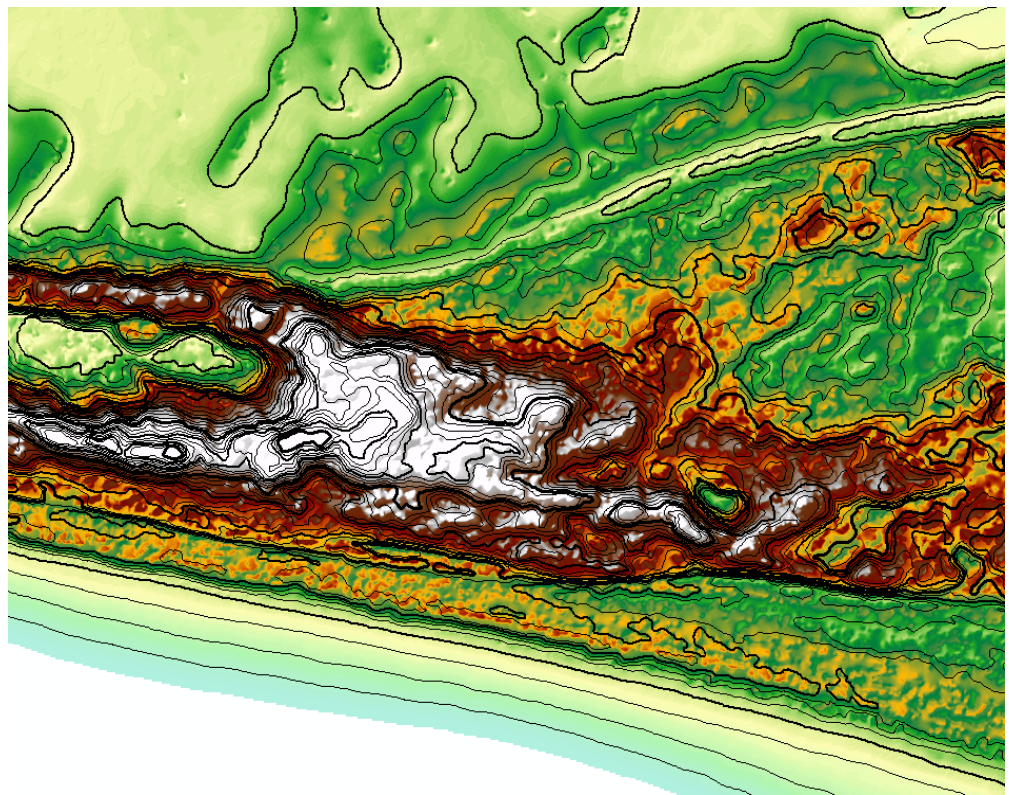


# PRODUCT DESCRIPTION

## VICMAP ELEVATION *Multi-Res DEM & Contours*



### **Disclaimer**

Information Services Branch does not warrant that this Product Description and the data are free from errors or omissions. Also, Information Services Branch shall not be in any way liable for any loss, damage or injury suffered by the licensed user of the data of this Product Description or any other person or organisation consequent upon or incidental to the existence of errors or omissions in the data or this Product Description.

**Information Services Branch**

**Department of Sustainability and Environment**

**Document version 1.0 November 2012**





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# 1. PRODUCT DESCRIPTION

## CUSTODIAN

Information Services Branch  
Department of Sustainability and Environment

## JURISDICTION

State of Victoria

## CONTACT INFORMATION

### Custodian

Information Services Branch  
Department of Sustainability and Environment  
Level 13, 570 Bourke Street  
MELBOURNE Victoria 3000  
Australia

PO Box 500  
East Melbourne 3002  
Victoria Australia

### General Information

This Vicmap Product is listed at [www.dse.vic.gov.au/vicmap](http://www.dse.vic.gov.au/vicmap)  
DSE Customer Service Centre Ph 136 186

### Supply Enquiries

This Vicmap Product is available through our Data Service Providers, listed at  
[www.dse.vic.gov.au/vicmapdsp](http://www.dse.vic.gov.au/vicmapdsp)

### E-mail Enquiries

[vicmap.info@dse.vic.gov.au](mailto:vicmap.info@dse.vic.gov.au)

### Internet Site for Information

<http://www.dse.vic.gov.au/spatial>  
<http://www.dse.vic.gov.au/vicmap>  
<http://www.dse.vic.gov.au/maps-imagery-data>

## DESCRIPTION

### Geographic Extent

Vicmap Elevation - Multi-Res DEM & Contours geographic extent covers natural relief features for inland Victoria and Greater Melbourne. It does not include coastal elevation under 10m in height. For coastal products please refer to Vicmap Elevation - Coastal 1m DEM and 0.5m Contours.

### Content

Vicmap Elevation contains several datasets:

- 10-20 Contours & Relief represents Victoria's elevations in the form of contours, spot heights and surface features including cliffs, embankments and rock outcrops among others. The 10-20 metre contours and spot heights are the source datasets used to create Vicmap DTM 20m and DTM 10m
- 1-5 Contours & Relief is an elevation dataset sourced from Melbourne Metropolitan Board of Works surveys conducted in from 1974 until the 1980s. This dataset enables a more detailed contour overlay of the Melbourne metropolitan area
- DTM 20m & DTM 10m digital terrain model (DTM) representing Victoria's terrain surface at 20 & 10m grid resolution. The DTM20m is a statewide, with DTM10m at 70% coverage)
- Coastal 1m DEM & 0.5m Contours provides an accurate representation of natural relief features along the coast of Victoria. It is comprised of: 0.5m Contours and 1m DEM The extent of coverage across the coastal zone is generally from the waterline until the terrain reaches approximately 10m in height. In steep coastal areas the dataset extends inland from the waterline for a distance of approximately 500m
- Multi-Res DEM & Contours provides an accurate representation of **natural relief features for inland Victoria and Greater Melbourne**. It contains highly accurate DEMs where the pixel size is less than 5m, with all available equivalent Contours. The extent of coverage includes major flood plains and Greater Melbourne.

This product description details the Multi-Res DEM & Contours product only. For more information on the other elevation products please see their respective product descriptions and metadata entries.

It is used for a variety of applications including planning, hazard mitigation and environmental modelling.

The Vicmap Elevation - Multi-Res DEM & Contours dataset is comprised of:

- DEMs which have a spatial resolution (pixel size) of 5m or less on a regular grid with a vertical accuracy of between 10cm to 50cm
- Contours which represents Victoria's topography/elevations in the form of contour lines with intervals between 0.5 to 2.5m. This product may not exist over all areas where the DEM exists.

### Structure

The DEM is a raster dataset with a known pixel size where each pixel has a value representing elevation. The DEM's are stored in two file formats; ASCII XYZ (.xyz) or ESRI ASCII Grid (.asc).

---

The Contours consists of vector data lines/arcs with a known interval, and attributed with an elevation height. The contours are stored in two formats- ESRI 3D Shapefile or Mapinfo Tab.

#### Features

- Captured through the Coordinated Imagery Program (CIP) 2007 - 2012, the DEM & Contours have been constructed from project based high-resolution LIDAR data gathered specifically for this product.
- The vertical accuracy for the DEM ranges from +/- 10cm (1m pixel) to +/- 50cm (5m pixel) at 1 sigma (68% Conf. Level) in bare ground
- The DEM & Contours are available only in their native projection of GDA 94, MGA Zone 54 or Zone 55
- The DEM & Contours are available only in their native file formats as stated in this document
- The DEM & Contours are available only in tiles for ease of use and distribution but are seamless between tiles. However it may not be seamless between individual projects or surveys
- Vicmap Elevation - Multi-Res DEM & Contours have undergone basic quality assurance procedures
- The irregular LiDAR points used to derive this product are not currently available.

## Reference Systems

The datum used in the construction and maintenance of Vicmap data is the Geocentric Datum of Australia. Data is held in MGA Zone 54 (eastings/northings) or MGA Zone 55 (eastings/northings) computed in terms of the GDA at 01 January 1994 (GDA94).

The ellipsoid heights have been corrected to Australian Height Datum (AHD) using AUSGeoid98 with local corrections as required.

## Related Datasets

These Vicmap Product are part of the State of Victoria's framework information. VSIS framework information datasets have been delivered into the following Vicmap Products, identified below:

- Vicmap Address
- Vicmap Admin
- Vicmap API
- Vicmap Crown Land Tenure
- Vicmap Elevation
- Vicmap Features of Interest
- Vicmap Hydro
- Vicmap Imagery- Aerial Photography
- Vicmap Imagery- Satellite
- Vicmap Index
- Vicmap Lite
- Vicmap Planning
- Vicmap Position
- Vicmap Property
- Vicmap Topographic
- Vicmap Transport
- Vicmap Vegetation.

## PRODUCTION AND/OR ACQUISITION METHODS

### SOURCE

The Vicmap Elevation - Multi-Res DEM & Contours was derived from airborne LIDAR specifically acquired for this dataset. It was captured over a number of projects. All the survey data has been prepared and validated for inclusion in the DEM. This includes identifying gross errors in height values, removing stepping within each of the project DEMs and ensuring all contours (where created) are correctly edge matched.

The irregular LiDAR points used to derive this product are not currently available.

This data has been acquired through the Coordinated Imagery Program.

### GENERALISATIONS WITHIN THE DATA

Data interpolation has been used to generate the DEM & Contours. More interpolation is required in areas underneath vegetation and infrastructure. The interpolation distance does not extend over areas of water or significant gaps in the dataset.

Where they exist, Contours have been subjected to cartographic generalisation to ensure cartographic clarity. This is achieved by minimising the number of vertices used to depict the contour while still preserving the natural look of the line.

### DATA CREATION DATES

The source data used to generate DEM & Contours was acquired between September 2007 and April 2012.

### MAINTENANCE AND UPDATE FREQUENCY

Currently there is no ongoing program to routinely maintain or update Vicmap Elevation - Multi-Res DEM & Contours.

### STANDARDS AND SPECIFICATIONS

Conformity is sought with existing and draft standards and specifications. For example:

- Relevant Australian (AS/NZS) Standards
- ISO 19100 series as they become adapted by Standards Australia and the user community
- The outputs of working groups under the auspices of ICSM, ANZLIC and other industry organisations.

Where these standards have been found to be deficient or non-existent to Information Services Branch requirements, suitable modifications will have been made.

### LEGISLATIVE REQUIREMENTS

- This dataset has not been constructed as the requirement of any Commonwealth or State legislation.
- The use and distribution of Vicmap Elevation must comply with the *Information Privacy Act 2000 (Victoria)* and the *Privacy Act 1988 (Commonwealth)*.

## CURRENT DATA DEVELOPMENT

The geographical extent of this product will be increased as projects become available on an ad hoc basis.

## FUTURE PLANS

Future data may be incorporated into Vicmap Elevation - Multi-Res DEM & Contours to further expand the coverage. This will only occur after consultation with the Coordinated Imagery Program partners or data custodian.

## DATA SCHEMA

### Data Structure

#### Digital Elevation Model (DEM)

The **DEM** is a raster which is composed of an array (rows and columns) of square pixels each representing an equal area defined by the separation of the points. The pixel size varies and is dependant on the vertical accuracy.

The DEM is available in two formats-

1. ASCII XYZ (.xyz) where one line contains horizontal and height information for each pixel. When converted into a raster format the value of the pixel represents the average height across the individual pixel. The combination of these pixels produces a surface representing elevation and does not require interpolation. Only cells with valid heights are listed.

Example of 1m DEM in ASCII XYZ:

```
403857.5,5701999.5,-0.969
403858.5,5701999.5,-0.972
403859.5,5701999.5,-0.97
403860.5,5701999.5,-0.982
403861.5,5701999.5,-0.99
403862.5,5701999.5,-0.991
403863.5,5701999.5,-0.989
403864.5,5701999.5,-0.989
403865.5,5701999.5,-0.994
403866.5,5701999.5,-0.999
403867.5,5701999.5,-0.997
```

2. A Floating ESRI ASCII Grid (.asc). The ASCII file begins with header information which defines the properties of the grid followed by pixel values listed in row-major order.

ESRI ASCII Grid Format:

```
<ncols xxx>
<nrows xxx>
<xllcorner xxx | xllcorner xxx>
<yllcorner xxx | yllcorner xxx>
<cellsize xxx>
{nodata_value xxx}
row 1
row 2
row 3
row n
```

Example of 1m DEM in ESRI ASCII Grid Format:

```
ncols 4
nrows 5
xllcorner 395806.000
yllcorner 5795995.000
cellsize 1.000
nodata_value -9999
172.06 172.48 172.75 173.11
185.26 185.66 186.13 186.49
175.86 176.18 176.69 177.00
-9999 -9999 -9999 -9999 -
```



---

## Contours

The **Contours** is a vector spatial dataset consisting of a series of lines. Each line represents an imaginary line joining all places of equal height above a fixed datum plane. These lines are spaced at predefined intervals in height.

The contours are available in ESRI 3D Shapefile and Mapinfo TAB format.

## Naming Convention

Both the DEM and Contours are only available the formats listed above and are delivered as tiles using a standard naming convention.

Example of Standard naming Convention:

Name : **e604n5760\_flood-s1\_dem\_1m\_mga54.xyz**  
Where : **e604n5760** The tile index number  
**flood-s1** The Project Name, in this case Flood Stage 1  
**dem** The data type ('DEM' or 'contours')  
**1m** The spatial resolution (pixel size) or contour interval  
**mga54** The projection of the data  
**xyz** The data format

The tile shown in the file name represents the individual tile origin. Therefore the e604n5760 tile has a lower left easting origin of 604000, and a lower left northing origin of 5760000.

It is not guaranteed that all tiles have complete data coverage. The tiling index used varies between different Projects.

## **Spatial Data Integrity**

Vicmap Elevation - Multi-Res DEM & Contours are correct when used in its native projection and formats.

Reprojecting, changing format or resampling by the user may cause changes in the DEM and therefore the DEM may not remain as accurate as stated in this document. The best solution is to reproject other vector datasets to match the DEM and reproject the end result back to the required projection.

As this product has been derived from LiDAR, additional processing has been undertaken to model the ground surface. The LiDAR laser strikes have been classified into ground using a series of algorithms tailored for major terrain and vegetation combinations. It is accepted that there will be isolated pockets of dissimilar terrain and vegetation which do not fit within the algorithm. This data set has undergone a quality assurance assessment and it has been determined that the algorithms have successfully removed the majority of vegetation and buildings required to produce data at the vertical accuracy specified in the metadata for each project area.

## DATA DICTIONARY

68% Accuracy	See Root Mean Square Error.
ASCII Data	Data which is stored in an ASCII or Text format where each line represents a record. Usually will have a set of coordinates to accompany each line.
Bilinear Interpolation	A resampling method that uses a weighted average of the four nearest cells to determine a new cell value. This will smooth the resulting DEM and is used for resampling continuous datasets.
Date of Acquisition	The date on which the elevation data was captured
Image, Grid, Raster	A dataset composed of rows and columns of data cells
Nearest Neighbour	A technique for resampling raster data in which the value of each cell in an output raster is calculated using the value of the nearest cell in an input raster. This technique is often used for the resampling of thematic raster data.
Resampling Kernel	Mathematical filtering model or pixel array used to modify the values of a DEM eg. Bilinear Interpolation
Resolution	A measure of the amount of detail that can be seen in a DEM.
Root Mean Square Error (RMSE)	Indicates how accurate a dataset is both horizontally and vertically by measuring the difference between the outputs to an input (base). The lower the error the more accurate the data. This is sometimes known as accuracy at 68% Confidence Level.
Source Data	Dataset representing the original elevation files. These may be vector, raster or ASCII files.
Vector Data	Spatial data in which the location of features is defined in the terms of points, lines and polygons (vector).

The data dictionary applicable to this Vicmap Products model is also located on the Victorian Governments website [www.dse.vic.gov.au/vicmap](http://www.dse.vic.gov.au/vicmap).

## BUSINESS REQUIREMENTS

### Usage or Availability Restrictions

Product/s will be provided under the terms and conditions of an ongoing licence.

### Licence Restrictions / Conditions

Vicmap Elevation - Multi-Res DEM & Contours will be supplied under licence with a once off licence fee determined by the coverage. Details are recorded in a Schedule appended to the Licence. The Licensee may use the Data only for internal business use. There is no transfer of title or ownership in the Data, and the copyright and intellectual property in the Data remains the property of the State.

Vicmap products are protected by copyright under the Copyright Act 1968 (Commonwealth). The dataset is appropriately labelled with copyright information and the removal or degradation of this labelling is an offence under the Copyright Amendment (Digital Agenda) Act 2000 (Commonwealth).

### Access Constraints

All digital data issued to customers is subject to licence conditions. A copy of the terms and conditions of the Licence can be viewed at [www.dse.vic.gov.au/vicmap](http://www.dse.vic.gov.au/vicmap). Select *Pricing and Licencing* under *About Vicmap*.

In general, the User Licence allows licensees to use the data within their own business but does not permit data to be provided to third parties. There is no transfer of intellectual property in the data to customers.

## Exclusion of Liability

Information Services Branch (ISB) make every effort to provide and maintain accurate, complete, useable and timely digital land information. However, some product versions may be preliminary in nature and presented prior to final review and approval by Manager Spatial Services. The data and information are provided with the understanding that they are not guaranteed to be correct or complete. Users are cautioned to consider carefully the provisional nature of the data before using it for decisions that concern personal or public safety or the conduct of business that involves substantial monetary or operational consequences. Conclusions drawn from or actions undertaken on the basis of this data are the sole responsibility of the user.

## Privacy Statement

Where any use of this Product is linked or related to other data causing the identification of an individual the user must comply with appropriate state or federal legislation.

## Supply Format

Vicmap Elevation - Multi-Res DEM & Contours data will be supplied as tiles in the following formats:

- DEM – XYZ ASCII (comma delimited), Floating ESRI ASCII Grid
- Contours – ESRI shapefile or MapInfo TAB.

The tiling index used varies between different projects.

## Media Format

Media format will be by negotiation with your supplier. Eg. DVD or Hard Disk.

## Projections

Both the DEM & Contours will be supplied in MGA Zones ONLY projection:

- Native projection MGA Zone 54 or Zone 55
  - Geocentric Datum of Australia – 1994 Adjustment (GDA94)
  - Eastings and Northing

## AREAS OF APPLICATION

- Catchment Hydrological Modelling
- Terrain Visualisation
- Erosion Risk
- Strategic planning
- Project planning
- Reference framework
- Research systems
- Geocoding
- Asset management
- Valuations analysis
- Property analysis
- Ortho-rectification of imagery.

Note: Many applications will require the input of user specific data, eg. Watercourse lines, planning polygons, land use information, etc.

## 2A. QUALITY OF VICMAP ELEVATION - DEM MULTI RESOLUTION & CONTOURS

### LINEAGE / HISTORY

The Vicmap Elevation - Multi-Res DEM & Contours product has been derived from LiDAR acquired between September 2007 and April 2012. Additional processing is undertaken to model the ground surface. To achieve this the LiDAR laser strikes have been classified into ground and non-ground using a series of algorithms tailored for major terrain and vegetation combinations across entire project areas. The quality of the classification is further improved by manual checking and editing of the ground LiDAR data using intensity imagery and orthophotography as a reference. It is accepted that there will be isolated pockets of dissimilar terrain and vegetation which do not fit within the algorithm. This data set has undergone a quality assurance assessment and it has been determined that the algorithms have successfully removed the majority of vegetation and infrastructure required to produce data at the vertical accuracy specified in the metadata for each project area.

To generate the DEM, the classified ground points are interpolated into a TIN then converted regularly spaced grids with a known pixel size, before being output to ASCII XYZ and ESRI Ascii formats.

In the Greater Melbourne region, multiple projects have been combined. This merging was undertaken by ISB by creating a cut line and using a weighted distance feathering technique to produce a smooth transition between the two projects.

The generation of the Contours using a defined interval are created by referencing the all ground LiDAR strikes. A number of macros are applied to the all ground strikes before contour generation. These macros thin and smooth the LiDAR ground strikes. Contours are then generated automatically from the smoothed LiDAR strikes. Contours are derived by interpolation of a surface model generated from LiDAR ground points using process parameters optimized to suit the terrain. The contours are checked using any available imagery as a backdrop and line work cleaned where required. Final macros are applied to the contour lines that check for dangles, loops, spikes etc.

The creation of the DEM and related contours was carried out by the various aerial survey companies that were commissioned to carry out the initial acquisition through the Coordinated Imagery Program.

### DATA QUALITY STATEMENT

#### Fitness for Purpose

- The quality of Vicmap Elevation - Multi-Res DEM & Contours are compliant with its technical specification for the original raw data capture and creation of the derived products (contours, DEM) as well as being dependant upon scale limitations brought about by topography and visual impedance due to vegetations cover and man-made cover
- The DEM is correct when used in its native projection. Reprojecting, changing format or resampling may cause changes in the DEM and therefore it may not remain as accurate as stated in this document. The best option is to reproject other vector datasets to the relevant zonal projection and reproject the end result back to required projection
- Vicmap Elevation - Multi-Res DEM & Contours have undergone basic QA procedures aimed at testing the product against its technical specifications. Tests include a series of manual, visual and automated procedures

- The Multi-Res DEM & Contours are stored in tiles for easy distribution and not all tiles have complete data coverage within the tile extent. The tile index varies between projects
- As the Vicmap Elevation - Multi-Res DEM & Contours has been created from separate aerial surveys or projects, it is not guaranteed there will be seamless join or height displacement where they overlap.

## Non Standard Validation Exercises Undertaken to Test Conformity and Accuracy

Vicmap Elevation - Multi-Res DEM & Contours has undergone basic level quality assurance (QA) to ensure with reasonable confidence that the product meets the acquisition specifications.

A basic level of QA aimed at identifying any obvious or extensive problems present in the data product has been undertaken to assess the data's fitness-for-purpose, identify invalid gaps, edge matching between tiles, checking vector topology and attributes and most importantly, verifying the vertical accuracy. These are undertaken by using both automated programs and visual checks. Such QA checks are undertaken on all CIP elevation data acquisitions.

## Proposed / Required Quality Assurance Applications

ISB is continually improving and extending the quality and content of the base. ISB will continue to undertake and improve its quality assurance processes to ensure that they conform to Australian and International Standards, and continue to improve the quality of the data within the Products.

The following procedures are undertaken as normal update/maintenance routines, to ensure conformity of the data to Specification:

- Virus check software for digitally supplied input data
- Automated quality routines, reflecting business rules for data population, to ensure data consistency.

## SPATIAL ACCURACY

### Positional Accuracy

The positional (horizontal) accuracy of spatial data is a statistical estimate of the degree to which planimetric coordinates and elevations of features agree with their real-world values.

The minimum planimetric accuracy attainable will be the sum of errors from three sources:

1. The positional accuracy of source materia
2. Errors due to the conversion process
3. Errors due to the manipulation process.

The positional accuracy of the 1m DEM is expressed as Root Mean Square Error (RMSE) (68% confidence). In this case it is  $\pm 35\text{cm}$ . For the other Projects please refer to the available spatial metadata.

The positional accuracy of 0.5m Contours inherits the accuracy of the source material and therefore is  $\pm 35\text{cm}$ .

## ATTRIBUTE ACCURACY / RELIABILITY

The vertical accuracy for the 1m DEM varies between projects. For the other Projects please refer to the available spatial metadata.

## FEATURE AND ATTRIBUTE ACCURACY (THEMATIC ACCURACY)

The vertical accuracy associated with the 1m DEM is  $\pm 0.10\text{m}$  @ RMSE (68% confidence).  
Reprojecting, changing format of resampling causes changes to the height values in the DEM.

The vertical accuracy associated with the contours is such that 95% of "well defined" points along the contour line have a value that must not differ to the "true" ground surface by any more than half of the contour interval.

## COMPLETENESS

Vicmap Elevation - Multi-Res DEM & Contours is complete for each project area. It only includes elevation data to support the creation of the DEM and associated contours and excludes areas where significant surface water is present.

Although it is stored in tiles, the data has been designed to be joined to produce a seamless dataset within projects, however often software capabilities and file size limits often prevent this from occurring.

## LOGICAL CONSISTENCY

Vicmap Elevation - Multi-Res DEM & Contours values across tile boundaries have been constructed to ensure a smooth consistent elevation is achieved.

## 2B. MINIMUM QUALITY STANDARD

### PROPOSED / REQUIRED QUALITY ASSURANCE APPLICATIONS

Once prepared and passed all required quality assurance checks, no further validation procedures are required.

## 3. METADATA

Metadata at Page 0, and Page 1 levels has been created using a compliant metadata entry tool, and has been added Datasearch Victoria. Datasearch Victoria can be viewed at [www.dse.vic.gov.au/datasearch](http://www.dse.vic.gov.au/datasearch) or via the Australian Spatial Data Directory site at [www.asdd.gov.au/net/asdd/](http://www.asdd.gov.au/net/asdd/).

The metadata complies with the *Geospatial Information Metadata Guidelines for Victoria* – part of the Victorian Geospatial Information Strategy 2000-2003.

## 4. PRICING

Under the Government pricing policy, data is supplied to customers in this case as on an ongoing right to use basis for a one off licence fee. The pricing of the data is dependent on the volume of data required, measured by geographical area and intensity of use of the data, measured by the number of user-seats/terminals upon which the data may be simultaneously used/viewed. The Government pricing policy also contains provision for subsidies and credits:

- Credits may be granted on licence fees in recognition for substantive contributions to the dataset by licensed users
- Subsidies may be applied to meet community or social objectives determined by government or arising from agreed outcomes.

## 5. ACCESS

To facilitate more widespread and ready access, Vicmap products are distributed by Data Service Providers, with Department of Sustainability and Environment (DSE) taking a wholesale role. The objective of this approach is to promote industry development, allowing DSE to focus on production and development while DSPs focus on marketing and sales. There is a small group of users who obtain Vicmap products directly from DSE, generally as a result of an existing contractual arrangement or agreement. Multiple DSPs have been engaged to provide a competitive market. DSP's are listed on [www.dse.vic.gov.au/vicmapdsp](http://www.dse.vic.gov.au/vicmapdsp)

All digital data issued to customers is subject to licence conditions. A copy of the terms and conditions of the Licence can be viewed at [www.dse.vic.gov.au/vicmap](http://www.dse.vic.gov.au/vicmap). Select *Pricing and Licencing* under *About Vicmap*.

## APPENDIX A- REFERENCE TABLES

### CONTOURS (LINE)

#### Summary information

<b>Description</b>	Artificial lines representing points of equal altitude on the earth's surface using a defined vertical interval.
<b>Entity</b>	<b>Contour</b>
<b>Included terms</b>	Contour, height, altitude, elevation
<b>Entity Type</b>	Spatial
<b>ICSM Conformance</b>	New entity

#### TABLE DESCRIPTION:

COLUMN NAME	DATA TYPE	FIELD SIZE	NULL	COLUMN DESCRIPTION
ALTITUDE	NUMBER	(8,1)	N	Height above sea level [Australian Height Datum]
FEATURE_TY	STRING	30	N	Feature Type

#### FEATURE CODES RANGES:

FEATURE_TY	Description
<b>contour</b>	An artificial line joining points of equal altitude on the earth's surface of a known height.
<b>contour_index</b>	Every 5 <sup>th</sup> Contour

#### LOOK UP TABLE CODELISTS APPLICABLE: NONE

---

## GLOSSARY

### Attribute

*A particular characteristic or property of an entity. Attributes can be spatial (or locational) and aspatial (or non-locational).*

### Attribute Object

*The addition of non-locational information about a feature instance. These data identify the feature class and the aspatial attributes of a specific instance of the feature type. The attribute object is composed of one or more attributes.*

### Attribute Value

*The value assigned to an attribute for a specific feature instance.*

### Coordinated Imagery Program

*The Victorian Coordinated Imagery Program's (CIP) mission is to develop an efficient and effective service and cost sharing model for the acquisition of spatial imagery and elevation products for the State of Victoria and the Program Purchase Partners.*

*The CIP coordinates the purchase of aerial imagery and elevation products across Victoria for a range of government and non-government organisations. It is designed to facilitate your imagery needs, reduce costs, avoid duplication and to contract manage your project. It streamlines the acquisition, storage and access to aerial images and elevation products for you.*

*Further information at <http://www.dse.vic.gov.au/cip>*

### Data

*The base level of information stored in electronic databases. Generally, "raw" data has not been value-added.*

### DEM or DTM

*A Digital Elevation Model (DEM) or Digital Terrain Model (DTM) is a representation of continuous elevation values over a topographic surface by a regular array of z-values, which represents the earth's terrain.*

### Entity

*A real world phenomenon not divided into phenomena of the same kind.*

### Feature instance

*An abstraction of an entity. The description of a feature instance encompasses only selected properties of that entity. Feature instances can also be referred to as features.*

### Feature Type

*A class of real world phenomena with common properties.*

*A group of feature instances defined by a set of rules and having common attributes and relationships that are properties of the corresponding real world phenomena. Within the Oracle tables that comprise Vicmap Digital Property, classes may refer to "link" tables, which establish direct relationships between the point and/or line and/or polygon structures that may be used as spatial objects.*

*The feature structure of the feature based data model can be summarised as:*

*feature instance = [spatial object + attribute object]*

### GDA94

*The Geocentric Datum of Australia 1994 is based on the Australian Fiducial Network (AFN) which fits into a global geodetic framework. The AFN comprises eight highly accurate survey marks across Australia each with a permanently tracking Global Positioning System (GPS) receiver. It has been established by AUSISB for geodetic surveying and scientific purposes.*



## **GIS**

*Geographic Information System. A spatial database which is manipulated with a set of spatial operators or commands.*

*will be carried as part of the spatial object whenever the transfer formats support them.*

## **ICSM**

*Intergovernmental Committee on Survey and Mapping. ICSM's role is to provide leadership through coordination and cooperation in surveying, mapping and charting. ICSM's core function is to coordinate and promote the development and maintenance of key national spatial data including geodetic, topographic, cadastral, street addressing, tides & sea level, and geographical names*

## **Information Services Branch**

*A body within Department of Sustainability & Environment, responsible for spatial policy for the State and for providing and maintaining a statewide spatial infrastructure, including the Victorian Geodetic Framework and Vicmap Digital.*

## **IUF : “Incremental Update Format”**

*A system whereby maintenance updates are provided as change only, add/modify/delete incremental update files, between nominated dates/times.*

## **Layer**

*Subdivision of a theme into one or more layers of data on the basis of topological relationships. Linear networks, polygons and point/line features are placed in separate layers.*

## **Metadata**

*Metadata, defined as ‘information about information’, provides fundamental information management tools at three levels:*

- *Discovery: enabling users to locate and evaluate information.*
- *Management: enabling custodians to better manage their spatial information.*
- *Utilisation: enabling users to access and manipulate information by means of automated / distributed systems.*

## **MGA94**

*Map Grid Australia. A cartesian coordinate system based on the Universal Transverse Mercator projection on the Geocentric Datum of Australia 1994. The unit of measure is the metre.*

## **Persistent Feature identifier (PFI)**

*Unique Feature Identification (each feature is uniquely identified for change management) is managed through the use of two identifier attributes; namely the Persistent Feature identifier (PFI) and the Unique Feature Identifier (UFI).*

*See also Unique Feature Identifier(UFI)*

## **Polygon**

*A set of chains used to define the boundaries of an area. There is one external polygon and there may be one or more internal, non-nested polygons.*

## **Positional Accuracy**

*Statistical estimate of the degree to which planimetric coordinates and elevations of features agree with their real world values.*

## **Spatial Object**

*The addition of all of the locational attributes of the feature instance and may comprise geometrical objects such as points, lines and polygons. Spatial objects carry a spatial address that consists of one*

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or more couplets (x, y) or triplets (x, y, z) of co-ordinates. In the feature based data model topological relationships

## Tile

A discrete spatial unit that defines a specific area of the database, eg a 1:25000 map sheet area. Tiles are normally unique areas which when combined will form the total area covered by the database.

## Unique Feature identifier (UFI)

Unique Feature Identification (each feature is uniquely identified for change management) is managed through the use of two identifier attributes; namely the Persistent Feature identifier (PFI) and the Unique Feature Identifier (UFI).

## Theme

The information contained in the map production material can be divided into themes which contain logically-related geographic information, each theme capable of being used as a data set in its own right. Vicmap Transport contains a single theme: "Roads"

## Unique Feature identifier (UFI)

Unique Feature Identification (each feature is uniquely identified for change management) is managed through the use of two identifier attributes; namely the Persistent Feature identifier (PFI) and the Unique Feature Identifier (UFI).

See also Persistent Feature Identifier (PFI)

## VSIS 2011-14

In 2008, the Victorian Spatial Council's Victorian Spatial Information Strategy 2008-10<sup>1</sup> introduced the strategic goal of creating a 'spatially enabled Victoria'.

The role of the Strategy is to create the frameworks that enable all sectors of the spatial information community<sup>2</sup> to be highly engaged and their efforts integrated towards delivering a spatially enabled Victoria.

Development of this 2011-14 Strategy has allowed the Council to review the landscape it painted in 2008 and set out the requirements for continuing to respond to the challenges associated with meeting this goal.

VSIS 2011-2014 incorporates four integrated strategic directions:

- Creating a framework in which the use of spatial information can flourish.
- Adopting an inclusive approach to the management of spatial information
- Developing the spatial information community through collaboration and partnerships
- Maintaining the foundations for spatial information management.

Further information <http://victorianspatialcouncil.org/>

## Vicmap

Vicmap is a set of spatially related data products made up from individual datasets. They are the underlying foundation to Victoria's primary mapping and geographic information systems.

Vicmap products are produced and managed by Information Services Branch, Department of Sustainability and Environment. Further Information- [www.dse.vic.gov.au/lvicmap](http://www.dse.vic.gov.au/lvicmap)

## WGS 84

World Geodetic System 1984. A geocentric datum used for the determination of geographic coordinates.