

## **Section 3 - Working Database and Production Information**

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# 1. Scope of this document

This document sets out the Technical Specification for Geoscience Australia's 1:250 000 and 1:100 000 scale working database for the production of GEODATA TOPO-250K Series 2 and TOPO-100K Series 1, and the production of 1:250 000 and 1:100 000 National Topographic Map Series maps.

This document defines the working database structure, lists the information that will be supplied for the production of the database, and lists the documentation and material that will accompany the working database, GEODATA tile and map on submission to Geoscience Australia.

## 2. General Information

The working database is a set of ARC/INFO layers and associated tables.

The working database:

- is used to generate GEODATA and the National Topographic Map Series maps
- is the data source for the future revision of GEODATA and the National Topographic Map Series maps
- must comply with the standards and rules set out in Sections 1, 2 and 3 of this specification and in the Appendices. The only exception is when a project instruction is issued for a tile specifically allowing a variation.
- is used to populate the topographic Seamless Database of Australia.

The application of data extraction and plotting routines to the working database supplied by producers must result in GEODATA and map reproducible identical to that supplied to Geoscience Australia with the working database.

The appendices to this specification include important descriptive information for the working database. In particular, appendices A and H should be referred to obtain a full understanding of the working database. Appendix A is the data dictionary. Appendix H lists the paper size and geographic limits for each tile of the working database.

## 3. Revision

### 3.1 Revision sources

Information sources to allow revision of the features in the working database will be supplied by Geoscience Australia. Only these sources will be required. Where producers have access to other information sources, they may be used. However, approval must be obtained from Geoscience Australia before use. All changed features visible on the imagery or contained in the other supplied information sources and meeting the criteria established in the feature class dictionary (see appendix A) will be captured in the working database.

Guidance on resolving conflict between sources is given in chapter 5.5 Priorities in Use of References, Map and Imagery. Where there is an unresolvable problem it should be referred to Geoscience Australia. Where use of the source material creates an anomaly it should also be referred to Geoscience Australia.

## 3.2 Source Material and Information Supplied by Geoscience Australia

### 3.2.1 Documentation

MATERIALS / INFORMATION DETAILS	FORMAT / DESCRIPTION
<p><b>GEOSCIENCE AUSTRALIA TOPOGRAPHIC DATA AND MAP SPECIFICATIONS</b></p> <p><i>The combined Geoscience Australia Topographic Data And Map Specifications for the production of 250K GEODATA Series 2 data, 100K GEODATA Series 1 data and revised topographic maps.</i></p> <p><i>The Specifications include such things as : Data model description, Data structure information, Glossary of terms, Mapping specifications, Data dictionary and feature cross reference, Map format sheets and Guides.</i></p> <p>To be supplied as and when updated.</p>	<p><b><u>Specifications format</u></b> Controlled Word files, PDFs and Arc Info Export files on CD-Rom.</p>
<p><b>PROJECT DOCUMENTATION</b></p> <p><i>Project Files and Instructions for data and map production. Where the map / data tile covers a non-standard area, several files may be provided to give all relevant information.</i></p> <p>Note: The project files may include material that post-dates that supplied as source material. Where such material exists it takes precedence over other source material.</p> <p>To be supplied for each work unit.</p>	<p><b><u>File format</u></b> Project File folder with associated instructions. Marked-up latest previous edition maps as appropriate.</p>
<p><b>ERROR/CORRECTION REPORTS</b></p> <p><i>These reports include errors found during the VAT process and errors or changes reported subsequently by internal and external sources. They contain details of errors to be corrected in the production of the new product. Features to be corrected are typically referenced by their coordinate location, together with a brief description of the problem.</i></p> <p>To be supplied for each work unit.</p>	<p><b><u>Printed material</u></b> Printed reports within project files.</p>

### 3.2.2 Existing mapping

MATERIALS / INFORMATION DETAILS	FORMAT / DESCRIPTION
<p><b>SOURCE DATA EXTRACTS</b></p> <p>Data extracts from the Geoscience Australia Seamless Database will be supplied as primary source material for the revision component of the 1:250 000 GEODATA and map Series. The 1:250 000 Seamless Database is an amalgamation of the completed and revised Series 2 GEODATA tiles. The supplied extracts will include a surrounding extension to the primary area of 0.5 degrees.</p> <p>Source data for the 1:100 000 GEODATA and map Series will vary. This will be listed in the Work Unit Production Record, located within the Project File.</p>	<p><b>Data format</b>  <b>ARC/INFO Double Precision Export files;</b>            Geographical (GDA94) for 1:250 000 Series 2 data</p> <p><b>Data Media</b>            Data will be supplied on one of the following media;</p> <p><b>DAT tapes</b></p> <p><b>DVD</b></p> <p><b>CD-ROM</b></p>
<p><b>SOURCE MAPS</b></p> <p>Source maps that may be supplied for each Work Unit/Package will generally include printed maps at the source scale ie. 1:250 000 or 1:100 000. These maps have been published by various agencies including Geoscience Australia, Royal Australian Survey Corps and state/territory agencies.</p> <p>Additional large scale mapping from various national and state authorities may also be supplied where it is available, or appropriate, for inclusion.</p> <p>These maps, where supplied, are to be used in conjunction with other supplied source material for the production, revision and verification of the final map and data products.</p>	<p><b>Printed material</b></p> <p>The printed maps being supplied for each Work Unit will be listed in the Production Record for the Work Unit, and will generally be referenced by map name, edition and scale.</p>
<p><b>REPRODUCTION MATERIAL (repmat)</b></p> <p>Copies of reproduction material used to generate the latest previous map editions may be supplied where appropriate for revision and production purposes for 1:100 000 scale, but is unlikely to be supplied for 1:250 000 scale.</p> <p>This reproduction material may only be supplied for individual themes as required eg. to enable the capture of additional features not previously captured.</p>	<p><b>Repmat datum (all sheets)</b>            Repmat supplied will typically be on the AGD66 datum. When another datum is used this will be identified on the repmat.</p> <p><b>Repmat details</b>            A comprehensive listing of the repmat supplied will be included in the Production Record (in the Project File) for each Work Unit.</p>

### 3.2.3 Satellite imagery

MATERIALS / INFORMATION DETAILS	FORMAT / DESCRIPTION
<p><b>SATELLITE IMAGERY / PHOTOGRAPHY</b></p> <p>Satellite imagery for the revision of the existing Series 2 GEODATA 1:2500 000 and the new Series 1 GEODATA will be supplied as deemed appropriate for each Work Unit.</p> <p>For 1:250 000 map and data production, a combination of LANDSAT TM, SPOT 10m and differing high resolution imagery may be supplied, together with various photography.</p> <p>For 1:100 000 scale map and data production, a combination of 60cm colour orthophotos, Quickbird, Iconis and 2.5m resolution SPOT data may be supplied.</p> <p>Combinations of these items will vary according to the geographical extent and nature of the respective areas being revised.</p>	<p><b>Data Media</b></p> <p><b>DVD</b> All of the files will be written to DVD.</p> <p><b>Imagery format</b> The imagery will be delivered as ARC/INFO 'imagename'.bil images with the associated 'imagename'.hdr file.</p> <p>Each 'imagename'.hdr file will contain the basic information required by ARC/INFO and additional information to assist with a more complete description of the associated image.</p>

### 3.2.4 Revision data

Refer to the publication, *Documentation for National Mapping Division Databases* and individual Project Files for up-to-date information regarding data clip supply.

The following geographic reference information will be supplied to enable the revision of data and the production of revised topographic maps. The format media for geographic source information may vary. In particular, digital data may be supplied rather than hard copy data. Producers will be supplied with guidelines for the use of reference information. The information used for a work unit will be documented on the project file.

Information will generally be supplied in the following categories:

- Aircraft facilities
- Dams and Reservoirs
- Electricity
- Foot tracks
- Horizontal control points
- Lighthouses, Wrecks and other Marine features
- Mines
- Nomenclature (including National Gazetteer of Australia)
- Pipelines
- Populated Places
- Public Lands: (see chapter 5.17 The NPIL Database)
- Rail
- Reefs
- Roads
- State borders (GEODATA 100K-COAST)
- Towers and Masts
- Wharves, Breakwaters, Jetties and Ferry Routes



### 3.2.5 Map marginalia information

MATERIALS / INFORMATION DETAILS	FORMAT / DESCRIPTION
<p>Information required for the production of the map surround (marginalia);</p> <p>This would typically include the following information supplied for each work unit each time a new Work Unit project is allocated. Other information may also be supplied as required;</p> <ul style="list-style-type: none"> <li>• <b>Bar Code number</b></li> <li>• <b>Map edition number</b></li> <li>• <b>Reliability date</b></li> <li>• <b>UTM Zone numbers</b></li> <li>• <b>Magnetic Declination diagram information</b></li> <li>• <b>Climatic graph(s) information</b></li> <li>• <b>GEOCAT production number</b></li> <li>• <b>Copyright date.</b></li> </ul> <p>The following marginalia information will be issued on a “once-only” basis ie. as a standard issue at the beginning of the program or until a variation is provided via an Action Request. This information will not be generated for each issue of the Work Unit.</p> <ul style="list-style-type: none"> <li>• <b>Locality diagram information</b></li> <li>• <b>Australian Coat of Arms</b></li> <li>• <b>Map of Australia</b></li> </ul>	<p><b><u>Delivery method</u></b></p> <p>These numbers, dates or figures will be supplied with the individual Work Unit Project File</p> <p><b><u>Delivery method</u></b></p> <p>These will be supplied in ArcInfo export file (.e00) format</p>

### 3.3 Scanning Transformation Error Report

The scanning transformation RMS error report will give the difference between known control points and their scanned locations for each piece of material scanned. Points will not be accepted with a difference greater than plus or minus 50 metres at 1:250 000 and plus or minus 20 metres at 1:100 000.

A sample report follows. The report layout may vary but area and coverage information, identification of the control points used, individual residual errors and RMS must be included.

AFFINE Transformation Report Mon Dec 23 11:47:19 1996  
 \*\*\*\*\*

Units quoted are in MASTER UNITS unless specified.

Datafile : C:\SUSIE\BETOOHYD.DGN Masterfile : C:\SUSIE\BETOOHYM.DGN

ID	Master Control Monuments (x,y)	Data Transformed Monuments (x,y)
1	[ 349872.300000 , 7123444.600000 ]	[ 349873.929659 , 7123428.288025 ]
2	[ 349242.300000 , 7178826.600000 ]	[ 349237.220023 , 7178833.546668 ]
3	[ 348623.700000 , 7234205.100000 ]	[ 348626.543897 , 7234209.506276 ]
4	[ 399086.600000 , 7234670.500000 ]	[ 399094.244822 , 7234674.842476 ]
5	[ 449544.500000 , 7234949.600000 ]	[ 449550.005428 , 7234942.321504 ]
6	[ 500000.000000 , 7235042.700000 ]	[ 499992.392353 , 7235023.575531 ]
7	[ 500000.000000 , 7179676.300000 ]	[ 499998.063041 , 7179687.991801 ]
8	[ 500000.000000 , 7124306.200000 ]	[ 500002.834445 , 7124315.153958 ]
9	[ 449960.600000 , 7124210.500000 ]	[ 449969.185596 , 7124205.623738 ]
10	[ 399918.800000 , 7123923.300000 ]	[ 399914.162437 , 7123917.921840 ]
11	[ 399498.900000 , 7179298.700000 ]	[ 399490.300307 , 7179310.844932 ]
12	[ 449750.700000 , 7179581.900000 ]	[ 449749.517992 , 7179586.383251 ]

List of Residuals

\*\*\*\*\*

ID	Weight	X-Component	Y-Component	VectorNorm
1	1.00	-1.629659414	16.311974859	16.393178874
2	1.00	5.079977336	-6.946668010	8.605949464
3	1.00	-2.843897290	-4.406276007	5.244332183
4	1.00	-7.644821656	-4.342475807	8.792064279
5	1.00	-5.505427580	7.278496484	9.126129733
6	1.00	7.607646697	19.124468721	20.582069675
7	1.00	1.936959281	-11.691800690	11.851160898
8	1.00	-2.834445248	-8.953958160	9.391881952
9	1.00	-8.585596244	4.876261763	9.873722280
10	1.00	4.637563426	5.378159508	7.101520558
11	1.00	8.599692800	-12.144931703	14.881333352
12	1.00	1.182007866	-4.483250976	4.636451435

Residuals (Sum) - X : -2.625165507E-08 Y : -1.862645149E-08

Residuals (Sum of Squares - X & Y) : 1574.040141472

Scaling - X : 1.250257 Y : 1.250349

Translation - X : 338898.447172 Y : 7114096.609280

Rotation - 0.351557 degrees

Non-orthogonality - -0.004027 degrees

End of report.

Checked : ..... /.../...

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## 4. The Working Database Structure

The following table lists every working database feature code, their associated feature type and their attributes. The attributes are listed in the order required for the working database.

Note: Some feature classes have attributes which are not relevant to the feature because they share the attribute table with other features in the cover. Where attributes are not relevant they will be null if of character type and 0 if numeric. Only attributes relevant to the feature class are listed in this table and the feature class dictionary, see Appendix A.

### How to read this table:

ID: **cover letter code**  
COVER: **cover name**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
type of spatial object	the feature class	feature code	attribute code (see Appendix A Feature Class Dictionary) <b>bold</b> = relevant to GEODATA <i>italic</i> = relevant to map but not GEODATA [In square brackets] = relevant to working database only (In round brackets) = relevant to the specific scale mentioned

ID: **a**  
COVER: **aeronautical point**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc (100K only)</b>	Taxiway	taxiway	<b>q_info</b> , <i>symbol</i>
<b>Point</b>	Aircraft facility	aircft_fly	<b>name</b> , <b>facility</b> , <b>q_info</b> , <b>ufi (250K only)</b> , <i>symbol</i> , <i>feat_wid</i> , <i>orientation</i> , <i>text_note (100K only)</i> , [old_ufi] (250K only)

ID: **b**  
COVER: **built-up areas**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Built-up area	builtup_a	<b>name</b> , <b>q_info</b> , <b>ufi (250K only)</b> , <i>symbol</i> , [old_ufi] (250K only)
	Built-up area void	buav_void	<b>q_info</b> , <b>ufi (250K only)</b> , <i>symbol</i> , [old_ufi] (250K only)
	Park	park	<b>name</b> , <b>park</b> , <b>q_info</b> , <b>ufi (250K only)</b> , <i>symbol</i> , <i>text_note</i>
	Cemetery	cemetery	<b>name</b> , <b>q_info</b> , <b>ufi (250K only)</b> , <i>symbol</i> , <i>text_note</i>
	Rubbish tip	Tip (100K only)	<b>q_info</b> , <i>symbol</i> , <i>text_note</i>
<b>Arc</b>	Built-up area line	builtup_l	<b>q_info</b> , <b>ufi (250K only)</b> , <i>symbol</i> , [old_ufi] (250K only)
	Tile edge	tile_edge	<b>q_info</b> , <b>ufi (250K only)</b> , <i>symbol</i>

ID: **c**  
COVER: **contours**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Hypsometric area	hypso_a	elevation, q_info, ufi (250K only), symbol
<b>Arc</b>	Contour	contour	elevation, contour, q_info, ufi (250K only), symbol
	Tile edge	tile_edge	q_info, ufi (250K only), symbol

ID: **d**  
COVER: **drainage**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Canal	canal	name, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)
	Connector	connector	name, perennial, hierarchy, q_info, ufi (250K only), symbol, [old_ufi] (250K only)
	Watercourse	watercours_l	name, perennial, hierarchy, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)
	Rapid	rapid_l	name, perennial, hierarchy, q_info, ufi (250K only), symbol, text_note
	Spillway	spillway	name, perennial, hierarchy, q_info, ufi (250K only), symbol, text_note
<b>Point</b>	Waterfall	fall_p	name, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note
	Lock	lock	name, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note
	Waterhole	waterhole	name, perennial, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note

ID: **e**  
COVER: **spot heights**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Point</b>	Spot elevation	spot_elevatn	elevation, source, point, q_info, ufi (250K only), symbol, feat_wid, orientation, [old_ufi] (250K only)

ID: **f**  
COVER: **framework**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Island	island	name, state, q_info, ufi (250K only), symbol, [old_ufi] (250K only)
	Sea	sea	name, q_info, ufi (250K only), symbol, [old_ufi] (250K only)
	Mainland	mainland	state, q_info, ufi (250K only), symbol, [old_ufi] (250K only)
<b>Arc</b>	Tile edge	tile_edge	q_info, ufi (250K only), symbol, [old_ufi] (250K only)
	Junction	junction	q_info, ufi (250K only), symbol, [old_ufi] (250K only)
	State border	state_border	q_info, ufi (250K only), symbol, [old_ufi] (250K only)
	Sea wall	sea_wall	q_info, ufi (250K only), symbol, text_note
	Waterline	waterline	q_info, ufi (250K only), symbol, [old_ufi] (250K only)

ID: **g**  
COVER: **buildings point**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Point</b>	Building	building	<b>building, function (100K only), q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>

ID: **h**  
COVER: **marine facilities**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Breakwater	breakwater	<b>q_info, ufi (250K only), symbol, text_note</b>
	Wharf	wharf	<b>q_info, ufi (250K only), symbol, text_note</b>
	Jetty	jetty	<b>q_info, ufi (250K only), symbol, text_note</b>
	Boat ramp	boat_ramp	<b>q_info, symbol, text_note</b>

ID: **i**  
COVER: **cultural area**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Building	building_a	<b>building (100K only), function (100K only), q_info (100K only), symbol, text_note, [building] (250K only)</b>
	Landmark Area	landmark_a (100K only)	<b>name, description, q_info, symbol, text_note</b>
<b>Arc</b>	Building line	building_l (250K only)	<b>symbol</b>
	Cultural Area Line	cultural_a_l (100K only)	<b>q_info, symbol</b>
	Tile edge	tile_edge	<b>q_info (100K only), symbol</b>

ID: **j**  
COVER: **vegetation miscellaneous**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Windbreak	windbreak	<b>q_info, ufi (250K only), symbol</b>

ID: **k**  
COVER: **powerlines**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Powerline	powerline	<b>q_info, ufi (250K only), symbol</b>

ID: **l**  
COVER: **localities**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Point</b>	Locality	locality	<b>name, locality, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note, [old_ufi] (250K only)</b>

ID: **m**  
COVER: **morphology**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Cliff	cliff	<b>q_info, ufi (250K only), symbol, text_note</b>
	Razorback	Razorback (100K only)	<b>q_info, symbol, text_note</b>
	Levee	levee	<b>q_info, ufi (250K only), symbol</b>
	Cutting	cutting	<b>q_info, ufi (250K only), symbol</b>
	Embankment	embankment	<b>q_info, ufi (250K only), symbol</b>
<b>Point</b>	Pinnacle	pinnacle	<b>q_info, ufi (250K only), name, symbol, feat_wid, orientation, text_note</b>
	Cave	cave	<b>q_info, ufi (250K only), name, symbol, feat_wid, orientation, text_note</b>

ID: **n**  
COVER: **navigation**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Point</b>	Lighthouse	lighthouse	<b>name, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>
	Wreck	wreck	<b>name, relationship, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>
	Offshore rock	rock_offshor	<b>name, relationship, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>

ID: **o**  
COVER: **offshore**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Foreshore flat	forshor_flat	<b>q_info, ufi (250K only), symbol, [old_ufi] (250K only)</b>
	Offshore void	offshor_void	<b>q_info, ufi (250K only), symbol, [old_ufi] (250K only)</b>
	Reef	reef	<b>name, relationship, reef, q_info, ufi (250K only), symbol, text_note</b>
<b>Arc</b>	Offshore line	offshor_l	<b>q_info, ufi (250K only), symbol, [old_ufi] (250K only)</b>
	Tile edge	tile_edge	<b>q_info, ufi (250K only), symbol</b>

ID: **p**  
COVER: **pipelines**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Pipeline	pipeline	<b>product, relationship, q_info, ufi (250K only), name, symbol, text_note</b>

ID: **q**  
COVER: **relief area**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Rocky outcrop	rocky_a	<b>q_info, ufi (250K only), symbol, text_note</b>
	Distorted surface	dist_surf	<b>q_info, ufi (250K only), symbol, text_note</b>
	Sand	sand	<b>q_info, ufi (250K only), symbol</b>
	Crater	crater	<b>q_info, ufi (250K only), name, symbol, text_note</b>
	Open Cut/mining area	open_cut	<b>q_info, ufi (250K only), name, symbol, text_note</b>
	Sand dunes	dunes	<b>q_info, ufi (250K only), symbol</b>
	Relief area void	rel_a_void	<b>q_info, ufi (250K only), symbol</b>
<b>Arc</b>	Relief area line	rel_area_l	<b>q_info, ufi (250K only), symbol</b>
	Tile edge	tile_edge	<b>q_info, ufi (250K only), symbol</b>

ID: **r**  
COVER: **rail transport**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Railway	railway	<b>name, tracks, status, gauge, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)</b>
	Railway bridge	bridge_rl_l	<b>name, tracks, status, gauge, q_info, ufi (250K only), symbol, feat_wid, text_note, [old_ufi] (250K only)</b>
	Railway tunnel	tunnel_rl_l	<b>name, tracks, status, gauge, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)</b>
	Railway causeway	causeway_rl	<b>name, tracks, status, gauge, q_info, ufi (250K only), symbol, feat_wid, text_note</b>
	Railway overpass	overpass_rl (100K only)	<b>name, tracks, status, gauge, q_info, symbol, feat_wid, text_note,</b>
<b>Point</b>	Railway bridge	bridge_rl_p	<b>name, tracks, status, gauge, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note, [old_ufi] (250K only)</b>
	Railway tunnel	tunnel_rl_p	<b>name, tracks, status, gauge, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note, [old_ufi] (250K only)</b>
	Railway station	rail_station	<b>name, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note, [old_ufi] (250K only)</b>

ID: **s**COVER: **sand ridges**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Sand ridge	sand_ridge	<b>average_height, q_info, ufi (250K only), symbol</b>

ID: **t**COVER: **vegetation**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Woody Vegetation	forest	<b>coverdensity (100K only), growthform (100K only), q_info, ufi (250K only), symbol</b>
	Rainforest	rainforest	<b>q_info, ufi (250K only), symbol, text_note</b>
	Plantation	plantation	<b>type (100k only), q_info, ufi (250K only), symbol, text_note</b>
	Orchard or Vineyard	orchard	<b>type (100k only), q_info, ufi (250K only), symbol, text_note</b>
	Mangrove	mangrove	<b>q_info, ufi (250K only), symbol, text_note</b>
	Vegetation Void	veg_void	<b>q_info, ufi (250K only), symbol</b>
<b>Arc</b>	Vegetation Line	veg_l	<b>q_info, ufi (250K only), symbol</b>
	Tile edge	tile_edge	<b>q_info, ufi (250K only), symbol</b>

ID: **u**COVER: **utilities**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Fence	fence	<b>q_info, ufi (250K only), symbol, text_note</b>
	Dam	dam	<b>name, q_info, ufi (250K only), symbol, text_note</b>
	Aerial cableway	chairlift	<b>name, q_info, ufi (250K only), symbol, text_note</b>
	Conveyor	conveyor	<b>q_info, ufi (250K only), symbol, text_note</b>
<b>Point</b>	Gas well	gas_well	<b>q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>
	Storage tank	stor_tank_p	<b>q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>
	Yard	yard	<b>q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>
	Mine	mine	<b>name, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>
	Landmark Point	landmark_p	<b>description, q_info, ufi (250K only), height, symbol, feat_wid, orientation, text_note</b>
	Dry dock	dry_dock (100K only)	<b>name, q_info, symbol, feat_wid, orientation, text_note</b>

ID: **v**COVER: **road transport**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Road	road	<b>name, class, formation, nrn, srn, q_info, ufi (250K only), symbol, feat_wid, text_note, [old_ufi] (250K only)</b>
	Road bridge	bridge_rd_l	<b>name, class, formation, nrn, srn, q_info, ufi (250K only), symbol, feat_wid, text_note, [old_ufi] (250K only)</b>



	Road tunnel	tunnel_rd_l	<b>name, class, formation, nrn, srn, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)</b>
	Ferry route	ferry_route	<b>name, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)</b>
	Foot track	foot_track	<b>name, q_info, ufi (250K only), symbol, text_note</b>
	Foot bridge	foot_bridge (100K only)	<b>name, q_info, symbol</b>
	Road causeway	causeway_rd	<b>name, class, formation, nrn, srn, q_info, ufi (250K only), symbol, feat_wid, text_note</b>
	Road on dam	road_on_dam	<b>name, class, formation, nrn, srn, q_info, ufi (250K only), symbol, feat_wid, text_note</b>
	Road overpass	overpass_rd (100K only)	<b>name, class, formation, nrn, srn, q_info, symbol, feat_wid, text_note,</b>
	Ford	ford_l	<b>name, class, formation, nrn, srn, q_info, ufi (250K only), symbol, text_note</b>
<b>Point</b>	Road bridge	bridge_rd_p	<b>name, class, formation, nrn, srn, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note, [old_ufi] (250K only)</b>
	Road tunnel	tunnel_rd_p	<b>name, class, formation, nrn, srn, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note, [old_ufi] (250K only)</b>
	Gate	gate	<b>q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>
	Stock grid	grid	<b>q_info, ufi (250K only), symbol, feat_wid, orientation</b>
	Ford	ford_p	<b>name, class, formation, nrn, srn, q_info, ufi (250K only), symbol, feat_wid, orientation, text_note</b>

ID: **w**  
COVER: **waterbodies**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Lake	lake	<b>name, perennial, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)</b>
	Land subject to inundation	sub_to_inund	<b>name, q_info, ufi (250K only), symbol, [old_ufi] (250K only)</b>
	Mangrove flat	mangrove_ft (250K only)	<b>q_info, ufi, symbol, [old_ufi]</b>
	Reservoir	reservoir	<b>name, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)</b>
	Saline coastal flat	saln_cst_ft	<b>q_info, ufi (250K only), symbol, text_note [old_ufi] (250K only)</b>
	Swamp	swamp	<b>name, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)</b>
	Watercourse	watercours_a	<b>name, perennial, hierarchy, q_info, ufi (250K only), symbol, text_note, [old_ufi] (250K only)</b>
	Water body void	w_body_void	<b>q_info, ufi (250K only), symbol, [old_ufi] (250K only)</b>
	Rapid	rapid_a	<b>name, perennial, hierarchy, q_info, ufi (250K only), symbol, text_note</b>
	Marine swamp	swamp_marine	<b>q_info, ufi (250K only), symbol, text_note</b>
	Salt evaporator	salt_evapor	<b>q_info, ufi (250K only), symbol, text_note</b>
	Settling ponds	sew_pond	<b>q_info, ufi (250K only), symbol, text_note</b>
	Canal	canal_a	<b>name, q_info, ufi (250K only), symbol, text_note</b>
<b>Arc</b>	Junction	junction	<b>q_info, ufi (250K only), symbol, [old_ufi] (250K only)</b>

	Waterline	waterline	<b>q_info, ufi (250K only)</b> , <i>symbol</i> , [old_ufi] (250K only)
	Rapid area line	rapid_a_l	<b>q_info, ufi (250K only)</b> , <i>symbol</i>
	Tile edge	tile_edge	<b>q_info, ufi (250K only)</b> , <i>symbol</i>

ID: **x**  
COVER: **waterpoints**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Point</b>	Spring	spring	<b>name (100K only), q_info, ufi (250K only)</b> , <i>name (250K only), symbol, feat_wid, orientation, text_note</i>
	Water tank	tank_dam_p	<b>name (100K only), q_info, ufi (250K only)</b> , <i>name (250K only), symbol, feat_wid, orientation, text_note</i>
	Bore	bore	<b>name (100K only), q_info, ufi (250K only)</b> , <i>name (250K only), symbol, feat_wid, orientation, text_note</i>
	Windpump	windpump	<b>name (100K only), q_info, ufi (250K only)</b> , <i>name (250K only), symbol, feat_wid, orientation, text_note</i>
	Waterpoint	waterpoint	<b>name (100K only), waterpoint, q_info, ufi (250K only)</b> , <i>name_(250K only), symbol, feat_wid, orientation, text_note</i>

ID: **y**  
COVER: **survey marks**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Point</b>	Horizontal control point	trig_station	<b>elevation, code, q_info, ufi (250K only)</b> , <i>name, symbol, feat_wid, orientation, text_note, [order]</i>
	Bench mark	bench_mark (250K only)	<b>elevation, code, q_info, ufi (250K only)</b> , <i>symbol, feat_wid, orientation, text_note</i>

ID: **z**  
COVER: **aeronautical area (100K only)**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Aircraft facility	aircft_ft_a	<b>name, facility, q_info, symbol</b>
	Airport	airport_a	<b>q_info, symbol</b>
	Aircraft facility void	airc_f_void	<b>q_info, symbol</b>
<b>Arc</b>	Aircraft facility line	aircft_f_l	<b>q_info, symbol</b>
	Tile edge	tile_edge	<b>q_info, symbol</b>

ID: **1**  
COVER: **security areas**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Prohibited area	proh_a	<b>name, authority, q_info, ufi (250K only)</b> , <i>symbol</i>
	Prohibited area void	proh_a_void	<b>q_info, ufi (250K only)</b> , <i>symbol</i>
<b>Arc</b>	Prohibited area line	proh_a_l	<b>q_info, ufi (250K only)</b> , <i>symbol, feat_wid, text_note (100K only)</i>

	Tile edge	tile_edge	<b>q_info, ufi (250K only), symbol</b>
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ID: **2**  
COVER: **auxiliary contours (100K only)**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Auxiliary Contour	auxil_cont	<b>elevation, contour, q_info, symbol</b>

ID: **3**  
COVER: **reserved areas**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Reserve - Indigenous area	abor_res	<b>name, authority, q_info, ufi (250K only), symbol</b>
	Reserve - Forestry	forest_res	<b>name, authority, q_info, ufi (250K only), symbol</b>
	Reserve - Nature conservation	nat_res	<b>name, authority, q_info, ufi (250K only), symbol</b>
	Reserve - Water supply	water_res	<b>name, authority, q_info, ufi (250K only), symbol</b>
	Reserve void	res_a_void	<b>q_info, ufi (250K only), symbol</b>
<b>Arc</b>	Reserve line	res_a_l	<b>q_info, ufi (250K only), symbol, feat_wid, text_note (100K only)</b>
	Tile edge	tile_edge	<b>q_info, ufi (250K only), symbol</b>

ID: **4**  
COVER: **seismic lines**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Seismic line	seismic_l	<b>q_info, ufi (250K only), symbol, text_note</b>

ID: **5**  
COVER: **cartographic features**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Boundary - International	internat_l	<b>symbol, text_note</b>
	Lock Line	lock_l (100K only)	<b>symbol</b>
	Salt evaporator internal line	salt_ev_i_l	<b>symbol</b>
	Settling pond internal line	sew_pond_i_l	<b>symbol</b>
	Runway centreline	runway_c_l	<b>symbol</b>
	Tropic of Capricorn	tropic_cap	<b>symbol, text_note</b>
	Feature pointer	pointer	<b>symbol</b>

	Road destination arrow	arrow_dest	<i>symbol, text_note</i>
<b>Point</b>	Transition point	transition_p	<i>symbol, feat_wid, orientation</i>
	Route marker - National	route_nat	<i>symbol, feat_wid, orientation, text_note</i>
	Route marker - State	route_state	<i>symbol, feat_wid, orientation, text_note</i>
	Kilometric distance indicator	distance_ind	<i>symbol, feat_wid, orientation</i>
	Powerline pylon symbol	Pylon (250K only)	<i>symbol, feat_wid, orientation</i>
	Flow Direction Arrow	flow_direct (100K only)	<i>symbol, orientation</i>
<b>Annotation</b>		-	<i>\$\$SIZE, \$TEXT, \$JUSTIFY, \$OFFSETX, \$OFFSEY, \$\$SYMBOL, \$ALIGN, \$FIT, \$WORD, \$ID, \$LEVEL, \$RECNO</i>

ID: **6**  
COVER: **map grid**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Grid line	grid_map	<i>symbol</i>
<b>Annotation</b>		-	<i>\$\$SIZE, \$TEXT, \$JUSTIFY, \$OFFSETX, \$OFFSEY, \$\$SYMBOL, \$ALIGN, \$FIT, \$WORD, \$ID, \$LEVEL, \$RECNO</i>

ID: **7**  
COVER: **graticule**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Arc</b>	Graticule line	graticule	<i>symbol</i>
<b>Annotation</b>		-	<i>\$\$SIZE, \$TEXT, \$JUSTIFY, \$OFFSETX, \$OFFSEY, \$\$SYMBOL, \$ALIGN, \$FIT, \$WORD, \$ID, \$LEVEL, \$RECNO</i>

ID: **8**  
COVER: **map boundary**

OBJECT	FEATURE CLASS	FEAT_CODE	ATTRIBUTES
<b>Polygon</b>	Map area	map_area	
<b>Arc</b>	Map mask	map_mask	

## 5. General Notes

### 5.1 Database Extents

The working database for a standard 1:250 000 sheet area will extend 4' to the north and 6' to the east beyond the standard area. For a standard 1:100 000 it will extend north and east to take into account the AGD66/GDA94 datum shift, however initially many 1:100 000s will not be based on standard boundaries, boundaries defined in the project files

supplied will take precedence over any stated boundaries in these specifications. The relationship between GEODATA tile extents, map extents and the working database extents is outlined in Appendix H together with a complete list of adjusted sheet extents.

## 5.2 Annotation and Paper Trimming

Annotation will be placed in the working database such that it will not be clipped when the printed map is trimmed.

At 1:250 000 annotation will not extend past the 3' and 5' bleed edge limits, ie. not extend within 1' of the northern and eastern working database extents. Particular care should be taken to allow for the 'tilt' of the sheet. For example, trimming a sheet on the western edge of a UTM zone will cause a Bleed Edge of less than 5' at the south east corner.

At 1:100 000 no annotation should be contained within the bleed/map overhang.

## 5.3 Cartographic Generalisation, Selection and Overlap

The working database is a cartographically generalised database. Features in the working database will often be displaced from their true position on the ground and their position as shown in satellite imagery. Only in extreme cases should existing features in the working database be moved so as to better match their position on satellite imagery. Any discrepancy equal to or more than 200 metres at 1:250 000 and 80m at 1:100 000 between where a feature is shown in the existing data and as shown on imagery would constitute an extreme case. When adding new features to or editing existing features in the working database the cartographic generalisation should be maintained. For instance, new roads may have to be displaced so that they do not plot over the top of railways.

Selection of features may also be affected by the need for cartographic generalisation. The feature class dictionary in Appendix A gives minimum criteria for inclusion of features. However, in some areas the density of detail will result in features which meet the minimum criteria for selection being omitted to prevent clutter. The need for such selections will be the exception rather than the rule. When such selections must be made, the aim will be to preserve the essential character of the terrain the map portrays. Priority should be given to features with high landmark value and to ensuring the connectivity of transport features. For example, major roads would take precedence over vehicle tracks or minor watercourses.

Where an existing working database overlaps a new tile, the data for the area of overlap must be identical spatially and in all attributes except Unique Feature Identifier (UFI).

The exceptions to this rule are:

- temporal changes in features since the earlier data was produced
- errors in the data structure (see Appendix J chapter 2.1.2 Logical Consistency)
- Annotation features, however, Section 2 chapter 5.3 rule 14 should be noted
- the highest spot elevation on the new tile or the highest spot elevation on the map
- changes in the selection rules as set out in Appendix A Feature Class dictionary, Horizontal control points.
- changes in symbolisation of watercourse between symbols 92 and 922 and between symbols 940 and 942 (see Appendix A chapter 6 – Symbol Dictionary) at 1:250 000.

- differences between versions of the specification (see Section 3, chapter 7.2)

Apparent errors in attributes in areas of overlap or difficulties in identifying features where they extend beyond the area of overlap should be referred to Geoscience Australia.

When selecting features close to the edge of the maps attention should be paid to their representation on the adjacent maps. It may be necessary to exclude features if only a short segment appears on the map, the surrounding maps do not include the feature and the feature can not be captured from other source material. Such exclusions should be documented on the project file.

## 5.4 The Use of Satellite Imagery

As a general rule a feature should not be captured solely from satellite imagery. Satellite imagery is generally used to position new features, and other information is used to verify existence and attribute the features. Guidelines for the use of satellite imagery will be issued to producers so that its use will be consistent.

## 5.5 Priorities in Use of References, Map and Imagery

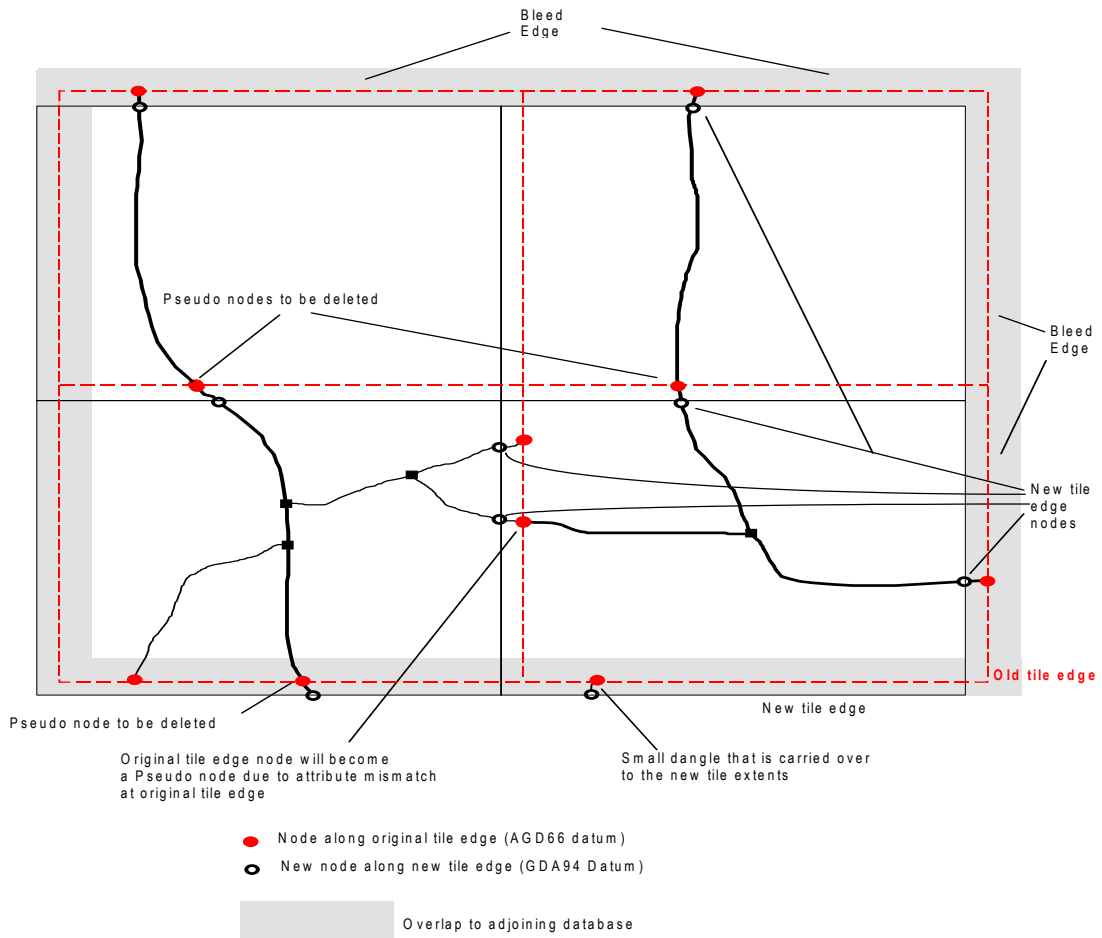
As listed in chapter 3.2, Source Material and Information Supplied by Geoscience Australia, information for revision of the existing maps is drawn from a wide range of sources. Appendix A, Feature Class Dictionary includes specific rules for the use of some sources. Supplementary guidelines for resolving conflicts between sources will be issued to producers so that use of sources will be consistent.

## 5.6 Datum Shift

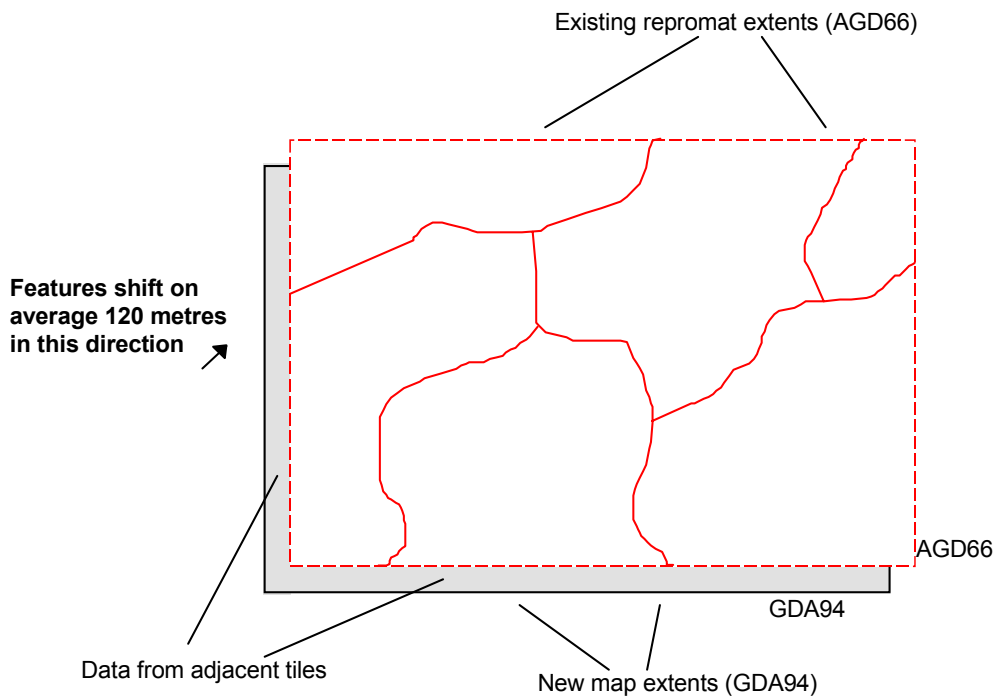
TOPO-250K Series 1 data, which may be supplied to revise spot elevations, is in the AGD66 datum. In addition, some revision information may be supplied to producers in paper, reprostat or digital form situated on the AGD66 datum. It would be unusual for producers to be supplied digital data in AGD66 but if this does occur the tape will be labelled as such. Producers need to be aware of the source datum and projection of all information supplied.

Any information in AGD66 will need to be shifted into the GDA94 datum before merging/inclusion into the new 250K Series 2 or 100K Series 1 products.

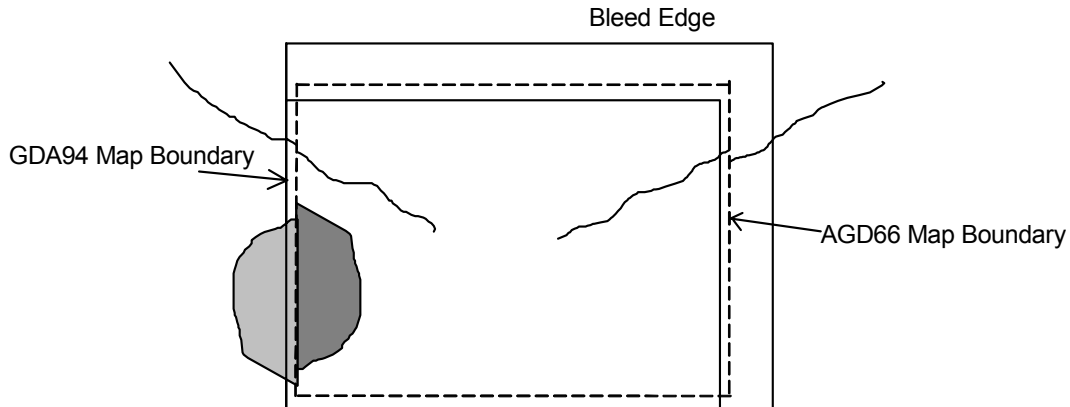
The following diagrams illustrate the effect of the datum shift on the position of the tile edges and the features that cross those tile edges. Additional information on GDA94 can be found in Appendix M.



Where data is digitised from reformat or generated from AGD 66 source material, data from the adjacent tiles to the south and west will need to be included to allow for the datum shift. This is illustrated by the diagram below:

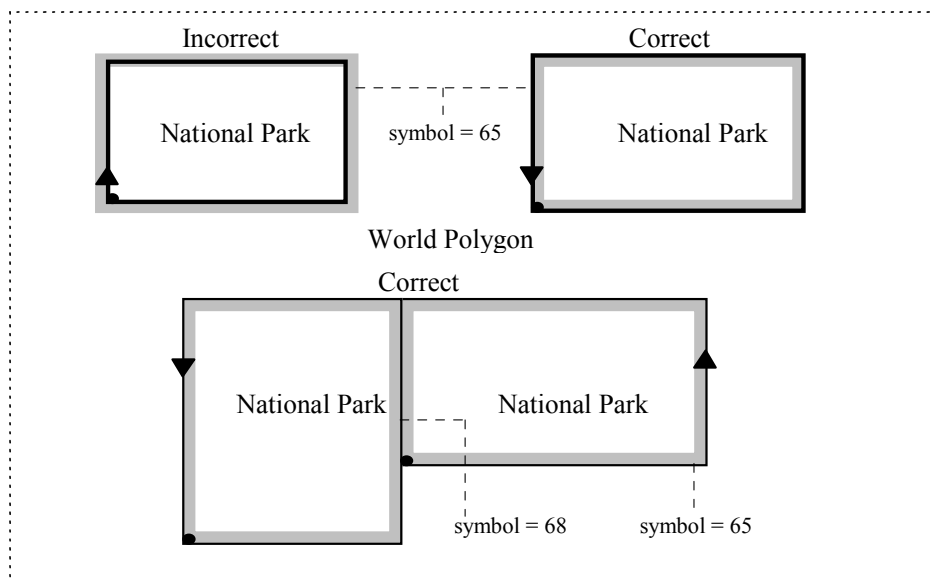


Graphical mismatches that were not resolved within source material/data will also manifest themselves within the new tile boundaries as shown below. These mismatches become internal to the tile when in the new datum, and must be resolved.



## 5.7 Direction of Digitising

For some features, such as cliff, embankment, and reserve line, the direction of digitising is important. For reserve line the direction of digitising will be anti-clockwise, as shown in the following diagram. This will place the verge of the symbol on the correct side of the digitised line.



Where direction of digitising is used in symbology it is noted in the feature class dictionary, see Appendix A.

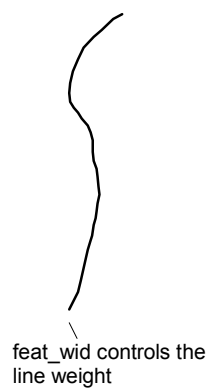


## 5.8 Feature Width Attribute

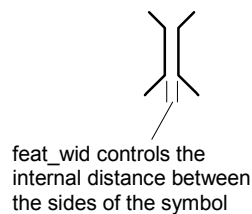
The feature width attribute (`feat_wid`) may be used to control three aspects of symbology:

- The width of a symbol, where the attribute controls the line weight of the symbol, for example, the line weight of roads under construction.
- The internal gap between two sides of a symbol, where the attribute controls the distance between two elements of a symbol, for example the distance between the two sides of a bridge to accommodate road symbols of varying width.
- The offset of a symbol from the feature's position where the attribute controls the distance a symbol is displaced from the feature's location. For example, a reserve boundary may be coincident with a road but the symbology will be displaced to allow for the width of the road symbol. The direction of digitising dictates the direction the symbol is offset. The symbol will move to the left when viewed from start node to end node.

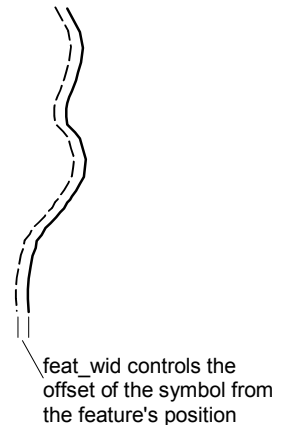
### Examples



*Symbol width*



*Internal distance*

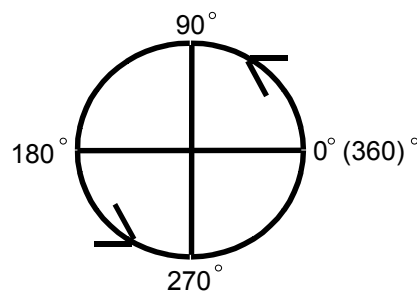


*Symbol offset*

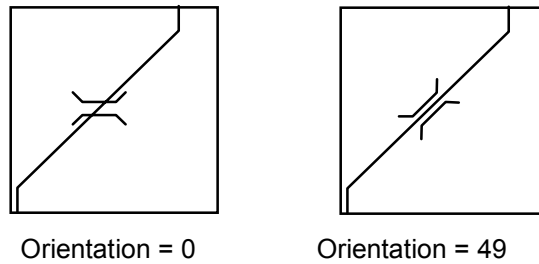
The usage of the feature width attribute for particular features is given in the feature class dictionary, Appendix A.

## 5.9 Orientation Attribute

The angle of orientation is anti-clockwise and as illustrated on the following diagram. The axis of oriented symbols is shown in the symbol dictionary, Appendix A.



The following diagram illustrates the effect of orientation on the plotting of a bridge symbol.



## 5.10 Type, Name and Text Note Attributes and Annotation Features

All type displayed on the face of the map will be stored as annotation features. Where the type relates to an entity feature, the \$text attribute of the annotation feature must be consistent with the data stored in the relevant attributes of the entity. For example, description, height and text\_note attributes are all relevant attributes for a Landmark Point tower. Note: that the text that appears on the face of the map may be a combination of several attributes in the working database.

Annotation should not exist on the map face that is not associated with a feature contained within the digital data except where that annotation is a general descriptor of the area (e.g. 'numerous bores and wells').

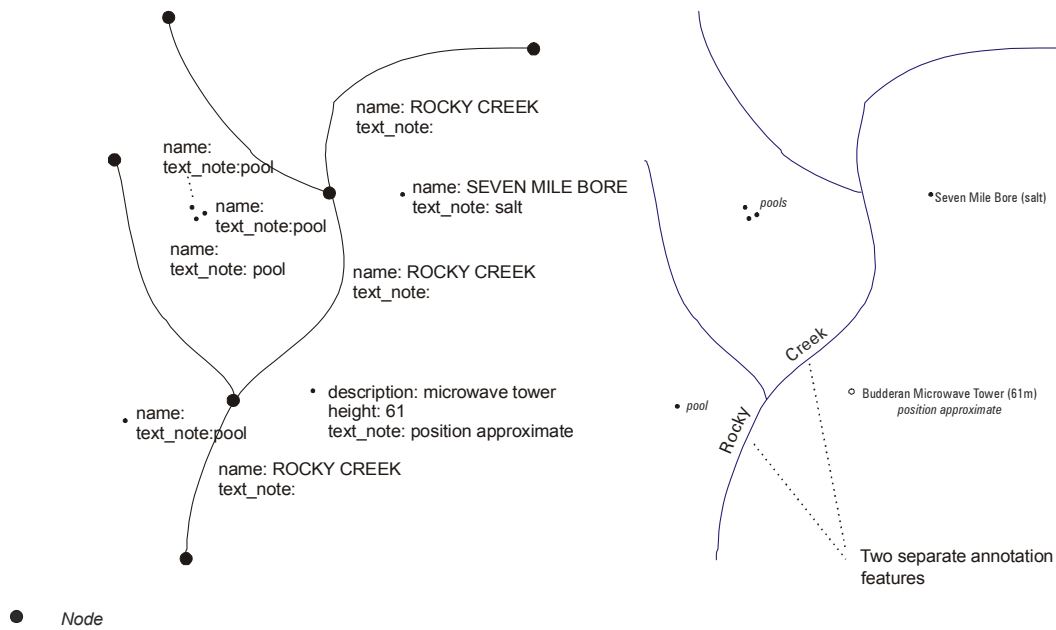
Annotation should not exist on the map face when its associated feature is not symbolised (note: Polygons may be symbolised/represented by a shading, by their boundary line or a combination of both). The following exceptions exist for this rule:

- Waterfalls
- Localities(non-printing)
- Airports
- Fords
- Grid Lines (when follows the central meridian)
- Offshore rocks (in close proximity to lighthouses)
- Pipelines (non printing when adjacent to another pipeline)
- Fences (non printing where follows state border or road)
- Dams (when coincident with roads)

The name attribute is used to store the name for GEODATA. The name must be stored against each spatial object making up the entity, for example, each chain along the course of a river.

The text\_note attribute is purely a working database attribute. It is intended to allow a linkage to be established between the attributes stored in the working database and the related annotation features. A text\_note need only occur in the working database the number of times the feature label appears on the map. The text\_note field will not duplicate text in other data attribute fields. Where the Map rules in Appendix A, Feature Class Dictionary, require or allow the naming of a feature and there is no name field the name will be held in the text\_note field. One text\_note or name may be divided between two or more annotation features.

## Examples

*Data Base (excluding Annotation)**Map (type from annotation)*

Name attributes will be in upper case. Text\_note and \$text attributes will be in the case in which they appear on the map. Parentheses will not be included in text notes. In the case of Landmark Point features where the height is shown on the face of the map the abbreviation for metres ('m') will not be included in either the height or text\_note attributes.

All annotation will be held in the cartographic features cover, except for annotation for the grid values and 100 000 metre identification letters which will be in the map grid cover and for graticule values which will be held in the graticule cover. All grid values, including those outside the neat line will be included in the grid cover. All graticule values, including those outside the neat line will be included in the graticule cover.

The \$SYMBOL attribute will be assigned to match the type specifications in Section 2 chapter 8 (1:250 000 Scale Type Specifications) and 9 (1:100 000 Scale Type Specifications). The symbol numbers used are:

\$SYMBOL number	Type style	Colour
6	Zurich	Black
7	Zurich Italic	Black
8	Zurich Bold	Black
9	Zurich Bold Italic	Black
10	Zurich Condensed	Black
11	Zurich Condensed Italic	Black
26	Zurich	Red
27	Zurich Italic	Red
28	Zurich Bold	Red
29	Zurich Bold Italic	Red

\$SYMBOL number	Type style	Colour
30	Zurich Condensed	Red
31	Zurich Condensed Italic	Red
36	Zurich	Blue
37	Zurich Italic	Blue
38	Zurich Bold	Blue
39	Zurich Bold Italic	Blue
40	Zurich Condensed	Blue
41	Zurich Condensed Italic	Blue
50	Stymie Medium	Black

## 5.11 Spatial Coincidence

The spatial object for some feature classes have a physical or assumed link to the spatial objects of other feature classes in the database. There are four types of linkages:

- Cloned features
- Coincident features
- Node on Chord
- Vertex on Chord

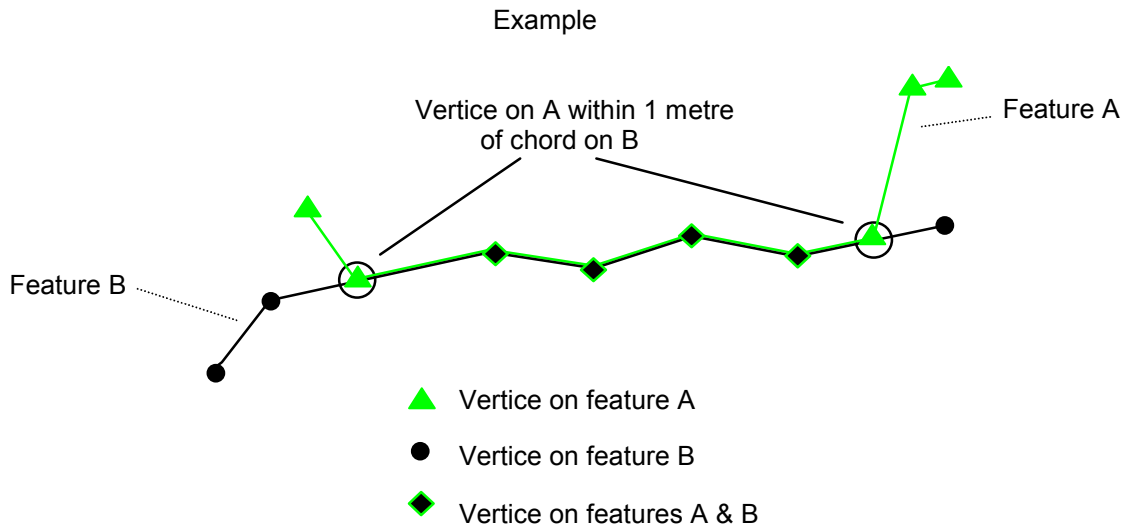
### 5.11.1 Cloned features

A feature is cloned when it's spatial attributes are to be exactly the same as those of another feature. Cloned features are of the same feature type, that is, a line will be cloned to a line, a point to a point. The following table lists some clone relationships. The data rules sections of the feature class dictionary indicate where a feature is cloned from another, see Appendix A.

ORIGINAL FEATURE	CLONE OF ORIGINAL
locality coded homestead	building (point)
vegetation line (bounding mangrove)	waterline (bounding mangrove flat)

### 5.11.2 Coincident Features

Features are coincident when they share one or more coordinate pairs. For example, a point feature may need to be coincident with a linear feature or two linear features may be coincident sharing a number of points. Point features may need to be coincident with a node rather than a vertex, for example a Railway station needs to be coincident with a node on the railway line. Where linear features are coincident one line may leave the other part way down a chord. However, at the point where one deviates from the other the vertex must be within 1 metre of the chord in both geographical and MGA coordinates.



When point features are required to be coincident with a node in a line feature they must have exactly the same coordinates as the node in the line feature.

The following table lists some of these point-over-node coincidence relationships. The data rules sections of the feature class dictionary give a more complete listing of relationships - see Appendix A.

LINEAR FEATURE WITH NODE	POINT FEATURE
connector	lock
railway	railway station, rail bridge (point), rail tunnel (point)
road	road bridge (point), road tunnel (point), ford (point), gate
road	locality (populated place, road junction)
watercourse	waterhole, waterfall
road, railway	transition point

The following table lists some of the linear feature to linear feature relationships. The data rules sections of the feature class dictionary give a more complete listing of coincidence relationships, see Appendix A. Where a feature in the right column of the table falls within 50 metres of a feature at 1:250 000 scale and 20 metres at 1:100 000 scale in the left column, then it should be made coincident with the feature in the left column.

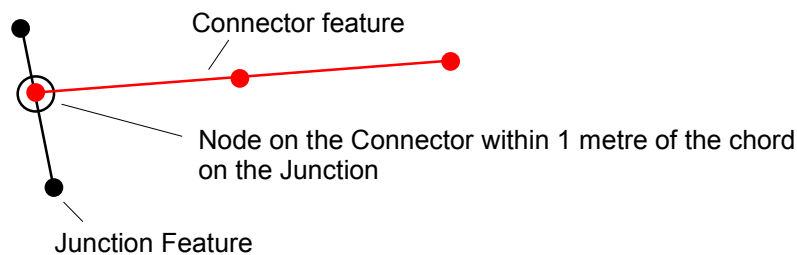
ORIGINAL FEATURE	COINCIDENT FEATURE
tile edge (in the framework layer)	tile edge (in any other layer)
0waterline, sea wall, offshore line, road, railway, prohibited area line, reserve area line	built-up line
waterline (in the framework layer)	waterline (bounding saline coastal flat)

ORIGINAL FEATURE	COINCIDENT FEATURE
waterline (in the framework layer)	waterline (bounding mangrove flat)
waterline (bounding sea, estuarine lakes or estuarine watercourse areas)	offshore line
building area line, offshore line, relief area line (bounding open cut, sand or dunes), waterline (bounding reservoir, settling pond, salt evaporator, lake, watercourse area perennial, and defining the coastline), sea wall, aircraft facility line	vegetation line
waterline (in the framework layer)	wharf

### 5.11.3 Node of Line Feature on Chord of another Line Feature

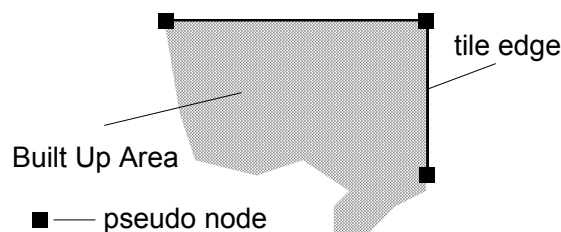
In the working database some features are required to end exactly on another. For instance, connectors are often required to end on a junction feature, even though the junction feature resides in a different layer. When one feature is required to end on another feature the coordinates of its end node are required to be exactly the same as the coordinates of a vertice in the cross feature, or to be within one metre in both geographical and MGA coordinates of a chord in the cross feature.

The following diagram illustrates this relationship. The data rules sections of the feature class dictionary give a more complete listing of these relationships, see Appendix A.



### 5.12 Nodes and Vertices on the Tile Edge

Where the tile edge forms a polygon boundary it is important that a node is present where the polygon meets the tile edge. Also where a polygon is present at the tile corner, the tile corner should also have a pseudo node. These situations are illustrated in the following diagram.



All `tile_edge` features should be densified so that there is a vertice at least every 0.002 degrees, which is approximately every 200 metres. Tile edge features in different layers will be coincident with each other where they overlap, such that their vertices are coincident.

## 5.13 Precision, Tolerances and Projections

Coordinates of all features in the working database will be rounded to the nearest 0.1 of a metre.

Each ARC/INFO export file will have the following tolerances:

TOLERANCE TYPE	SETTING (in decimal degrees) for 1:100 000 scale	SETTING (in decimal degrees) for 1:250 000 scale	Metres for 1:100 000	Metres for 1:250 000
Fuzzy	0.000001	0.000001	0.01	0.01
Dangle	0.0004	0.001	40	100
Edit	0.001	0.002	80	200
Nodesnap	0.0004	0.001	40	100
Weed	0.0001	0.00025	10	25
Grain	0.0001	0.00025	10	25
Snap	0.0004	0.001	40	100

Note: these tolerances are set to achieve consistency in the files and may not be those used in production.

The coordinate system description of each ARC/INFO layer will correctly describe the projection type, the spheroid, and units.

The GEODATA tile must be projected to MGA coordinates without error.

## 5.14 Allocation of Unique Feature Identifiers and Data Quality Pointers

The working data base will contain Unique feature identifiers (UFIs) at 1:250 000 scale, and data quality pointers (q\_info) at both scales, for features which lie within the extents of the working data base. These numbers will be identical to those in the GEODATA tile. GEODATA features will be broken at the tile edge in accordance with Section 3.7 Edge Match.

Rules for generation of UFIs are outlined in Section 1, chapter 3.4 and rules for generation of q\_infos are outlined in Section 1 chapter 3.5.

For the **revision** of a 1:250 000 Series 2 tile, UFIs and qinfos will be added to features in the bleed edge. The UFIs in the bleed area may fall within the UFI range of the primary or adjoining tile. Qinfos in the bleed area will have the <tile-id> of the primary tile.

For the **revision** of a 1:250 000 Series 2 tile, duplicate UFIs are permitted for continuous arc and polygon features and multi-polygon features that have the same items and attributes. They are not permitted in any other circumstances.

## 5.15 Maintaining Old Unique Feature Identifiers

Except where the loss of old unique feature identifiers is unavoidable, old UFIs should be maintained and stored in the old unique feature identifier field. Loss of the old UFI will be unavoidable when:

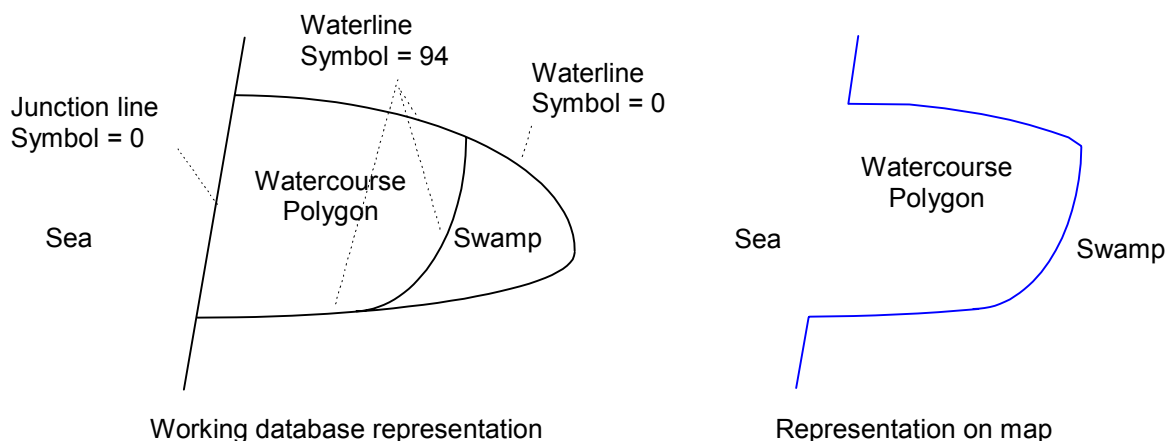
- Two features with different UFIs are combined into one feature.
- A single feature is split into two or more features.
- For the paracentroid of a polygon where the area has changed.
- A feature changes feature class (excluding bulk changes such as Foreshore flat lines being changed to Offshore lines).

Where a feature changes spatial attributes, such as in a road realignment, the old UFI will be maintained (as long as the start and end nodes are the same).

Where a feature changes other attributes, such as a change in a road classification, it will maintain the old UFI.

## 5.16 Printing and Non-printing Features

Some features do not print on the map. Others may or may not print depending on their attributes, the type of feature they bound or other criteria. For example, waterline, when bounding areas of land subject to inundation, swamp, saline coastal flat or mangrove flat, does not print, whereas, when bounding polygon watercourses or lakes, it does print. When a feature does not print it has a symbol attribute of 0. The symbol attribute description in the feature class dictionary defines when the feature prints, see Appendix A. The following diagram illustrates this.



## 5.17 The NPIL Database

The National Public and Indigenous Lands (NPIL) database is to be used to delineate and partially attribute reserves and prohibited areas. Only those NPIL Types listed in the table below are to be added to the working database. Additional types in NPIL and isolated areas without a centroid are to be ignored or treated as Reserve or Prohibited Area Voids.



The table shows:

**Feature Class Name:** The five feature classes which are sourced from the NPIL data base, see the feature class dictionary in Appendix A.

**NPIL Type:** NPIL Reserve Types (res\_type) which are to be included in the working database against the feature class to which they will be coded.

**NPIL Reserve Description:** This is the term which describes the NPIL Reserve type.

Where the description is followed by an asterisk (\*) the reserve overlaps or partially overlaps another reserve. These reserves are shown on a secondary coverage in the NPIL data base. Only areas of these reserves which do not overlap another reserve will be shown.

Reserves will be named using the name field set out in the NPIL Database. If the NPIL database's name field is blank for a reserve that meets selection criterion and no instruction exists within the project file for naming of that feature then the producer should seek clarification from Geoscience Australia on how the Working Database name field is to be populated.

### **Reserved Area Covers - Feature Codes, NPIL Types and Descriptions**

<b>Feature Class Name</b>	<b>NPIL Type</b>	<b>Reserve Description</b>
Reserve - Indigenous Area Feature Code: <b>abor_res</b>	<b>ABOR</b>	Aboriginal Reserve
Reserve - Prohibited Area Feature Code: <b>proh_a</b>	<b>DEF</b>	Defence Reserve
Reserve - Forestry Feature Code: <b>forest_res</b>	<b>F</b> <b>FR</b> <b>SF</b> <b>SFIN</b> <b>TR</b>	Forest Forestry Reserve State Forest State Forest* Timber Reserve
Reserve - Nature Conservation Feature Code: <b>nat_res</b>	<b>AA</b> <b>AQR</b> <b>AS</b> <b>BR</b> <b>CA</b> <b>COP</b>	Aboriginal Area Aquatic Reserve Aboriginal Site Bushland Reserve Conservation Area Coastal Park

Feature Class Name	NPIL Type	Reserve Description
	<b>COR</b>	Coastal Reserve
	<b>CP</b>	Conservation Park
	<b>CRR</b>	Crown Reserve
	<b>CR</b>	Conservation Reserve
	<b>FFR</b>	Flora and Fauna Reserve
	<b>FHA</b>	Fish Habitat Area
	<b>FLR</b>	Flora Reserve
	<b>FOR</b>	Fossil Reserve
	<b>FTR</b>	Forest Reserve
	<b>GR</b>	Game Reserve
	<b>HA</b>	Historical Area
	<b>HP</b>	Historical Park
	<b>HR</b>	Historical Reserve
	<b>HS</b>	Historical Site
	<b>MAA</b>	Management Agreement Area
	<b>MAR</b>	Marine Reserve
	<b>MCP</b>	Marine and Coastal Park
	<b>MNNR</b>	Marine National Nature Reserve
	<b>MNP</b>	Marine National Park
	<b>MP</b>	Marine Park
	<b>MR</b>	Muttonbird Reserve
	<b>NAP</b>	Nature Park
	<b>NCR</b>	Nature Conservation Reserve
	<b>NNR</b>	National Nature Reserve
	<b>NP</b>	National Park
	<b>NPS</b>	National Park
	<b>NR</b>	Nature Reserve
	<b>NRA</b>	Nature Recreation Area
	<b>P</b>	Park
	<b>PA</b>	Protected Area
	<b>PUR</b>	Public Reserve
	<b>R</b>	Reserve
	<b>RA</b>	Reference Area
	<b>REP</b>	Regional Park
	<b>RGR</b>	Regional Reserve

Feature Class Name	NPIL Type	Reserve Description
	<b>RP</b>	Recreation Park
	<b>RR</b>	Recreation Reserve
	<b>RSR</b>	Resources Reserve
	<b>SCR</b>	Scenic Reserve
	<b>SGR</b>	State Game Reserve
	<b>SP</b>	State Park
	<b>SR</b>	State Reserve
	<b>SRA</b>	State Recreation Area
	<b>SW</b>	Historic Shipwreck
	<b>W</b>	Wilderness
	<b>WPA</b>	Wilderness Protection Area
	<b>WR</b>	Wildlife Reserve
	<b>WS</b>	Wildlife Sanctuary
Reserve - Water Supply Poly Code: <b>water_res</b>	<b>CAT</b>	Catchment Area
	<b>NRWS</b>	Water Supply Reserve *
	<b>WSR</b>	Water Supply Reserve

The following table describes each NPIL authority type, and relates it to a GEODATA "AUTHORITY CODE" value listed in the "Code" column.

### **Reserved Areas - Authority Codes and Descriptions**

Authority	Code	Authority Description
	<b>0</b>	Not applicable
<b>A</b>	<b>1</b>	State/Territory National Parks and Wildlife Service or equivalent
<b>AA</b>	<b>2</b>	Aboriginal and Torres Strait Islander Commission
<b>AL</b>	<b>3</b>	Aboriginal Lands Trust
<b>B</b>	<b>4</b>	State Wildlife Authority
<b>C</b>	<b>5</b>	Local Government authority
<b>D</b>	<b>6</b>	Department of the Environment and Heritage
<b>DD</b>	<b>7</b>	Department of Defence (Commonwealth)
<b>F</b>	<b>9</b>	State Forestry Commission
<b>L</b>	<b>10</b>	State/Territory Lands Department
<b>LC</b>	<b>11</b>	Aboriginal Land Council
<b>N</b>	<b>12</b>	ACT Parks and Conservation Service
<b>O</b>	<b>13</b>	Other State or Federal Government organisations

Authority	Code	Authority Description
P	14	Great Barrier Reef Marine Park Authority
PI	15	State Department of Primary Industry
PW	16	State Department of Water Resources/Public Works
QD	17	Queensland Department of Family and Community Services and Aboriginal and Islander Affairs
NR	18	Department of Natural Resources, Mines and Energy
CM	19	Conservation and Land Management
I	20	Department of Indigenous Affairs
Z	9999	Other (not specified)

## 6. Feature Specific Notes

### 6.1 Contours and Hypsometric Areas

Contours are to be attributed with one of the following values in the contour code field:

CONTOUR CODE	TYPE OF CONTOUR	USAGE
1	Standard	To be used for standard (not depression) Contours.
2	Depression	To be used for depression Contours.
3	Connector on cliff/cutting/embankment/razorback	To be used for Contours added to the data where contours on the reformat were broken for either a cliff, cutting, embankment or razorback symbol.
4	Connector standard	To be used for Contours where the contour's position is not known, for example in a Watercourse or through open cut mine polygons.
5	Interpolated contour	To be used to join discontinued Contours or to replace a Contour absent in the source material for cartographic reasons where a cliff symbol has not been used.

Hypsometric areas will be defined as the areas in between consecutive contours and will carry the elevation of the lowest contour bounding the polygon. Hypsometric areas will not cover the sea and no voids apply to it, for instance, lakes do not form voids in hypsometric areas.

The coastline, including junctions, will be considered to be the 0 metre contour, ie. it will be cloned as the 0 metre contour. The contours resulting from cloning coastal junctions will be attributed as "connector standard", other 0 metre contours along the coastline will be attributed as "standard". Depression contours will be used for closed contours bounding or on the slope of a depression. Standard contours will be used for areas of higher land within a depression.

### 6.1.1 Contour Cliff Connectors

A contour that is broken by a cliff/cutting/embankment/razorback will be re-connected by a contour cliff/cutting/embankment/razorback connector. When connectors for these features are required, they will be treated in a similar manner to the following cliff situation. If more than one contour is broken by a cliff then the associated connectors must not intersect or overlap, but rather be offset from one another by a minimum of 5 metres. At 1:250 000 these connectors will be within 75 metres of the cliff feature on the downslope side and within 25 metres on the upslope side. At 1:100 000 these connectors will be within 30 metres of the cliff feature on the downslope side and within 10 metres on the upslope side.

## 6.2 Vegetation

Vegetation Voids less than 250 000 sq m at 1:250 000 scale, and 40 000 sq m at 1:100 000 scale, may be shown as an exception when associated with another feature as specified in the Appendix A Vegetation Void General Notes. The vegetation line bounding Woody Vegetation areas will be highly detailed, showing the convolutions of the edge of the Woody Vegetation, given that the segment length of the vegetation line may approach but not be less than 25 metres at 1:250 000 scale and 10 metres at 1:100 000.

## 6.3 Inland Islands

There is no polygon feature specifically for inland islands. Inland islands usually appear as Water body voids. If the island is at the mouth of a river and is met on either side by a junction feature then part of the bounding line of the island appears in the framework layer, shown as waterline, and the remainder appears in the waterbody layer, also shown as waterline. In this case no paracentroid appears in the feature as no closed polygon is created, see Section 1 chapter 3.8.5. For both inland islands and islands which do not appear as polygons (and are not adjacent to junction features) a locality feature of type 'waterbody island' is placed near the middle of the island.

## 6.4 Kilometric Distance Indicators

Kilometric distance indicators and the associated distances will be placed to avoid ambiguity and allow the calculation of route distances. Particular care should be taken around the map edges with the placement of kilometric distance indicators. Placement of indicators should be consistent between adjacent sheets and allow calculation of distances to continue from one sheet to another.

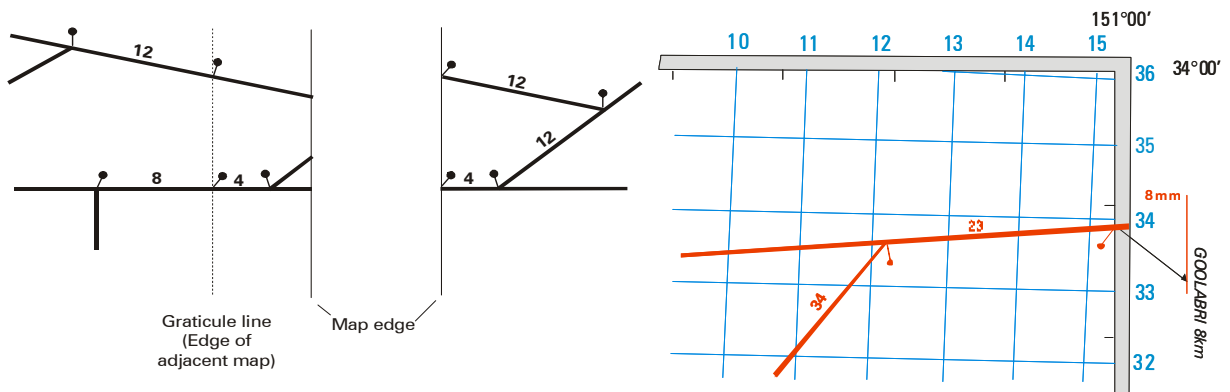
### 1:250 000 map distance measurement

On the south and west sides of the map, measurements will be shown to the edge of the map. On the north and east sides, distances will be shown to the graticule line which forms the edge of the adjacent map. Where there is a destination point to be indicated within the bleed edge a distance will be given to that point from the graticule line which forms the edge of the adjacent map.

### 1:100 000 map distance measurement

On the south and west sides of the map, measurements will be shown to the edge of the map. On the north and east sides, distances will be shown to the GDA94 graticule line which forms the edge of the adjacent GDA94 map. No destination point will be indicated within the area between the GDA94 and AGD66 graticule lines.

Example:



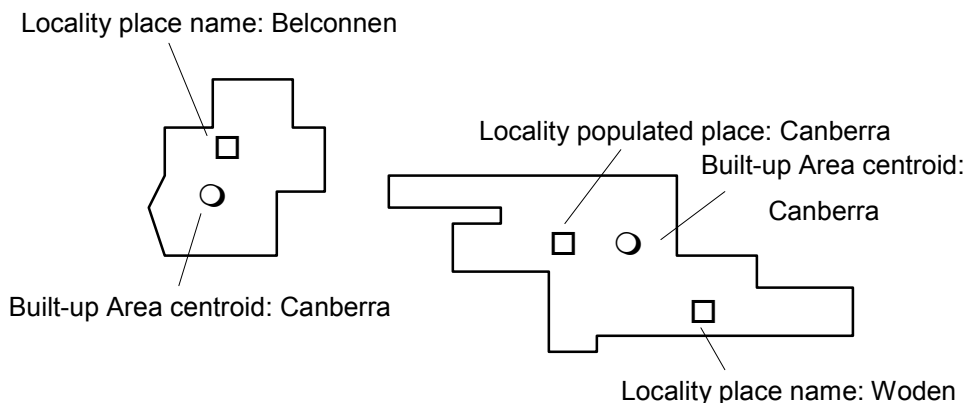
## 6.5 Localities

### 6.5.1 Place Names and Populated Places

All named places or populated places appearing in the base data/material will be included in the working database unless there is clear evidence the named feature no longer exists. Populated place is used if the population of the place is greater than 200, - see 'Locality' in the feature class dictionary, Appendix A.

The feature point for a populated place will be positioned coincident with a point on the road network unless there is no road within 1 mm at map scale of the built-up area associated with the populated place. If necessary, a vertex will be created on the road coincident with the locality populated place feature. For populated places with a population over 20 000 the point should be placed as near as possible on the road network to the location of the central post office.

The following diagram illustrates how large built-up areas generally have within their extents one or more localities of type "place name".



### 6.5.2 Homestead

Abandoned homesteads will not be shown as a Locality of code 4 but rather as a building in the buildings layer. Homesteads will be cloned as buildings. Named buildings other than operational homesteads will be cloned as localities of type place name.

### 6.5.3 Mountain, Pass and Road Junction

Mountains and passes are to be placed in their true planimetric position as shown on the map, however for passes traversed by a road the pass will be coincident with a vertice on the road.

Named road junctions will be in the working database as locality road junctions. The road junction will be placed coincident with the node of the road intersection.

### 6.5.4 Cape, Bay, Beach and Waterbody Island

Cape features will be placed at a point over the land representative of the cape. Bay features will be placed in the centre of the bay. All named beaches on the existing previous edition maps will be in the working database except where an adjacent populated place has the same root name, for example Bondi and Bondi Beach. Beaches will be placed coincident with the waterline at the approximate centre of the beach. All named inland islands appearing on the existing previous edition maps will be held as locality of type waterbody islands in the working database, see chapter 6.3 Inland Islands.

### 6.5.5 Cemetery

Named cemeteries shown as a point feature will be in the working database as localities of type cemetery, see also Cemetery in the feature class dictionary, Appendix A.

## 6.6 Locality Mountain Features, Spot Elevations And Horizontal Control Points

The above features may appear in close proximity (within a distance of 1mm at map scale from one another) when first extracted from the source data. When this occurs the following rules will be applied.

Locality mountains will be left in their current location. The name of the Locality will be shown on the map in preference to the alpha-numeric code for the Horizontal control point. The Locality will have a symbol number of 0.

Where a horizontal control point and a spot elevation are in close proximity to one another and have the same elevation to the nearest metre, the spot elevation will be moved to have the same location as the Horizontal control point and the spot elevation will have a symbol number of 0.

Where a horizontal control point and a spot elevation are in close proximity to one another but the elevations differ by more than a metre, their respective positions will be maintained. Normally the Spot elevation will have a symbol number of 0 and the elevation of the Horizontal control point will be shown. However, if the Spot elevation is the highest elevation on the map or is higher than the Horizontal control point by more than 25 metres at 1:250 000 or 10 metres at 1:100 000, the Spot elevation will be symbolised and its elevation shown on the map and the Horizontal control point will have a symbol number of 0.

Where a cultural feature such as a landmark point feature lies in close proximity to a Horizontal control point, spot elevation or symbolised locality mountain, the cultural feature has precedence and will be the only symbol shown, unless the spot elevation is the highest spot elevation on the map.

## 6.6.1 Spot Elevations

All statements in the following chapter relate to the selection of features for capture and display in the 1:250 000 data product and for display only on the 1:100 000 map products. All 250K GEODATA Series 1 spot elevations will be captured for the 1:100 000 data product.

Spot elevations will be selected (for capture and display at 1:250 000 and for display at 1:100 000) to best show terrain shape, change of slope and high and low points. In any group of related features (ridges peaks or saddles) the highest elevation shall be shown. The density of the spot elevations selected will not be reduced from that on the latest previous edition map. (This overrides all other rules and applies when the latest previous edition map of the equivalent scale has been provided to the producers.)

Preference will be given in descending order to elevations that are:

- closest to Localities of code 6 (mountain-peak-hill) and in an isolation (ie enclosed by a contour);
- closest to Aircraft Facilities;
- in isolations;
- greater than half the contour interval above the next lower contour;
- in depressions
- on cliffs or razorbacks
- on sand ridges

All occurrences of the highest Spot elevation in the map area and the GEODATA tile will be maintained unless they are less than 12mm apart at map scale. Where two or more occurrences of the highest Spot elevation are less than 12mm apart only one will be included.

Spot elevations that have the same elevation as a contour will not be selected. Should the highest Spot elevation have the same elevation as a contour clarification will be sought from Geoscience Australia.

Spot elevations with a GEODATA Series 1 point determination of 4 (contour) will not be selected at 1:250 000 scale. Should the highest Spot elevation be of point determination 4 or if the full extent (or a significant proportion of the extent) of the tile contains only point determination 4 this should be referred back to Geoscience Australia for direction on how to proceed.

Spot elevations selected will be no less than 12 mm apart at map scale. Spot elevations selected should be no more than 64 mm apart at map scale where points meeting the above criteria are available in the source data.

### At 1:100 000

As discussed above all spot elevations from GEODATA Series 1 relief theme will be captured in the 1:100 000 data product. The selection that is made should be compatible with the contour features. In addition, spot elevations representing locality mountains of a known height, should be consistent with the 100K source material and 250K map product, anomalies should be referred back to Geoscience Australia.



### At 1:250 000

Spot elevations will be retained from the base Series 2 data. When Spot elevations with a GEODATA Series 1 point determination of 4 (contour) have been selected this will be accepted as having previously been authorised by Geoscience Australia as a valid exception.

Reference will also be made to the latest previous edition map when not produced by Geoscience Australia. If as a result of comparison significant logical anomalies are found which may influence map users perception of the topography of the area clarification should be sought from Geoscience Australia (e.g. If there are values higher on the latest previous edition map which have a difference greater than 5m or when inconsistencies with contours would result).

The overall selection of spot elevations in the base Series 2 data should be reviewed against the criteria discussed in the upper portion of this chapter and if the selection is found to be inadequate, the GEODATA Series 1 relief theme should be utilised to conduct any corrections required. If the GEODATA Series 1 relief theme has not been provided – a request for its supply should be made to Geoscience Australia.

## **6.7 Roads, Road Bridges and Road Tunnels**

### **6.7.1 Road Names**

For inclusion of road names in relation to road classification, refer to the 'Road' entity in Appendix A.

If a road has multiple names then the names will be separated by hyphens. Hyphens are also to be included where they form part of the official road name eg. *KOO-WEE-RUP ROAD*. Hyphens will not be included however where road names define a route between locality destinations eg. the naming convention *BROWNSVILLE – GREENTHORPE ROAD* is incorrect, and the name should be shown as *BROWNSVILLE GREENTHORPE ROAD* instead.

Road bridges and road tunnels carry the name of the road not of the bridge or tunnel. Where a road bridge or tunnel was named on the latest previous edition map the bridge or tunnel name will be added to the text note field.

### **6.7.2 Route Numbers**

If a road has multiple route numbers then the numbers will be separated by hyphens. Up to three National Route Numbers (NRN) or State Route Numbers (SRN) and one alternate road number can be attached to a road.

For example: John Highway

National route number attribute

38-15-11-A1 (A1= alternate route 1)

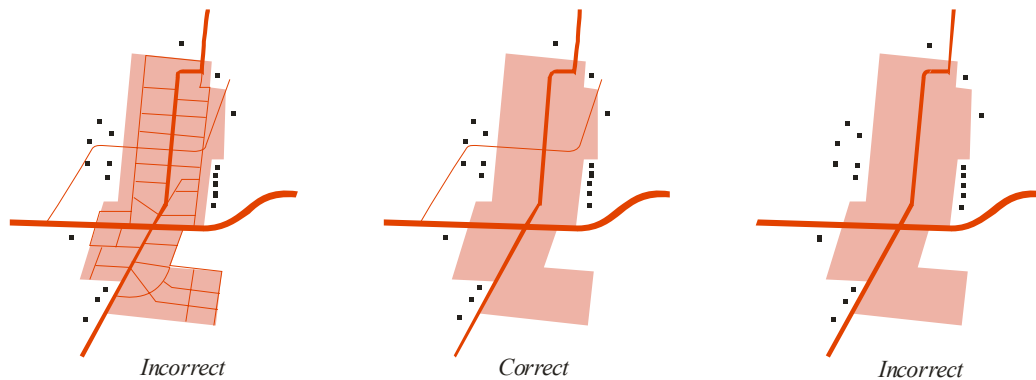
State route number attribute

79-23-32-A79 (A79 = alternate route 79)

### **6.7.3 Roads through Built-Up Area**

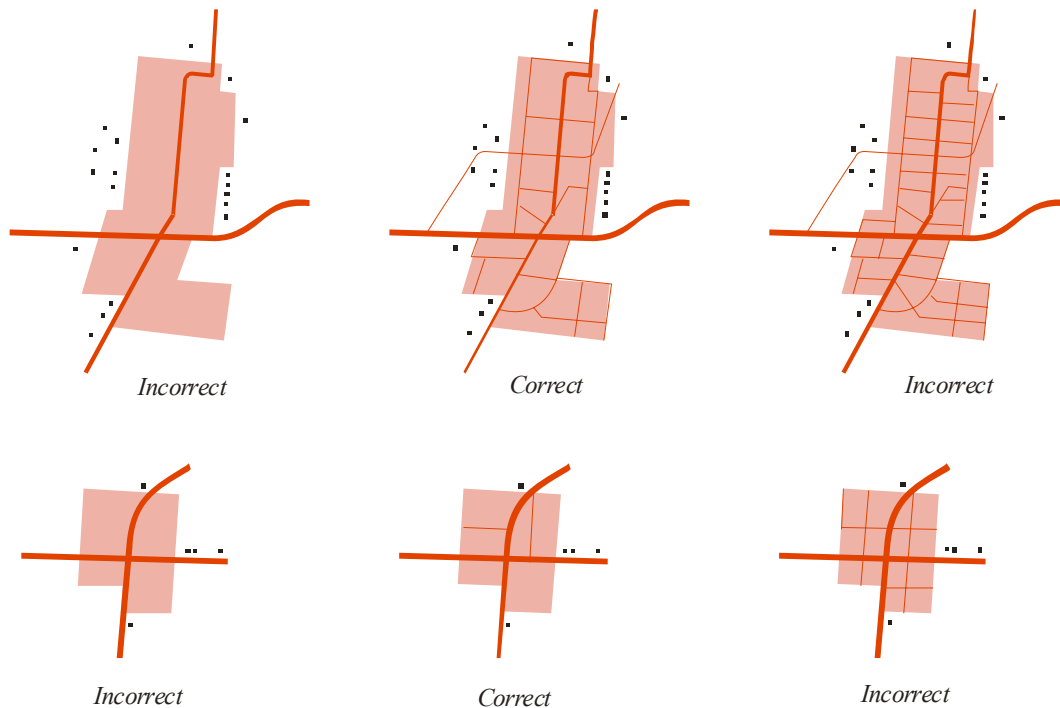
At 1:250000 dual carriageways, principal roads and secondary roads will be shown within built-up areas. Minor roads entering a builtup area will be continued to the first intersection with a dual carriageway, principal or secondary road. Minor roads totally contained in built-up areas will not be shown. This rule extends to other features in the built-up area layer where they are surrounded by a built-up area.

Road pattern interpretation within BUA – see example below;



At 1:100000 dual carriageways, principal roads and secondary roads will be shown within built-up areas. Minor roads entering a built-up area will be continued to the first intersection with a major through route (preference should be given to intersections with dual carriageways, principal or secondary roads). In addition, sufficient minor roads will be shown to reflect the Built-up Area's road pattern. Select the major through routes (from Primary Reference material) to reflect the road pattern within the area whilst avoiding clutter. This rule extends to other features in the built-up area layer where they are surrounded by a built-up area.

Road pattern interpretation within BUA - see example below;



## 6.8 State Borders

The sections of state borders which do not follow natural features do not necessarily fall exactly on the meridians of longitude or the parallels of latitude. Rather they have been defined by survey monuments. The coordinates for these monuments have been used in the construction of the GEODATA 100K-COAST dataset, which in turn will be used for defining these sections of state borders in the working database. As the survey

monuments defining the state borders correspond to vertices in the data, these state border features in the data must not be filtered or point reduced.

Where state borders follow a natural feature, such as the Murray River, the natural feature as represented in the data must be cloned as the state border into the framework layer. The GEODATA 100K-COAST dataset is not to be used to define the state border in these places, since it would then not match with the feature it should follow. The GEODATA 100K-COAST dataset can be used as a guide to deciding which sections of natural feature should be cloned.

## 6.9 Waterbodies

### 6.9.1 Naming Lakes and Double Line Streams

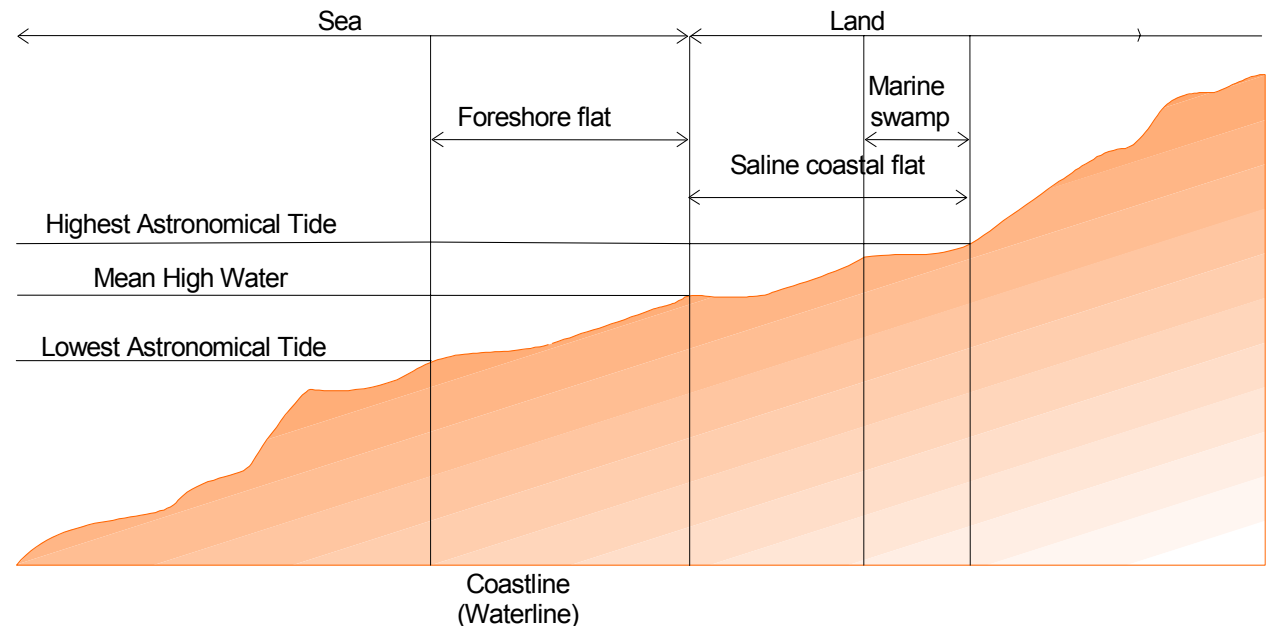
All waterbody names that appear on the base data/material or on revision source material will be carried as attributes of the appropriate features in the database. For polygons it is the paracentroid that carries the attributes.

### 6.9.2 Naming Swamps, Reservoirs and Land Subject to Inundation

The name, if known, will be added for all swamps, reservoirs and land subject to inundation shown in the database. Note that the name of some features may not match the feature type. For instance, the name "Williams Swamp" may in fact be associated with an area of "land subject to inundation" rather than an area of "swamp".

### 6.9.3 Coastal Relationships

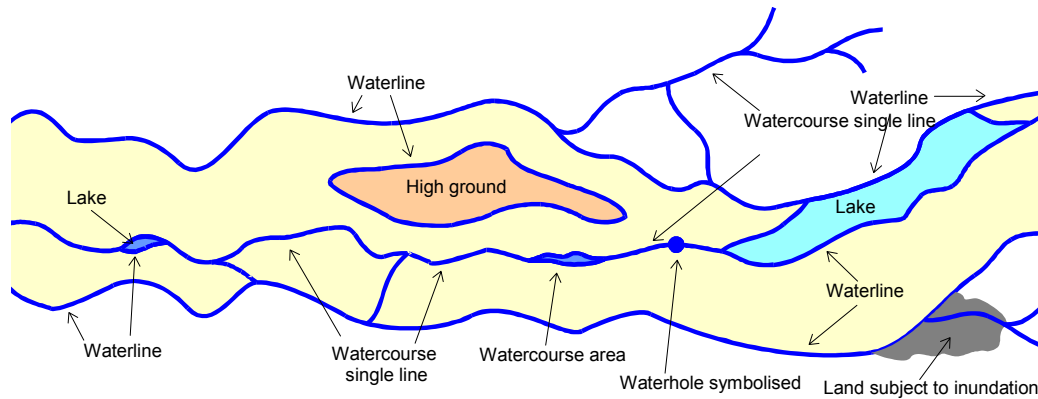
The following diagram identifies features associated with coastlines and shows the relationships between the respective features.



Coastline follows the mean high water mark except in areas covered by mangroves, where the limit between the sea and the land is considered to be the seaward side of the mangroves.

### 6.9.4 Features With Braided Watercourses.

The following diagram identifies features associated with braided watercourses lying within primary banks and shows the relationships between the respective features.

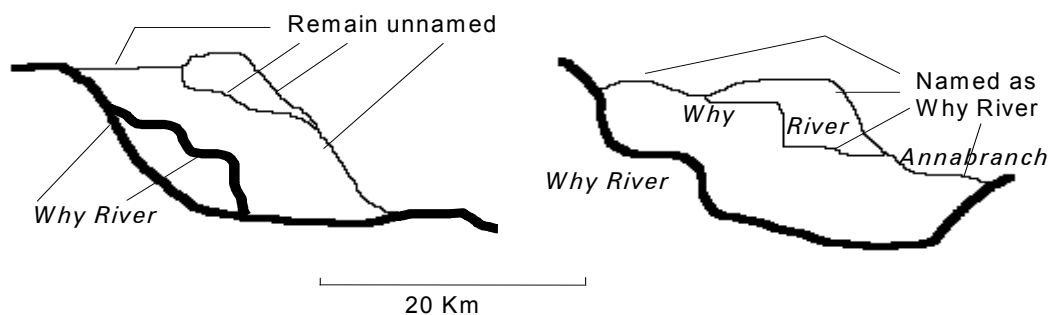


## 6.10 Watercourses

### 6.10.1 Naming Watercourses, Anabranches, and Connectors.

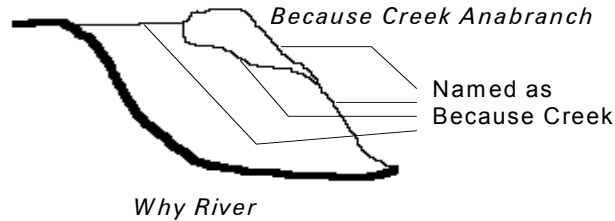
All stream names (for double & single line streams) that appear on the repromat or base data/material will be added/retained as attributes to the appropriate features (including connectors) in the database.

Where a stream forms a complete loop by leaving and re-joining a main stream (that is, an anabranch), and is less than 20 kilometres long, it will carry the name of the main stream as its name attribute. If it is more than 20 kilometres long, it will not carry the name of the main stream as its name attribute. Regardless of length, if it is labelled as "anabranch" on the latest previous edition map it will carry the name of the main stream. The following illustrations show examples of this.



In some circumstances an anabranch may be separately named and in these cases it will maintain its own name in the name attribute field.

In the case below the name field for the anabranch feature will be "BECAUSE CREEK". Once again the word "anabranch" does not appear in the name attribute field.



Where a stream leaving the main stream joins a different stream and is not separately named it will not be given a name attribute.

Refer to Section 1 chapters 3.8.3 and 3.8.4 of this specification for more details on Connector and Junction features respectively.

## 7. Submission of Data to Geoscience Australia

### 7.1 Material and Format

The following products, data and information will accompany the submission of a completed tile to Geoscience Australia.

- the tile number
- the tile name
- notification as to whether the latest previous edition map was an NTMS, JOG or State Mapping Authority product.
- the elevation range for spot heights and survey marks
- notification as to whether imagery has been used
- the date of the imagery
- version number of the Technical Specifications used
- Amendment of specification used (when using base specification Amendment = 0)
- reformat for map production
- one hard copy chemical proof of the map
- the working database
- TOPO-250K GEODATA Series 2 tile or TOPO-100K GEODATA Series 1 tile
- All source materials supplied including remote sensed imagery, revision information (ie. maps, plans, listings etc), reformat, digital revision & source data and project files
- a listing of working database coverages
- a listing of GEODATA coverages
- a printout of the TQI (tile quality information) table for each coverage (the tables will be in the relevant GEODATA coverage export files)
- a printout of the FRQ (frequency) table for each coverage (the tables will be in the relevant GEODATA coverage export files)
- a printout of the UFI range for each theme (250K only)
- a printout of the DQT (Data Quality Table) (the DQT table will also be supplied as an exported INFO file)
- a listing of sources used for attribute information and their reliability date
- a listing of sources used for feature positioning and their reliability date
- a scanning transformation RMS error report(s) for all newly scanned data
- any comments about production or revision

A Validation and Testing (VAT) submission form should be used when submitting these details. A blank VAT submission form is found in Appendix J.

The working database and the GEODATA tile will be submitted as separate ARC/INFO Export files on CD-ROM. Both file types will be located at the top level of the tape ie. no subdirectories are to be used for separation purposes when writing files to CD-ROM. These files must have double precision accuracy and coordinates must be on GDA94. GDA94 will be included as a user defined datum in all export files using the parameters set out in appendix M. All files must be uncompressed export files. The GEODATA tile will be in geographic coordinates and the working data base in MGA94. File names will take the form <tile\_id><cover\_id><coord\_id><precision\_id>.exx

where

<tile_id>	map sheet identifier eg h5612 for 250 000 s7563 for 100 000 (note 's' prefix)
<cover_id> table	A single character code identifying the cover in the following table
<coord_id>	A single character code identifying the coordinate system ie a = MGA94 I = Geographic
<precision_id> precision.	A single character code identifying the data as double precision.  d = double precision
.exx	Standard ARC/INFO Export file suffix.

Example: (working database export file naming convention)

h5612bad.e00	= Built-up area cover for 1:250 000 tile SH56-12 in double precision MGA94.
s8432bad.e00	= Built-up area cover for 1:100 000 tile s8432 in double precision MGA94.

COVER	<cover_id>
aeronautical area	z
aeronautical point	a
auxiliary contours	2
buildings point	g
built-up areas	b
cartographic features	5
contours	c
cultural area	i
drainage	d
framework	f
graticule	7
localities	l

<b>COVER</b>	<b>&lt;cover_id&gt;</b>
map boundary	8
map grid	6
marine facilities	h
morphology	m
navigation	n
offshore	o
pipelines	p
powerlines	k
rail transport	r
relief area	q
reserved areas	3
road transport	v
sand ridges	s
security areas	1
seismic lines	4
spot heights	e
survey marks	y
utilities	u
vegetation	t
vegetation miscellaneous	j
waterbodies	w
waterpoints	x

Only those coverages that need to be populated for the work unit will be supplied. Layers for which coverages are not supplied because they contain no features will be annotated 'not applicable' on the list of coverages for both the working database and the GEODATA file.

Reproamat will be 7 plate making film negatives. The negatives will be in register with one another and clearly labelled with the following information on a permanent label:

Map sheet number  
Map sheet name  
Edition number  
date of production  
PMS colour.

The 7 colours will be:

Process Black  
Process Blue  
Process Yellow  
Red, PMS 485  
Brown, PMS 471  
Green, PMS 347



Reflex Blue.

The proof will be a full colour proof made from the negatives supplied.

After the tile has passed validation and testing all tile specific source material will be returned to Geoscience Australia.

## 7.2 Impact of Specification Changes

These Technical Specifications are subject to continuous improvement. Changes made may impact on the working data base, the map and/or the GEODATA tile. Where such changes occur the changes must be implemented for work units allocated after the change comes into effect.

The version number of the specification used for production must be shown at the 'Version number of the Technical Specification' line of the relevant scale VAT Submission form (see appendix J ).

The procedure for suggesting changes or improvements to the specification is in Distribution and Suggestions for Change, page iii at the front of this specification.

## 8. Post production Validation and Testing

A brief description of the testing process is outlined in Appendix J. Appendix J also describes the tests.

### 8.1 Results of Tests and Resubmitting Failed Tiles

On completion of the VAT tests a summary report is generated. The report lists the tests that have been failed, and any other errors which, by themselves, do not cause the tile to fail. The details of each error are briefly described. When possible, the UFI of each feature in error is included. The report summarises whether the tile passes or fails.

The following table is an example of a report:

### VALIDATION AND TESTING REPORT

<b>WORK UNIT:</b>	<b>C5116 BARTON SHOAL</b>
<b>PRODUCT TYPE:</b>	GEODATA SERIES 2 & NATMAP EDITION 2
<b>DATE SUBMITTED:</b>	1 August 2004
<b>DATE COMPLETED:</b>	14 August 2004
<b>SEQUENCE NUMBER:</b>	1
<b>SUPPLIER:</b>	WDS&S LIMITED
<b>SPECIFICATION TESTED:</b>	Version 3.6
<b>AMENDMENT TESTED:</b>	0

**TEST RESULT: PASSED**

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Refer to the Geoscience Australia TOPOGRAPHIC DATA AND MAP SPECIFICATIONS, Section 3.8.2 - Results of Tests and Resubmitting Failed Tiles - for guidance on VAT testing conditions.

Producers correcting data as a result of FAILED TESTS or OTHER TEST ERRORS should make all

corrections in the WORKING DATABASE. The producers should not only correct the errors listed in the summary report but search the data, correcting similar errors.

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## **FAILED TESTS**

**NIL**

## **OTHER TEST ERRORS**

### **14. SEGMENTS LESS THAN 0.00022 DEGREES IN LENGTH**

There are short line segments in the Road Transport coverage.

### **51. POLYGON FEATURES IN THE VEGETATION COVERAGE INCORRECTLY OVERLAP OTHER POLYGON FEATURES**

Two Vegetation lines with UFI's BG12801127 and BG12801189 should not overlap Open-cut Areas.

## **ADDITIONAL COMMENTS**

A tile fails VAT when any of the tolerances for any of the tests on any of the coverages or products are exceeded. When a tile fails VAT a copy of the above report is sent to the producer. VAT staff are forbidden from editing or correcting the data. The producer will correct the data. Because the data are only sampled for many tests, when a tile fails VAT the producer will not only correct the errors listed in the summary report but search the untested parts of the data for similar errors. When they are satisfied that all errors are corrected the producer will resubmit the tile to Geoscience Australia's VAT cell. Re-submission follows the process outlined in chapter 7 Submission of Data to Geoscience Australia.

Any corrections made as a result of VAT testing must be made in the working database, and the GEODATA files and map reformat must be regenerated from that data base prior to re-submission to VAT. See section 3 chapter 2 General Information.

Resubmitted data will be fully tested again, using a different sampling area. If the tile fails again it will be returned to the producer again for correction and subsequent re-submission.

When the data and associated products pass VAT, the summary report will be sent to the producer stating that the data and associated products have passed VAT, the data will be archived and the map printed.