to local meridians. It is accepted almost universally as the prime meridian or the origin of measurement of longitude.
Grid	Two sets of parallel lines intersecting at right angles and forming squares; a rectangular Cartesian coordinate system that is superimposed on maps, charts, and other similar representations of earth's surface in an accurate and consistent manner to permit identification of ground locations with respect to other locations and the computation of direction and distance to other points.
Grid bearing	A bearing measured clockwise from Grid North.
Grid convergence	The angular difference in direction between Grid North and True North. It is measured east or west from True North.
Grid magnetic angle	Angular difference in direction between Grid North and Magnetic North. It is measured east or west from Grid North.
Grid north	The northerly or zero direction indicated by the Grid datum of directional reference.
Grid reference	The position of a point on a map expressed in terms of grid letters and/or coordinates. Conventionally the 'Easting' distance is given before the 'Northing'.
Grid zone designation	An arbitrary division of the earth's surface designed for identification without reference to latitude or longitude.
Height	The vertical distance from the base to the top.
Heliport	A constructed and maintained landing area for helicopters.
Highest astronomical tide	The highest tide level, which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions.
Horizontal Control	A network of stations of known positions referred to a common horizontal datum (in Australia, AGD) and which control the horizontal position of mapped features.
Hydrographic chart	A chart for marine navigation showing water depths, nature of bottom, elevations of land features, configuration and characteristics of the coast, dangers to navigation, navigation aids.
Hydrography	Those features both natural and constructed of which water is the main constituent, either permanently or intermittently. Also, a GEODATA theme consisting of features pertaining to the drainage and run-off of water.
Indefinite	Vague, undefined; that detail which cannot be accurately defined.
Index to adjoining sheets	A diagram, on a map, which shows names and/or series numbers of Adjoining Sheets in the same or related series.
Infrastructure	A GEODATA theme consisting of features pertaining to transportation systems and also includes named localities and places.
Inset	A separate map positioned within the neat line of a larger map. Three forms are recognised: 1. An area geographically outside a sheet, but included therein for convenience of publication, usually at the same scale. 2. A portion of the map or chart at an enlarged scale. Sometimes called an 'inset plan'. 3. A smaller scale map or chart of surrounding areas, included for location purposes.

Term	Meaning
Isogonic	Of equal magnetic declination. Isogonals are lines of equal magnetic declination on a map.
Joint Operations Graphic (JOG)	A military map specification used for some 1:250 000 scale maps of Australia.
Landing ground	Unlicensed facility with clearly marked runway but no airport facilities.
Large scale map	A map having a representative fraction (scale) of 1:75 000 or larger. eg. 1:25 000, 1:12 500.
Latitude	The latitude of a place is its angular distance on a Meridian, measured northwards or southwards from the terrestrial Equator.
Layer	Subdivision of a theme into one or more layers of data on the basis of topological relationships. Linear networks, polygons and point/line features are placed in separate layers.
Linear network	A theme layer consisting of linear features, which are connected forming a pathway, along which movement is possible.
Longitude	A linear or angular distance measured east or west from a reference meridian (usually Greenwich) on a sphere or spheroid.
Lowest astronomical tide	The lowest level, which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. For reasons of safety lowest Astronomical Tide is the datum used by Navy's Hydrographic Surveys.
Magnetic declination	The angle between true north and magnetic north. The magnetic declination varies for different places continuously with respect to time.
Magnetic north	The uncorrected direction indicated by the north-seeking pole of a compass magnetic needle.
Magnetic variation	Regular or irregular change with time of the magnetic declination.
Map	A representation of part or whole of the earth's surface usually to scale showing both natural and artificial features.
Map accuracy specifications	Specifications, which set up standards to which the completed map, must adhere.
Map Grid of Australia 1994	A coordinate system based on the Universal Transverse Mercator projection and the Geocentric Datum of Australia 1994. The unit of measure is the metre.
Map projection	Any systematic way of representing the meridians and parallels of the earth upon a plane surface.
Map series	A group of map sheets usually having the same scale and cartographic specifications and collectively identified by the producing agency.
Map sheet	An individual map, either complete in itself or part of a series.
Margin	The area of a map sheet, which lies outside the Neatline.
Marginal information (Marginalia)	Information, both standard and of a variable nature, in the form of explanatory notes, symbols and diagrams printed in the margins or borders of maps, charts and other graphics.
Mean High Water (MHW)	The average height of all high waters at a place over an 18.6 year period. On small and medium scale maps MHW coincides with the coastline.
Mean sea level	The mean level of the sea throughout a definite number of complete tidal cycles.
Medium scale map	A map having a scale larger than 1:600 000 and smaller than 1:75 000. eg. 1:100 000.
Mercator Projection	The conformal cylindrical projection tangential to the equator possessing the additional valuable property that all rhumb lines are represented by straight lines. Used extensively for hydrographic and aeronautical charts.
Meridian	A Great Circle arc of 180° terminated by the geographic poles.
MGA94	See Map Grid of Australia
MHW	See Mean High Water (MHW).
Minor road	Access, residential or local road.
National park	An area subject to strict control of the activities, which may take place in it, and under Government supervision to maintain its value to the public.

Term	Meaning
National Topographic Database (NTDB)	A database containing detailed spatial and attribute information on a National basis, its primary focus being on Topographic information. The National Topographic Database currently comes in two scales (1:250 000 and 1:100 000) and is managed by its custodian Geoscience Australia.
National Topographic Map Series (NTMS)	A civilian map series comprising a set of consistent topographic maps nationwide, at scales of 1:100 000 and 1:250 000.
NATMAP	A product name for topographic 1:100 000 and 1:250 000 scale map products using the NATMAP product name. The use of a NATMAP logo was dropped in October 2003 and replaced with the Australian Coat of Arms.
Nautical mile	A measure of distance equal to one minute of arc of a great circle on the earth's surface. The International Nautical Mile is equal to 1852 metres.
Neatline	A line, usually on the grid or graticule, which encloses the detail of a map.
Node	A point that is a junction of two or more chains or which is the end point of a chain.
Node/line structure	The structuring of linear features in a theme layer so that they consist of lines broken by nodes at intersections or at the point where an attribute of the feature changes.
Non-perennial	Contains water for several months of each year or only contains water intermittently.
Northing	A linear distance northwards from the horizontal grid line which passes through the True Origin or False Origin of a grid.
Overshoot	The case where the spatial object extends beyond its actual position in relationship to other features. For example, at a 'T' road junction where the upright forms a 't'. See also Undershoot.
Parallel	A Small Circle parallel to the equator, on which all points have the same Latitude.
Perennial	Where an area normally contains water for the whole year, except during unusually dry periods, in at least nine years out of ten.
Personal geodatabase (pgdb)	A geodatabase stored in a Microsoft Access database which can be accessed directly by the ArcGIS suite of products. It enables multi-user viewing, but single-user editing.
Planimetric map	A map representing only the horizontal positions of detail.
Polygon	A set of chains used to define the boundaries of an area. There is one external polygon and there may be one or more internal, non-nested polygons.
Polygon Edge	see Edge.
Positional accuracy	Statistical estimate of the degree to which planimetric co-ordinates and elevations of features agree with their real world values.
Principal road	Highway, regional and through road.
Prohibited area	An area into which entry is prohibited without the prior permission of the controlling authority.
Proof	An advanced copy of a map produced either from final film (chemical proof) or from a printing press (press proof) to check the design, register and/or to enable errors to be detected and corrected before final printing.
Reliability notes	A notation in the margin of a map, which shows the dates and quality of the source material from which the map has been compiled.
Relief (GEODATA)	A GEODATA theme consisting of features defining the elevation and shape of the terrain.
Relief	The deviation of an area of the earth's surface from a plane. It refers to the physical shape of the surface of the earth.
Representative fraction (RF)	The scale of a map or chart expressed as a fraction or ratio, which relates unit distance on the map to distance, measured in the same unit on the ground. Sometimes called 'natural scale'.

Term	Meaning
Reproduction material	Material, generally in the form of positive or negative copies on film of each colour plate, from which a map may be reprinted without redrafting. Commonly called 'Repromat' or 'Rep mat'.
Repromat	See Reproduction material
Scale	The relationship between the distance on a photograph, map or other graphic to its corresponding distance on the ground or to another graphic. See also Representative Fraction.
Scale bar	A graduated line by means of which distances on the map or chart may be measured in terms of ground distances.
SDTS	The United States Spatial Data Transfer Standard. This standard is to be the basis of the new Australian Standard for the transfer of spatial digital data.
Secondary road	Linking and distributor road.
Segment	A direct line between a pair of vertices or a vertice and a node.
Series designation	The letters and numbers used to identify land maps and provide a unique designation for each map series by which it can be differentiated from all other series.
Sheet line system	The system by which a Map Series is divided into individual Map Sheets.
Sheet numbering system	The system by which individual map sheets within a series are numbered.
Sliver	Long, thin triangle or polygon of very small area formed by overlaying of almost coincident lines. Often a result of twice digitising the same linear feature.
Small scale map	A map having a scale smaller than 1:600 000. eg. 1:1 000 000.
Source material	Data of any type required for the production of maps and charts including, but not limited to ground control, aerial and terrestrial photographs, satellite imagery, sketches, maps and charts; meteorological information; intelligence documents and written reports pertaining to natural and constructed features of the area to be mapped or charted.
Spatial object	The spatial object holds the locational information of a feature instance. For GEODATA it is composed of either a point, node, line or polygon.
Specification	A document, which sets out the standards to be adhered to in, the production of a particular dataset, map or map series. This generally contains information, which describes or represents data structure, the sheet layout, marginal information, symbols, lettering and colours to be adopted.
Standard parallel	The parallel or parallels on a conical projection along which the principal scale is preserved.
State forest	A tract of forest land gazetted as such by a government.
SYMBAS	SYMBOLISATION ALL SERIES, specifications for topographic maps published by Royal Australian Survey Corps in 1988.
Symbol	A letter, character or other graphic device representing some feature, quality or characteristic on a map.
Terrain	A tract of country considered with regard to its natural features and configuration.
Thematic map	A map designed to demonstrate particular features or concepts. In conventional use, this term excludes topographic maps. Thematic maps include rainfall maps, population distribution maps, and the like.
Theme	The information contained in the map production material is divided into four themes, which contain logically related geographic information (Hydrography, Infrastructure Relief and Vegetation). Each theme is capable of being used as a data set in its own right.
Tile	The area of a spatial database included in a data transfer.
Tile Edge	An artificial linear feature, which indicates the boundaries of the tile. The tile edge closes off polygon features, which are situated in more than one tile.

Term	Meaning
Topographic map	A map whose principal purpose is to portray and identify the features of the Earth's surface as faithfully as possible within the limitations imposed by scale.
Topography	The detailed description, especially on a map, of a locality; including its relief and any relatively permanent objects, whether natural or of human origin, thereon. The configuration of a surface, including its relief, the position of its streams, lakes, roads, cities, and other features. The earth's natural and physical features collectively.
Track (railway)	The number of sets of rails.
Track (vehicular)	Public or private roadway of minimum or no construction, not necessarily maintained.
Transverse Mercator projection (TM)	A conformal cylindrical map projection, originally devised by Gauss, also known as the Gauss-Kruaer projection. As its name implies its construction is on the same principle as the Mercator projection, the only difference being that the great circle of tangency is now any nominated meridian. Meridians and parallels are curved lines, except for the central meridian or a specified zone (meridian of tangency), which remains a straight line. Projection zones are established about the central meridian and vary in width from two degrees to six degrees of longitude, with some overlap between zones. Properties: Scale: Scale is true along the central meridian, but enlarges away from the central meridian. Conformality: The projection is conformal; meridians and parallels intersect at right angles and all angles are correctly represented. Sheet fit: Map sheets at the same scale and within the same zone with the same central meridian fit perfectly along their sheet edges. General:
	The amount of scale distortion may become unacceptable at distances greater than about 1.5 degrees in longitude from the central meridian. In a modified form the projection is in general use for topographic mapping at scales of 1:250 000 and larger. See **UNIVERSAL TRANSVERSE MERCATOR**.
True bearing	The horizontal angle between the meridian line and a line through the observed point, measured clockwise.
True north	The direction from an observer's position to the geographic North Pole.
UFI	Unique Feature Identifier.
Undershoot	A line that falls short of another line that it should intersect.
Universal Transverse Mercator (UTM)	A world wide systematic application of the Transverse Mercator Projection applying to the region between 80°S and 84°N latitude. The UTM is a modified TM projection whereby the natural scale of the central meridian is scaled by a factor of 0.9996 to enable a wider area to be mapped with acceptable distortion. Each Zone is six degrees of longitude in width with a half degree of overlap within the adjoining zone and having a true origin at the intersection of the central meridian of that zone and the equator.
Vegetation	A GEODATA theme consisting of features describing the vegetation cover.
Vertical control	The measurements taken by surveying methods for the determination of elevation with respect to a vertical datum.
Vertice	An intermediate point on a chain for which coordinates are held in the data.
WGS 84	World Geodetic System 1984. A geocentric datum used for the determination of geographic co-ordinates. It is for most practical purposes the same as GDA 94.
Work Package	A group of Work Units bundled together for production by a producer.
Work Unit	One map sheet and its related dataset within a work package.

Term	Meaning
World Aeronautical Chart (WAC)	A series of aeronautical charts at the scale of 1:1 000 000 that has been planned to cover the whole surface of the earth (including both land and sea areas) to a common specification laid down by the International Civil Aviation organisation.
World geodetic reference system 1972 (WGS 72)	Superseded by WGS 84. A reference spheroid having the following dimensions: semimajor axis 6 378 135.0 metres; and a flattening or ellipticity of 1/ 298.26.
Zone	See UTM.

Appendix F: Installing TAB Custom Symbology

This document is to guide you through the installation of the custom MapInfo symbology provided. These steps need to be performed for each user.

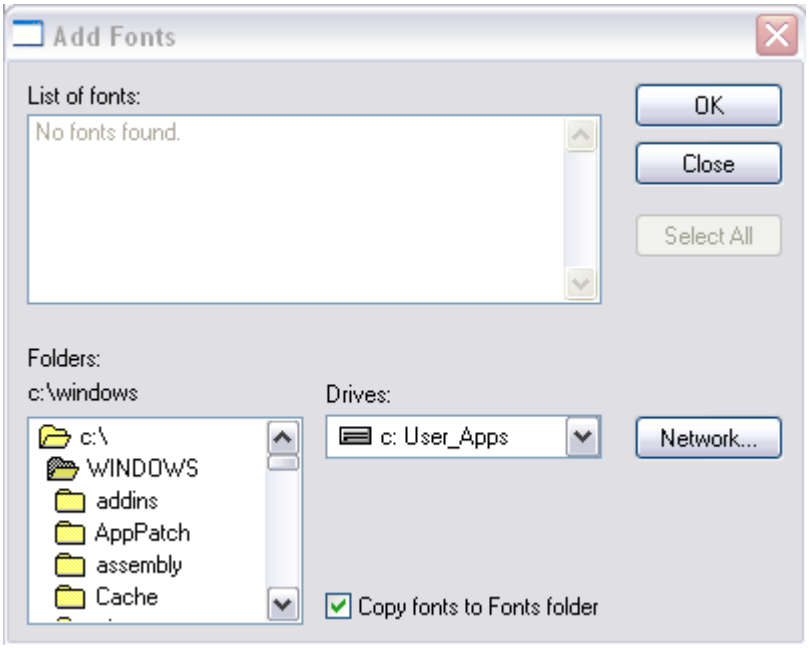
This custom symbology will only work for MapInfo Professional 8.0.

The installation requires you to install a new True Type Font, update the mires800.dll, and update your MAPINFOW.PEN file.

Installing the new True Type Font
This font will work for all versions of MapInfo Professional. It stores point symbolisation.

To do this:
For Windows XP and Windows 2000

1. From you Desktop, Select **Start** | **Control Panel** | **Fonts**. This will open the Font Manager.
2. In the Font Manager, Select **File** | **Install New Font…**
   The following dialog will appear:



3. Using this Dialog, search for 'Geoscience MapInfo.ttf' found on the CD under the directory *'Symbolisation\Symbology'* and click **OK**.
4. Exit out of the Font Manager.
5. Congratulations, you have just installed the Geoscience Australia MapInfo Point Symbology.

Updating the mires800.dll to utilise the Geoscience Australia's MapInfo Fill Patterns
MapInfo uses a special file called *miresXXX.dll* (where xxx denotes the version of MapInfo you are using, i.e. Version 7.8 is 780, version 7.9 is 790 and version 8 is 800) to store monochrome bitmap files that are use for you fill patterns or styles.

NOTE: *This will require renaming and copying files required for MapInfo Professional 8.0 to run correctly. Please follow the steps carefully.*

NOTE: *The mires800.dll file will only work for MapInfo Professional 8.0. Hence, this section is only for users with MapInfo Professional 8.0 Installed.*

To update your MapInfo Fill Patterns, do this:
For Windows XP and Windows 2000

1. Open Windows Explorer; open your MapInfo Professional 8.0 directory. The default location *C:\Program Files\MapInfo\Professional*
2. Locate the file *mires800.dll*. This file contains all the Bitmap files used by MapInfo to store your Fill patterns.
3. Right mouse click on this file and select **Rename**.
4. Rename the file to *mires800_old.dll* and press **OK**
5. Open another Windows Explorer window. Locate the updated *mires800.dll* file in the directory '*Symbolisation\Symbology'* on your CD. Right Mouse Click and select **Copy**
6. Return to your MapInfo Professional Directory *C:\Program Files\MapInfo\Professional*, Right Mouse Click and select **Paste** to add this file to your MapInfo Professional Directory.
7. Congratulations, you have successfully installed the Geoscience Australia MapInfo Area Symbology.

Installing the New Geoscience Australia Line Styles
MapInfo use their own proprietary format to store line styles used by MapInfo Professional. This file is located in the profile directory for each user.

NOTE: This file will need to be installed for each new user profile (logon).

NOTE: This has only been tested on MapInfo Professional 8.0.

To install this file:

Before starting this process open windows Explorer & open the 'tools folder option menu' select the 'view tab' & select show 'hidden files' & folder under Hidden files folders. Then Apply to All Folders.

For Windows 2000

1. Open Windows Explorer, navigate to *C:\WINNT\Profiles\<your username>\Application Data\Mapinfo\Mapinfo\Professional\800*
   Here you will see 5 files and 2 directories
2. Right Mouse click on the *MAPINFOW.PEN* file and rename this file to *MAPINFOW_old.PEN*
3. Open another Windows Explorer window and locate the *MAPINFOW.PEN* file in the directory '*Symbolisation\Symbology'* on your CD.
4. Right Mouse click on this file and select **Copy**
5. Paste this file in your *C:\WINNT\Profiles\<your username>\Application Data\Mapinfo\Mapinfo\Professional\800* directory.
6. Close Windows Explorer.
7. Congratulations, you have successfully installed the Geoscience Australia MapInfo Line Symbology.

For Windows XP

1. Open Windows Explorer, navigate to *C:\Documents and Settings\<your username>\Application Data\Mapinfo\Mapinfo\Professional\800*
   Here you will see 5 files and 2 directories
2. Right Mouse click on the *MAPINFOW.PEN* file and rename this file to *MAPINFOW_old.PEN*
3. Open another Windows Explorer window and locate the *MAPINFOW.PEN* file in the directory '*Symbolisation\Symbology'* on your CD.
4. Right Mouse click on this file and select **Copy**
5. Paste this file in your *C:\WINNT\Profiles\<your username>\Application Data\Mapinfo\Mapinfo\Professional\800* directory.
6. Close Windows Explorer.
7. Congratulations, you have successfully installed the Geoscience Australia MapInfo Line Symbology.

Additional Files

Some symbology requires multiple colours to be displayed within the one symbology style. To over come this limitation within MapInfo (where only one colour can be applied at any one time), MapInfo allow us to define custom bitmap files. A selection of these files has been provided to complete the Geoscience Australia MapInfo Symbology set.

To install these files:

1. Open Windows Explorer. Go to the *Application Data* directory specified in the previous step. Take note of what operating system you are using
2. You will see the *CustSymb* directory. Open this directory
3. Open another Windows Explorer window and locate the Bitmaps directory on your CD containing the 250k scale Topographic data.
4. Copy the contents of this directory (i.e. copy the files, not the directory) and paste it to your Applications Data directory specified in step 1.
5. Congratulations, you have successfully installed the Geoscience Australia MapInfo Additional Symbology.