

Metadata specifications

Category	Element	Comment
Dataset	Title	Land Use Classification of Lower Goulburn CMA
Custodian	Custodian	Department of Primary Industries (DPI)
	Jurisdiction	Victoria
Description	Abstract	<p>This land use map has been prepared under contract for the Goulburn Broken Catchment Management Authority (GB-CMA). The classification scheme followed here was the Australia Land Use Mapping (ALUM) classification version 5 (BRS, 2001). ALUM version 5 was developed by BRS as a modification of Baxter – Russell Classification, in coordination with State agencies.</p> <p>This product is based on information from a number of sources: Corporate Geospatial Data Library (CGDL), DPI regional data sets, VGV Shire Valuation Datasets, SPC-Ardmona surveyed datasets, SPOT imagery, satellite imagery, aerial photography, tree cover and field survey information.</p>
	Search Word(s)	Land use, Goulburn-Broken Catchment, land management
	Geographic Extent Name(s)	Low rainfall region (<600mm) of Goulburn-Broken Catchment.
	OR	
	Geographic Extent Polygon(s)	Minimum latitude: 35.820 S Maximum latitude: 37.062 S Minimum longitude: 144.666 E Maximum longitude: 146.188 E
Data Currency	Beginning date	June 1999
	Ending date	Jan. 2005
Dataset Status	Progress	In Progress - Complete
	Maintenance and Update Frequency	Not known
Access	Stored Data Format	Arc/Info coverage
	Available Format	Arc/Info coverage
	Type	
Data Quality	Access Constraint	Access will be provided by DPI, GB-CMA, BRS or AFFA
	Lineage	Created from (1) CGDL layers (DPI corporate geospatial data library) <i>Topographic and cadastral data layers</i> <ul style="list-style-type: none"> • Digital cadastre 1:25,000 - VicMap Property (2004) • Transport - Roads and Rail 1:25,000 - VicMap Transport (2004) • Hydrologic features; polygon, line & point 1:25,000 - VicMap Hydrology (2004) <i>State-wide/Regional land data and mapping layers</i> <ul style="list-style-type: none"> • Public Land Management - current legal status of land 1:100,000 (2004) • Tree Cover - 1:25,000 (2004) (2) SPC-Ardmona 1:25,000 Surveyed Irrigated Horticulture Dataset (2005) (3) Valuer-General of Victoria (VGV) Shire Valuation Datasets (2004). (4) Fieldwork carried out in May 2004 (5) Aerial Photography: <ul style="list-style-type: none"> • Shepparton Irrigation Region - 1:40,000 flown from June 1999 to March 2000 • Moira Shire (North) - 1:40,000 flown 2004 • Benalla Shire - 1:40,000 flown 2000 • Mitchell Shire - 1:40,000 flown 2004 • Strathbogie Shire - 1:40,000 flown 2002 (6) SPOT 5 Imagery - 5m Captured 04/04/2004 (7) Satellite Imagery: <ul style="list-style-type: none"> • Landsat 5 ETM - 30m Captured 13/09/2003 • Landsat 5 ETM - 30m Captured 20/09/2003 • Landsat 5 ETM - 30m Captured 07/11/2003 • Landsat 5 ETM - 30m Captured 09/12/2003 • Landsat 5 ETM - 30m Captured 18/01/2004

- Landsat 5 ETM - 30m Captured 27/02/2004
 - Landsat 5 ETM - 30m Captured 09/05/2004
 - Landsat 5 ETM - 30m Captured 10/05/2004
- (8) CFA Mapbook Region 12 & 22 (December 2001)

- **Inputs and Processes - Draft Landuse Layer**

1. *Classification by Shire:*
The draft classification was first performed on each of the shires that made up the catchment. The VicMap digital cadastre of each shire was first clipped to the catchment boundary before the classification was undertaken. These clipped shires would eventually be merged to form the one whole catchment dataset.
2. *VGV Shire Valuation Dataset:*
The first step in the draft classification process was to use the Land Classification Codes (LCC) that were surveyed by the Valuers for each Shire. The Valuers assign an LCC code to each Property Number (PROPNUM) of a Shire's Vicmap Property cadastre. Using these Property Numbers, the Valuer's Landuse Dataset could then be linked to the corresponding shire's Vicmap Digital Property Cadastre. A Lookup Table was created that assigned an ALUM Classification Code to each of the 265 LCC codes. This Lookup table was then linked to the digital cadastre to provide a base landuse dataset for each shire. As the Valuer's dataset also contained other relevant information pertaining to landuse, this helped with the classification of the anomalies that were present within the LCC Codes (Eg. LCC Code 666 = Mixed Use Farming). Information regarding landuse such as the amount of land that is dryland, irrigated, horticulture, cropping or grazing may also be provided within the dataset, which could then be used to assign an ALUM code to the property. It must be noted that the quality of this information varied from shire to shire.

The product of this Valuer's information made up the base of the draft landuse dataset for each shire.

3. *Public Land Management Layer:*
The next step in the process was to classify the public land (i.e. Conservation and natural environments) within each shire. The latest 1:100,000 Public Land Management Layer from the CGDL (2004) was overlaid on the digital cadastre and an appropriate ALUM code was then assigned to each corresponding polygon.
4. *CFA Mapbook and GMW Channels Layer:*
To further refine the draft layer the CFA Mapbook was used as a source for classifications, such as in small towns, rural residential and identifying vineyards/wineries etc. The VicMap Hydrology Layer was used to classify any irrigation channels/drains within the digital cadastres.

- **Inputs and Processes - Final Landuse Layer**

1. *Refinement of Draft Landuse Layer:*
Building upon the Draft Landuse layer, cadastre parcels that remained unclassified or incorrectly classified in the intensive used areas (eg. Towns) were classified based upon aerial photography and SPOT imagery.
2. *Merging Datasets:*
These refined landuse datasets of each shire were then merged together to produce the overall vector coverage of the catchment extent.
3. *Classification of Dryland Agriculture:*

The software package Ecognition, in conjunction with the satellite imagery and fieldwork was used to produce a raster layer that identified dryland cropping and grazing land within the Lower Goulburn. This process was then checked in the field to verify results and fix anomalies.

4. *Classification of Irrigated Agriculture:*
Further remote sensing methodology was applied to identify the surface temperature and NDVI of an irrigation season of satellite imagery. From this, an irrigated land cover raster dataset was produced, which identified the seasonal, summer and perennial irrigation conducted within the catchment. This land cover layer was then further refined to classify irrigated grazing and cropping parcels of land.
5. *Classification of Irrigated Horticulture:*
After obtaining the SPC-Ardmona horticulture dataset, ALUM codes were assigned to the commodity fruit types. Other irrigated horticulture that is not utilised by the company (derived from the Valuer General's dataset) was identified. A raster layer was then produced using the combination of these 2 vector datasets.
6. *Implementation of Raster Layers:*
The refined vector landuse layer was converted to a raster layer so that the dryland agriculture, irrigated agriculture, irrigated horticulture and tree cover information could all be incorporated. This resulting raster layer was further refined to eliminate gaps, inconsistencies and the road network.

Then by utilising a methodology applied by Queensland DPI, the raster layer was converted back into a vector coverage format.

Positional Accuracy 25 – 100 m
Attribute Accuracy The accuracy of the land use attributes has been determined through a validation procedure. Validation was carried out for each shire, shortly after the completion of the land use data layer. 50 random sample sites were generated for every 245,000Ha. The number of sample sites allocated to each land use was proportional to the area of each land use class in each validation area. Land uses at sample sites were recorded by independent observers. An error matrix was constructed for each validation area, comparing mapped land use to independently observed land use classes. The validation results produce an attribute accuracy of ???.?%. **(Validation is still in progress)**

- Logical Consistency
- **Data Collation**
Integration of existing datasets containing information relating to landuse including remotely sensed Landsat 5 ETM, aerial photography, SPOT imagery, DPI/DSE Corporate datasets including cadastre, public land, infrastructure and tree cover, CFA Mapbook, VGV Shire Valuation Datasets and SPC-Ardmona dataset.
 - **Interpretation**
This stage involved interpreting landuse, by assigning appropriate landuse codes to the source datasets and preparing draft landuse maps for verification and field checking.
 - **Verification**
Field verification of draft landuse maps included the annotation of field maps on the basis of expert advice and field checking. The primary focus of this activity was to capture agricultural landuse and incorporated extensive windscreen surveys, utilising mobile mapping technology and local knowledge of DPI/DSE and CMA staff.

- **Final Editing**

Final editing was carried out using ArcGIS, ERDAS Imagine and Ecognition software (remote sensing interpretation) and incorporating field survey datasets, aerial photographic interpretation, external datasets and ancillary datasets prepared in Step 1.

	Completeness	Land Use has been mapped across the full extent of the study area down to a minimum secondary ALUM Version 5 level.
Contact Information	Contact Organisation	Department of Primary Industries, PIRVic - Tatura Centre
	Contact Position	Spatial Sciences Group
	Mail Address 1	Private Bag 1
	Mail Address 2	Ferguson Rd
	Suburb or Place or Locality	Tatura
	State or Locality 2	Victoria
	Country	Australia
	Postcode	3616
	Telephone	5833 5293
	Facsimile	5833 5377
	Electronic Mail Address	GIS.Tatura@dpi.vic.gov.au
Metadata Date Additional Metadata Additional Information	Metadata Date	26 th October 2005
	Additional Metadata	DPI/DSE CGDL Catalogue.
	Additional Information	Key Reference Bureau of Rural Sciences (BRS), 2002, <i>Land Use Mapping at Catchment Scale: Principles, Procedures and Definitions</i> , Edition 2, February 2002, BRS Document, Canberra.
File Transfer Details	Files name(s) and size(s)	lg_lum94geo: 18 MB
	Number of Records	lg_lum94geo: 25,527
	File Format	Arc/Info
	Field Name Definitions	Main item: lu_code, lu_description, source_scale, source_date, source_desc, luc_date
		Look-up Tables: multiple_uses.lut, working_lucode_v5, source_lut
		Reliability definitions (source.lut): 1 = Field Mapping/Local Knowledge 2 = Ancillary Dataset 3 = Aerial Photography & VG Valuation Dataset 4 = SPOT imagery 5 = Landsat 5 ETM/TM 6 = Other
		Fields Names
	Update	Full or partial
	Date of Creation	October 2005