



DOCUMENT  
**GSM-G-CPL.026**

DOCUMENT TITLE  
**NAVIGATION 1**

## **CHAPTER 1 – CHARTS AND PUBLICATIONS**

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## CHARTS AND PUBLICATIONS

### 1.1 Maps and Charts - Introduction

Three principal types of aeronautical charts are currently used to satisfy the requirements for visual (VFR) navigation:

- Visual Terminal Chart (VTC)
- Visual Navigation Chart (VNC)
- World Aeronautical Chart, (WAC).

The production of charts is organised on a world-wide basis by the International Civil Aviation Organisation (ICAO) with each member nation being responsible for the production of charts in its own territory.

In Australia the Department of Administrative Services, in Canberra, is responsible for the production of Australian charts, in accordance with ICAO Standards and recommended practices.

### 1.2 Identification, Number and Name

Each chart is clearly identified and has an expiry date. These appear on the top of the chart:

The WAC is also identified by a number.

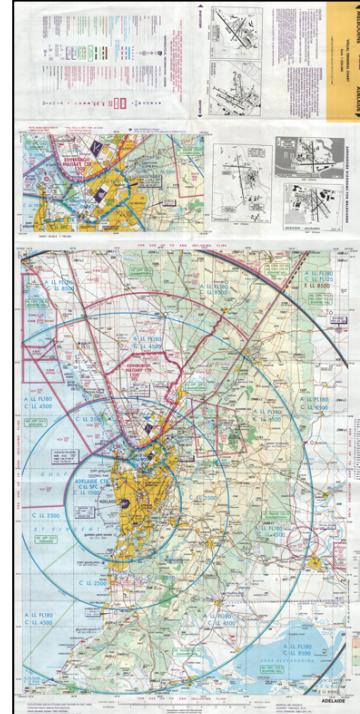


#### 1.2.1 Visual Terminal Charts

Visual Terminal Charts are published by the Civil Aviation Safety Authority (CASA). A VTC has a scale of 1:250,000 which is larger than the scale used on a VNC and more detail (of a smaller area) can be shown.

Use the VTC while flying in the area covered by the chart. When preparing maps for navigation exercises, prepare both the VTC and VNC charts with tracks and 10 nautical mile markers clearly shown.

VTC charts present detailed topographical and cultural information within and around Australia's major terminal areas.



# CHAPTER 1

## CHARTS AND PUBLICATIONS



## NAVIGATION 1

## 1.2.2 Visual Navigation Charts

Visual Navigation Charts are published by CASA and are the most commonly used charts when flying visual navigation exercises.

When a flight is outside of the area covered by a VTC, the VNC is used.

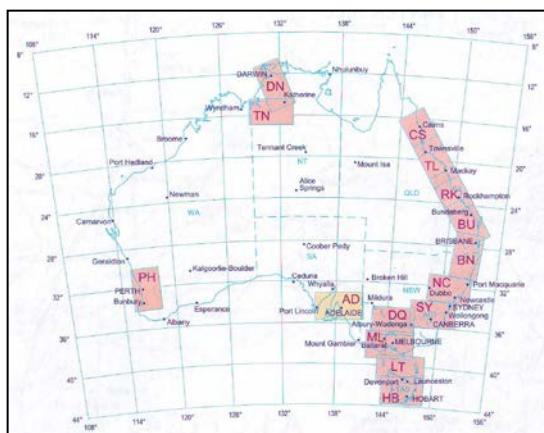
The VNC chart has a scale of 1:500,000.

VNC's are based on the Lambert's Conformal Conic Projection (discussed in Navigation 2).



VNC's provide:

- Topographic information (e.g. mountains, sand ridges, coastlines, rivers, lakes)
  - Cultural information (e.g. towns, roads, railway lines, silos)
  - A limited amount of aeronautical information (e.g. aerodromes, isogonals, aeronautical beacons)
  - A standard set of symbols, colours and terminology
  - A cover page and legend.



The shaded areas indicate which parts of Australia are represented by VNC.

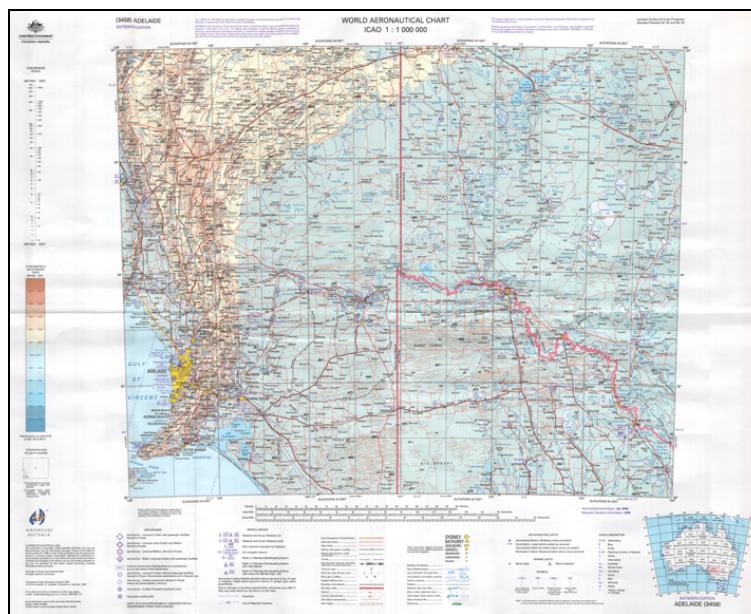
## CHAPTER 1 CHARTS AND PUBLICATIONS



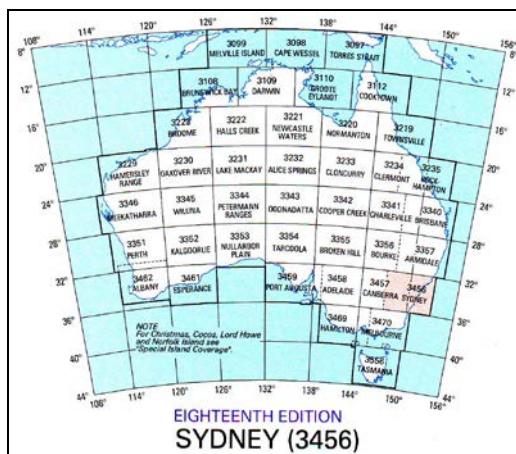
## NAVIGATION 1

### 1.2.3 World Aeronautical Charts

These charts are normally used for visual en-route navigation outside terminal areas. The charts show significant topographical and cultural information.



WACs have a scale of 1:1,000,000 and the series of charts cover the extent of Australia.



### 1.2.4 Jeppesen Airways Manual – Low Altitude Charts

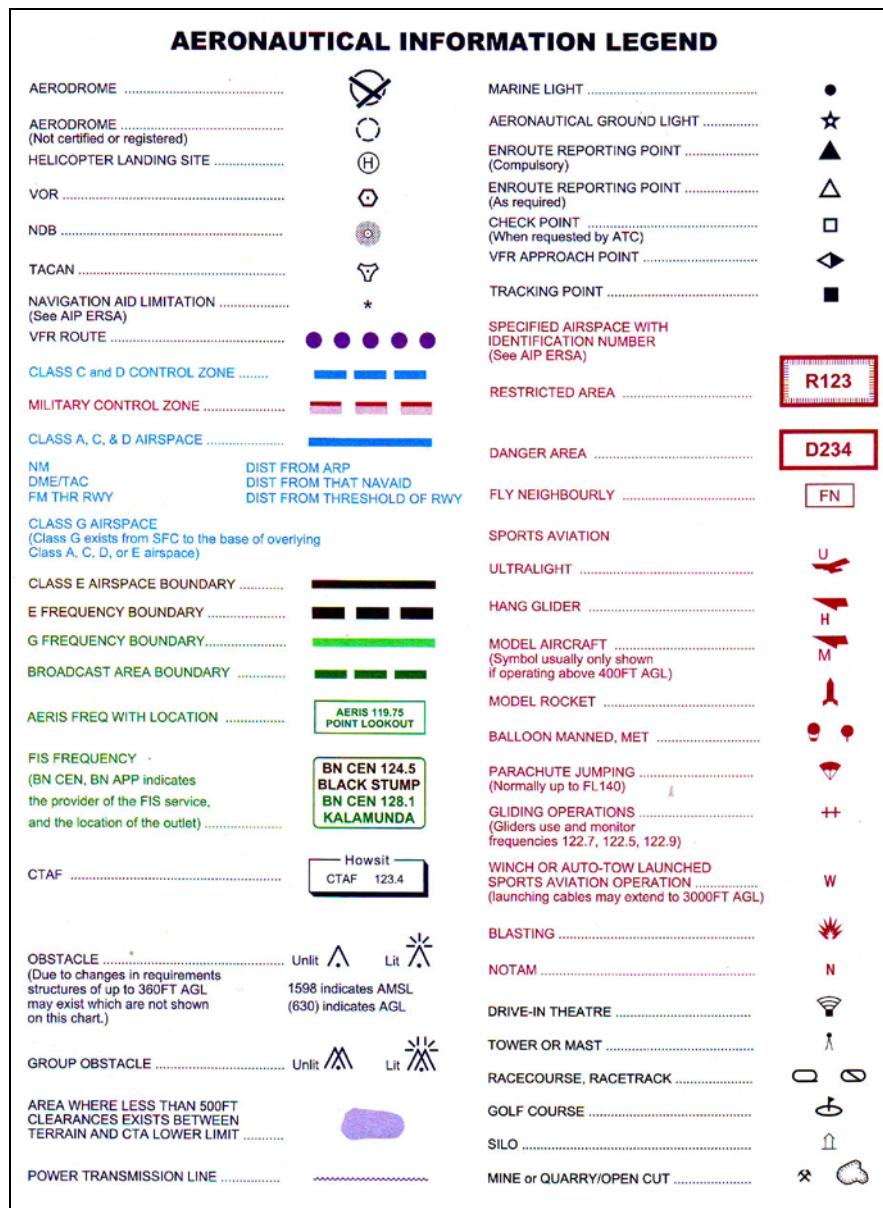
The low altitude en-route charts contained in Jeppesen 1 and the high level area chart in Jeppesen 2 are used for low altitude VFR navigation. These charts present significant en route aeronautical information.

**Note** These charts are not intended as map reading charts, as limited topographical and cultural information are included

### 1.3 Updates of Information

- Information appearing on charts may be subject to change (e.g. roads, aerodromes, towers), and are notified by NOTAMS.
- Charts are re-issued at regular intervals.
- Pilots **MUST** always be vigilant to use the current issue of charts.

### 1.4 Chart Legends



**VTC chart legend**

Chart legends are used to interpret information given on charts.

### 1.4.1 Jeppesen Low-Altitude En route Charts and Area Charts

Jeppesen en route charts are published and periodically updated. Jeppesen charts are the primary source of aeronautical information for flights, which are conducted away from major terminal areas (surface to FL200).

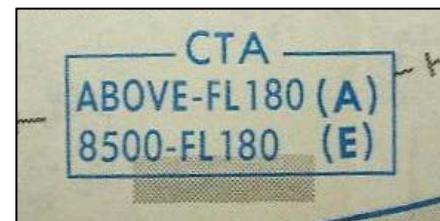
Jeppesen charts contain limited topographic and cultural information and are not a substitute for VNC/VTC. Jeppesen charts provide valuable aeronautical information, particularly during the flight planning stage.

Jeppesen Low en route and area chart information:

#### 1.4.1.1 Different Classes of Airspace

Example:

- Lower Limit of Class A airspace - FL180
- Upper Limit of Class E airspace - FL180
- Lower Limit of Class E airspace - 8,500 feet.



#### 1.4.1.2 Prohibited, Restricted, Danger Areas

Prohibited, Restricted, and Danger areas are listed on the front of chart.

Additional information is indicated on the chart.

Example: Restricted Areas 295 A – D

- A - Ground to FL 250 (always active)
- B - Activated by NOTAM
- C - Activated by NOTAM
- D - Activated by NOTAM.

TWR 120.5, Gnd 121.7,	
YM(D)-277	YM(D)-293
GND-2500	1500-4000
SR-55	SR-55
YM(D)-278	YM(D)-297
2500-4000	A. GND-1500
SR-55	SR-55
WHEN ACTIVE, CLASS	B. GND-2000
C AIRSPACE WITHIN	SR-55
THIS DANGER AREA	
IS RECLASSIFIED AS	
CLASS G	YM(R)-295
	A. GND-FL250
YM(D)-290	B. FL250-NOTAM
GND-1500	NOTAM
SR-55	NOTAM
YM(D)-291	C. NOTAM-NOTAM
GND-1500	NOTAM
SR-55	D. NOTAM-NOTAM
	NOTAM
	E. GND-NOTAM
	NOTAM
	F. GND-NOTAM
	NOTAM
	YM(R)-298
	GND-1500

TUNAA 285 TO SLOPE 096°



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### CHARTS AND PUBLICATIONS

#### 1.4.1.3 Radio Navigation Aids

Example: Tailem Bend VOR 116.6MHz

- Morse identification
- Latitude and longitude.



#### 1.4.1.4 Communications

Communication information is indicated on the front of the chart and where appropriate on the chart.

<b>COMMUNICATIONS</b>					
<b>BOLD NAME</b> - Voice call. <b>Light Names/Abbreviations</b> - Identifying names/abbreviations not used in radio call. <b>T</b> - Transmit only. <b>G</b> - Guard only. <b>*</b> - Part-time operation. <b>X</b> - On-request. <b>(R)</b> - Radar Capability. TCA 1 or TCA 2 - Group I or Group II TCA for VFR. <b>C</b> - Clearance Delivery. <b>Cpt</b> - Clearance (Pre-taxi Proc). <b>YSSY p6D</b> - Charted location is shown by Area chart initials and/or by quarter panel number-letter combination. Common <b>EMERGENCY</b> 121.5 is not listed. Air-to-air communications that may be used to exchange operational information or resolve operational problems: Worldwide Remote Areas-123.45. Refer to Glossary and Abbreviations in Introduction pages for further explanations. <b>SSB-AII HF communications</b> listed below have single side band capability unless indicated otherwise.					
A ---	G ---	M ---	S ...	Y -----	5 ....
B ---	H ...	N --	T -	Z -----	6 ....
C ---	I ..	O ---	U ---	1 -----	7 ....
D ---	J ---	P ---	V ---	2 -----	8 ....
E .	K ---	Q ---	W ---	3 -----	9 ....
F ---	L ....	R ---	X -----	4 -----	0 -----
ADELAIDE, SA YPAD p4C Adelaide Intl. Adelaide App (R)/ (App/Dep) (SE of Rwy 05/23 extended centerline) 118.2 (NW of Rwy 05/23 extended centerline) 124.2 (SW between 20nm & 50nm) 123.05 . Twr 120.5. Gnd 121.7. Parafield. Parafield *Twr 118.7 124.6. Gnd 119.9. ALICE SPRINGS, NT YBAS p9C Alice Springs. Alice *Twr 118.3. Calvin Grove, SA YPAD Adelaide App 128.6. DARWIN, NT YPDN p9B Darwin Intl. Darwin App(R)/Dep (R) 125.2(E Sector) 134.1(W Sector), Dep 123.0. Twr 133.1. Gnd 121.8 119.55. EDINBURGH, SA YPAD p4C (Military), Adelaide *App 128.6. Edinburgh *Twr 118.3. Gnd 134.1.					
Gingin Military, WA YPPH Gingin. Pearce *App 130.2. Dep 135.9. Gingin *Twr 118.5. Gnd 121.65. LEARMONTH, WA p6B Learmonth *App 120.5. *Twr 118.3. MELBOURNE, VIC YMML p5C Essendon. Melbourne App(R) 132.0. Dep (R) (N) 118.9 (S) 129.4 Essendon *Twr 125.1. Gnd 121.9. Melbourne Intl. Melbourne App(R) 132.0. Dep(R) (N) 118.9. (S) 129.4. Twr 120.5. Gnd 121.7. Moorabin. Moorabin *Twr 118.1 123.0. *Gnd 119.9. PEARCE, WA YPPH p6C Pearce Military. Perth App 123.6. Dep 118.7. Pearce App(R) 130.2. Dep(R) 135.9. Twr 118.3. Gnd 127.25. C 134.1.					
PERTH, WA YPPH p6C Jandakot. Perth App(R) 123.6. Dep(R) 118.7. Jandakot *Twr 118.1 119.4. *Gnd 124.3. Perth Intl. Perth App(R) 123.6. Dep (R) 118.7. *Twr 120.5. Gnd 121.7. TINDAL, NT p9B Tindal. Tindal *App(R) 121.9. *Twr 119.7. Gnd 135.85 *C 128.1. WOOMERA, SA p4A Woomera Military. Woomera *Twr 118.3.					

Example:

Radio frequencies for Parafield Airport:

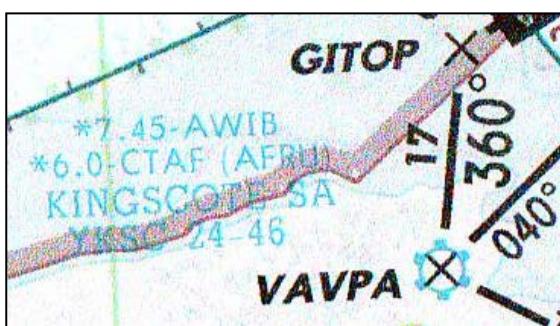
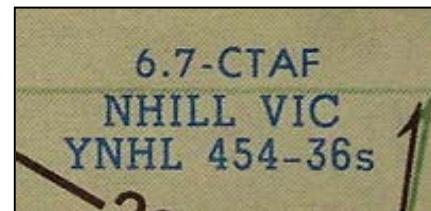
- Automatic Terminal Information Service (ATIS)  
– 120.9 MHz
- Common Traffic Advisory Frequency (CTAF)  
after hours – 118.7 MHz.



1.4.1.5 Common Traffic Advisory Frequency - CTAF

Universal CTAF 126.7 MHz is used in Australia and listed next to ICAO airport indicator (e.g. YNHL)

Note: Only the last two digits of the frequency are shown, e.g. **6.7 = 126.7 MHz**



Non-standard CTAF frequencies are indicated on the chart, e.g. Kingscote Airfield (YKSC) frequency - 126.0 MHz (\*6.0).

Additional airport information:

The elevation of Kingscote airport is 24 feet and the length of the longest runway is 4,600 feet (24 - 46).

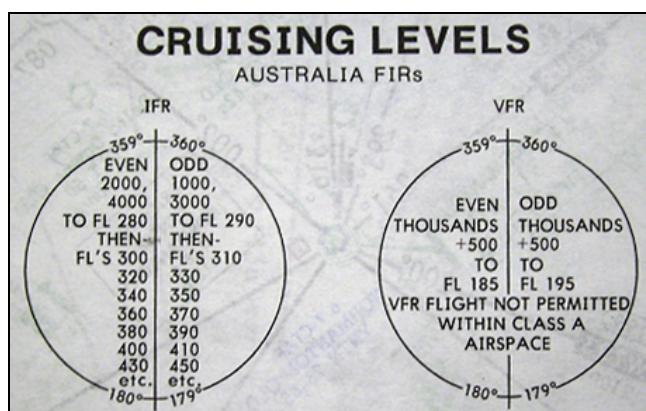
1.4.1.6 Boundaries of Flight Information Regions

Boundaries are shown on Jeppesen low en route and area charts as a thick green line.

**Example:** The FIR boundary between the Melbourne and Brisbane FIRs for Classes G and E airspace.

1.4.1.7 Cruising Levels

Cruising levels are listed on the front of Jeppesen low level en route charts.



## 1.5 NOTAMS

NOTAMS are notifications issued to pilots before a flight, advising them of changes to circumstances relating to the state of flying of a temporary nature. Categories are:

- Aerodromes AD
- Prohibited, restricted, danger areas PRD
- Air traffic services ATS
- Documentation DOC
- Navaids. NAV

### NOTAMS are

#### NEWS FLASHES

*HERE'S THE LATEST INFORMATION ON ...* JEPPESEN Air Traffic Control AU101  
Paragraph 1.3.2

NOTAMS are Notices to Airmen

NOTAMS provide immediate information of operational significance which may affect aircraft operations. If a change becomes permanent, it will be amended prior to the next issue of the appropriate document.

NOTAMS in Australia are generated by the aviation facsimile system (AVFAX) or National Aeronautical Information Processing System (NAIPS).

The first line of a NOTAM indicates the reference number. Daily NOTAMS in most cases only indicate the first line of the NOTAM. Refer to the monthly or full text NOTAMS to view the change affecting a flight.

Highlight NOTAMS that apply to the planned flight. Both daily and monthly NOTAMS are available from operations at a flight school.

If a NOTAM is annotated '**NIL CURRENT**', no current NOTAMS are available for the specified area or airfield.

The **conditions of operation are as indicated in Jeppesen and on your charts.** E.g. Port Wakefield restricted areas are **permanently restricted**, therefore **not** listed.

**ALWAYS READ NOTAMS BEFORE FLIGHT PLANNING**

Refer to Jeppesen Volume 1, Air Traffic Control, for the format and decoding of NOTAMS. NOTAMS are an important part of flight planning and may contain information vital to the flight. This information must be interpreted confidently and correctly.

## 1.6 Aeronautical Chart Symbols

### 1.6.1 Introduction

Designing and producing maps and charts poses two main problems, i.e:

- The content and extent of detail
- Symbolisation

Selecting a chart to fulfil a specific requirement may it be an aeronautical chart for route flying or a topographical map (landscape detail when planning VFR navigations).



An important factor of a chart is that it must be symbolized in such a way that it is understandable and accurate.

## 1.7 Aeronautical Symbol Categories

Chart indexes are used to identify symbols and aeronautical symbols are categorized as follows:

### 1.7.1 Chart Symbols

#### 1.7.1.1 General

Ground features are represented by a legend.

Symbols commonly used with VTC are:

## CHAPTER 1 CHARTS AND PUBLICATIONS



## NAVIGATION 1

<u>Title</u>	<u>Symbol</u>	<u>Example</u>
Aerodrome (purple)	➡	➡
Aerodrome – not Certified or Registered (purple)	➡	➡
Helicopter Landing Site (purple)	➡	➡
Aeronautical Ground Light (purple)	➡	➡
VFR Route (purple dots)	➡	➡

# CHAPTER 1

## CHARTS AND PUBLICATIONS



# NAVIGATION 1

### Title

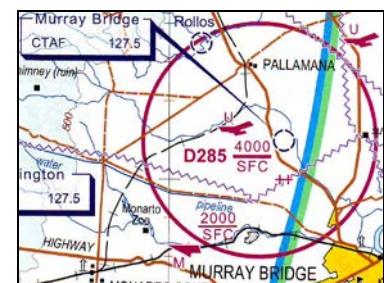
### Symbol

### Example

VFR Approach  
Point  
(purple)



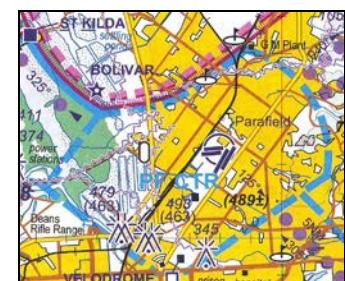
Danger Area  
(pink border)



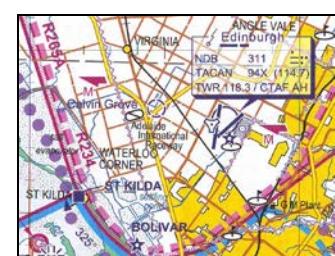
Restricted Area  
(pink border with  
short lines  
around border)



Class C and D  
Control Zone  
(thick blue  
broken line)



Military Control  
Zone  
(thick light and  
dark pink broken  
line)

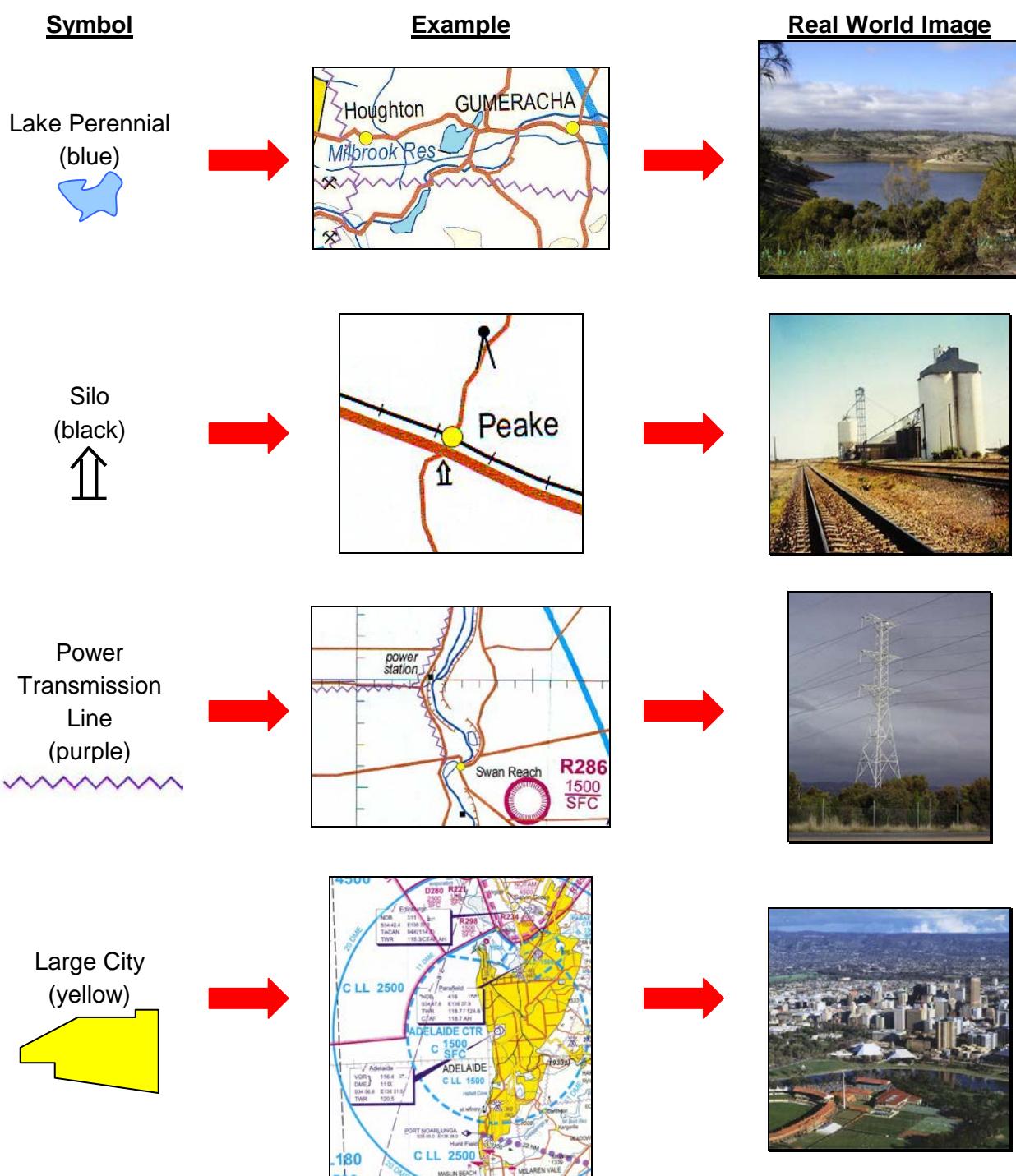


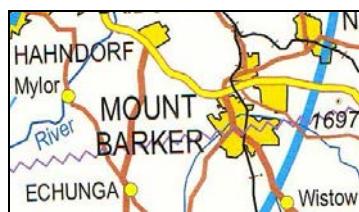
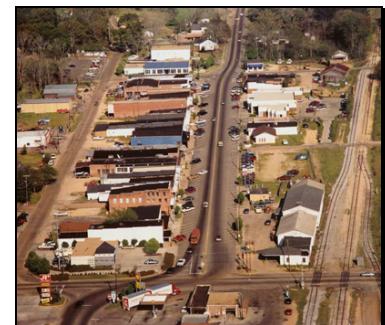
1.7.1.2 Topographic (Natural and Man Made Features)

Topographic features are important visual aids to navigation.

Common chart symbols used on the Adelaide VNC:

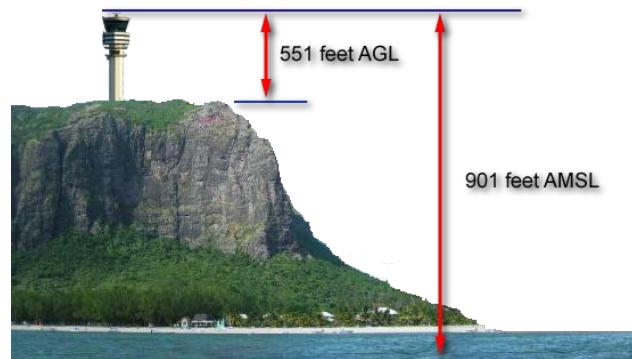
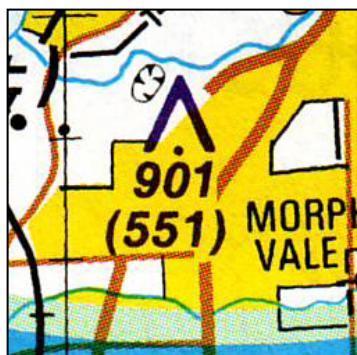
<u>Symbol</u>	<u>Example</u>	<u>Real World Image</u>
Primary (main) road (brown)		
River (blue)		
Mangrove (green)		
Railway (black)		



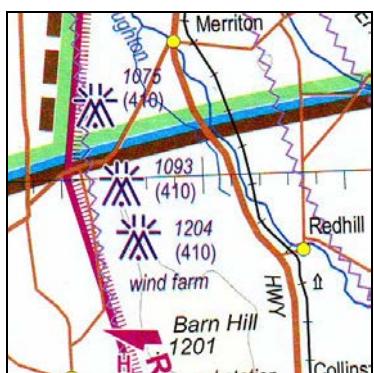
SymbolSmall Town  
(yellow)ExampleReal World ImageVery Small Town  
(yellow)**1.7.2 Obstacles and Spot Heights**

The height of an obstacle is shown both in feet AMSL (above mean sea level) and feet above ground level (AGL).

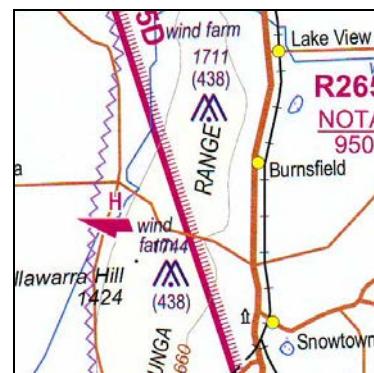
Example: The unlit mast is 901 feet AMSL and 551 feet AGL (VTC).



The group of obstacles on the left is lit and on the right is unlit (no lighting at the top).



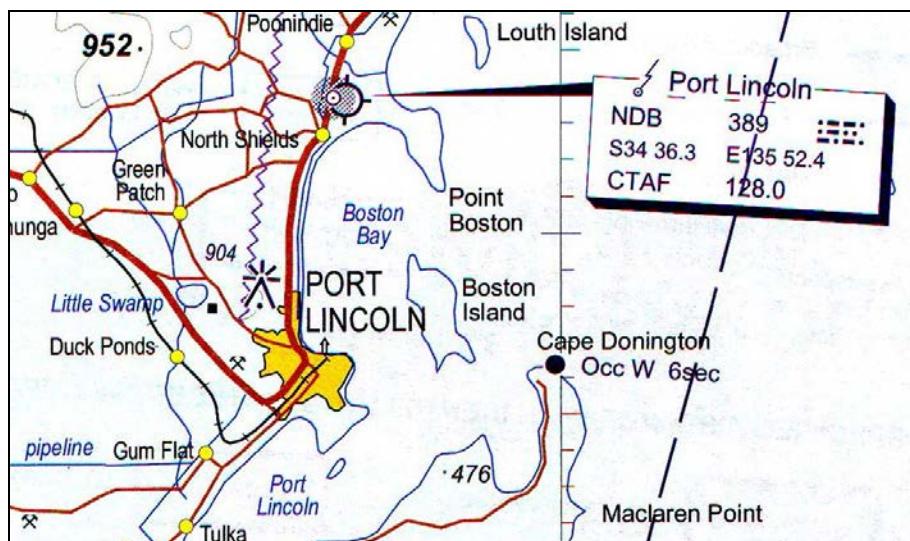
Group Obstacle (Lit)



Group Obstacle (Unlit)

### 1.7.3 Aerodrome Data

Aerodrome data can be obtained from many sources, such as the Jeppesen manual or ERSA (En-route supplement), and available on charts. The text box on the right of the VNC extract represents the following:



- Port Lincoln aerodrome radio navigation aid - Non-Directional Beacon (NDB) frequency 389 kHz.
- The NDB Morse code identification is represented by the underlined letters PLC.
- Port Lincoln Airport coordinates are South 34° 36.3' and East 135° 52.4'.
- The radio frequency to use when operating at Port Lincoln is 128.0 MHz.
- The lightning bolt symbol at the top left of the text box indicates that VHF radio communication with Air Traffic Service (ATS) is possible on the ground.
- There is a single lit obstruction 6 miles south of the airfield.

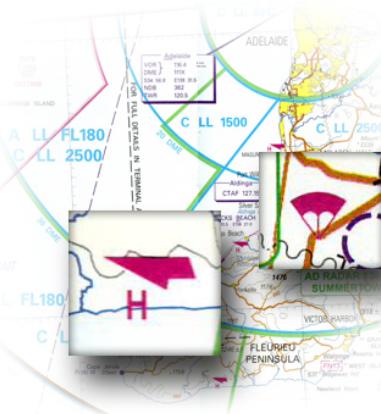
## CHAPTER 1 CHARTS AND PUBLICATIONS



## NAVIGATION 1

### 1.7.4 Sport Aviation Activities

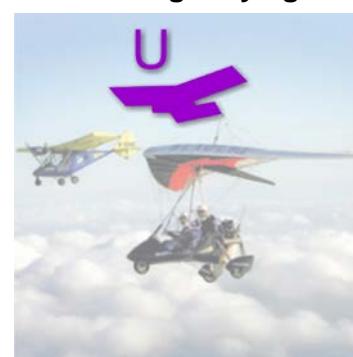
The following symbols represent the most common sport aviation activities on charts:



**Hang gliding**



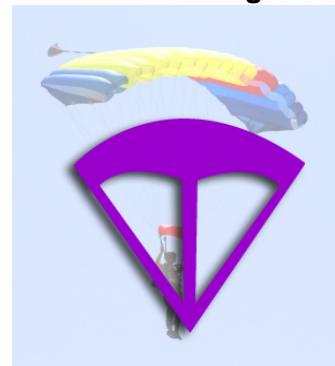
**Ultra light flying**



**Model aircraft flying**



**Parachuting**



**Manned balloon ascents**



**Gliding**



### 1.7.5 Assessing the Height of Terrain using Hypsometric Tinting

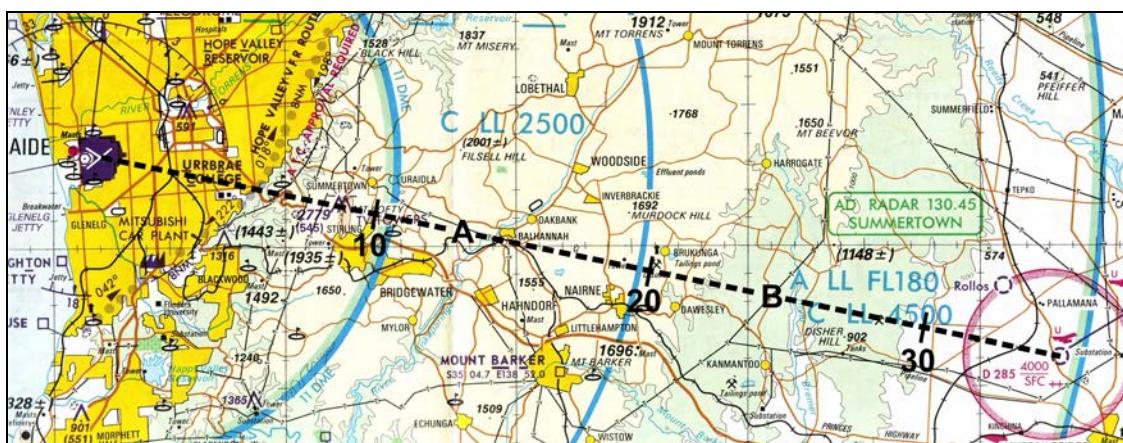
The height of terrain (the sea, land and mountains) is indicated on many types of charts using hypsometric tinting.

The colour coding indicates the maximum height of any point or area along the route.

**Refer to the VTC and the segment of the chart** to see how hypsometric tinting can be used to assess the height of the ground.

The height of terrain at point 'A' along the leg is indicated by yellow hypsometric tinting, between 1000 feet and 2000 feet AMSL.

HYPSEOMETRIC TINTS	
METRES	FEET
913	3000
609	2000
305	1000
152	500
SEA LEVEL	



The height of point 'B' is indicated by the green hypsometric tinting, which is between 500 feet and 1000 feet AMSL. For flight planning purposes consider the maximum:

- **A** – maximum 2000 feet AMSL
- **B** – maximum 1000 feet AMSL.

## 1.8 Cartography Representations and Terms

### 1.8.1 Introduction

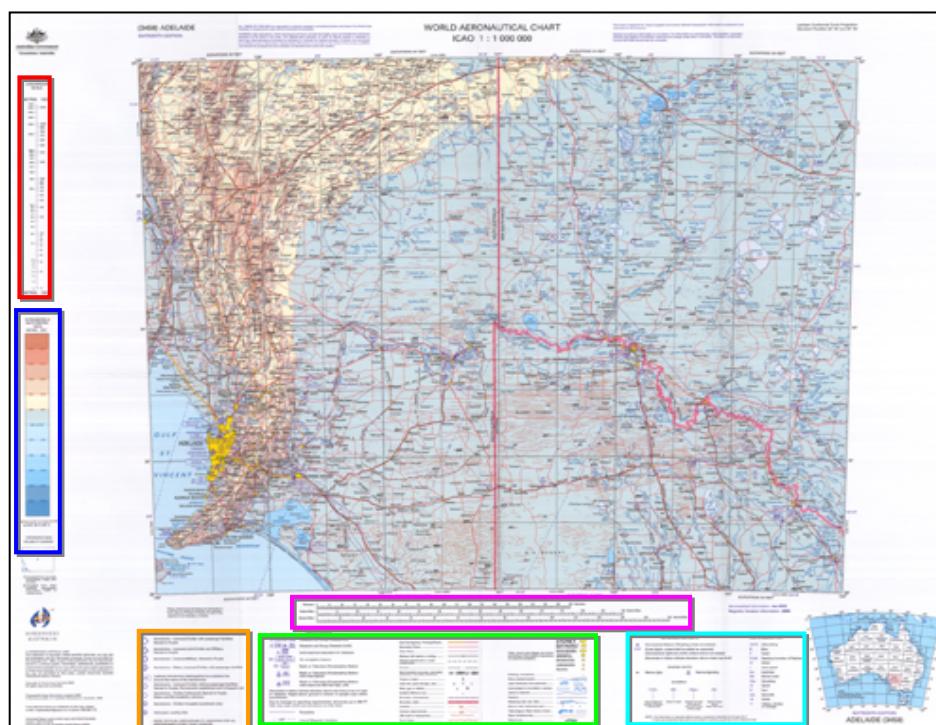
There are many types of charts, therefore standardisation is important. To simplify the process of standardisation symbols are used that are common to most types of charts and generally indicated by a legend. The use of symbols aids the navigation process.



### 1.8.2 Terms, Symbols and Scales

The World Aeronautical Chart (WAC) 1:1,000,000 is used as an example to explain the different symbols.

Positioning of specific information may differ between chart types, whether it is a change of projection or scale.

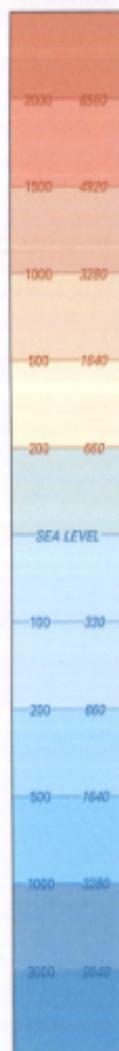


**Hypsometric Tints**

Index representing the colours used and

HYPSEOMETRIC &  
BATHYMETRIC  
TINTS

METRES FEET



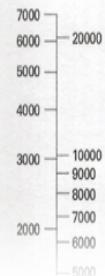
Highest point on chart 3179  
at S32° 30' E138° 0'

**Conversion Scale**

Conversion scale between "feet" and "metres", to assist height conversions

CONVERSION SCALE

METRES FEET



METRES FEET

**Aerodromes**

Aerodrome symbols explained

AERODROMES

- Aerodrome - Licensed Civilian with passenger facilities Named in Purple
- Aerodrome - Licensed Joint Civilian and Military Named in Purple
- Aerodrome - Licensed Military. Named in Purple
- Aerodrome - Water, Licensed Civilian with passenger facilities

Perth Customs Aerodrome (distinguished by a pecked line around the name of the Aerodrome)

Aerodrome - Licensed Civilian without passenger facilities Named in Purple. Permanently established and in frequent use

Aerodrome - Civilian Unlicenced. Named in Purple Status and Serviceability unknown

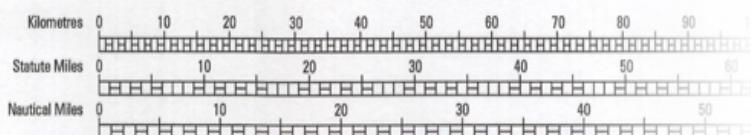
Aerodrome - Civilian Unusable (Landmark only)

Helicopter Landing Site

NOTE: STATUS & SERVICEABILITY UNKNOWN FOR ALL AERODROMES OTHER THAN LICENCED.

**Distance Scale**

For use when measuring distances, Scales presented:  
"kilometres", "nautical miles" and "statute miles".



# CHAPTER 1

## CHARTS AND PUBLICATIONS



# NAVIGATION 1

### Air Navigation Lights and Lights Description

Aeronautical lights, description of the type and colour of lights, are displayed in this legend

AIR NAVIGATION LIGHTS		LIGHTS DESCRIPTION	
	Aeronautical Beacon (Rotating unless annotated) (Code lights: codes shall be added as required) (Aeronautical lights are white unless colours are stated) (Numerals in italics indicate elevation above mean sea level)	<b>ALTN</b>	Alternating
	Marine light	<b>B</b>	Blue
	Marine lightship	<b>F</b>	Fixed
	EXAMPLE	<b>Fl (#)</b>	Flashing (number of flashes)
	Type of light and number of flashes in each group	<b>G</b>	Green
	Colour of light	<b>I</b>	Interrupted
	Duration of cycle from start of one cycle to start of next cycle	<b>Iso</b>	Isophase
	Height of light above Mean Sea Level	<b>Mo</b>	Morse Code
		<b>Occ</b>	Occulting
		<b>Q</b>	Quick
		<b>R</b>	Red
		<b>sec</b>	Seconds
		<b>W</b>	White
		<b>Y</b>	Yellow, Amber or Orange

*NOTE 1: Full information on Australian Marine Lights is contained in Admiralty List of Lights Vol. K.  
2: Users are advised that these lights are provided for maritime use and may not be visible over land.*

### Miscellaneous

The legend indicates various features and obstacles' spot heights. The value in brackets represents height in feet AGL and the other height in feet AMSL.

MISCELLANEOUS	
	Obstacle and Group Obstacle (Lit) <i>(Numerals in italics indicate elevation above sea level of top of mast or obstacle. Height above ground is shown in upright type within parenthesis).</i>
	Obstacle and Group Obstacle (Unlit)
	Grid maximum elevation for Obstacle
	NDB-DME
	Air navigation beacon
	Radio or Television Broadcasting Station <i>(BS)</i>
	Radio or Television Broadcasting Station with mast lighted <i>(2CA)</i>
	Radio or Television Broadcasting Station with mast over 300 feet high, unlit <i>(415)</i>
	Powerline
	Line of Magnetic Variation
Dual Carriageway, Principal Road.....	
Secondary Road.....	
Other Road.....	
Railway with station or siding.....	
Railway abandoned or under construction.....	
Tunnel.....	
Spot elevation accurate, calculated maximum, accurate maximum.....	 <i>(305 • (984±) • 564)</i>
Tower or mast.....	
Grain silo, grain storage, yard.....	
Mine, gas or oilfield.....	
Isolated offshore rock.....	
Boundary, international.....	
Boundary, state.....	
Contour.....	 <i>(660)</i>
Contour, approximate.....	 <i>(1640)</i>
Cliff, bluff or escarpment.....	
Sand ridges.....	
Cities, towns and villages are shown according to their relative importance to visual air navigation.	 <b>SYDNEY</b>  <b>BATHURST</b>  <b>GOULBURN</b>  <b>GRENFELL</b>  <b>BRAIDWOOD</b>  <b>CABRAMURRA</b>  <b>NEVERTIRE</b>
Building, homestead.....	
River, braided stream.....	
Lake, Perennial; Non-perennial.....	
Area subject to inundation, swamp.....	
Canal or channel.....	
Pipeline.....	
Retaining wall, weir, falls.....	
Bore or well, waterhole, tank.....	
Tidal ledge or Reef, shoal or bank.....	
Sand, foreshore flat.....	
Mangroves.....	

### 1.8.3 Representation of Direction

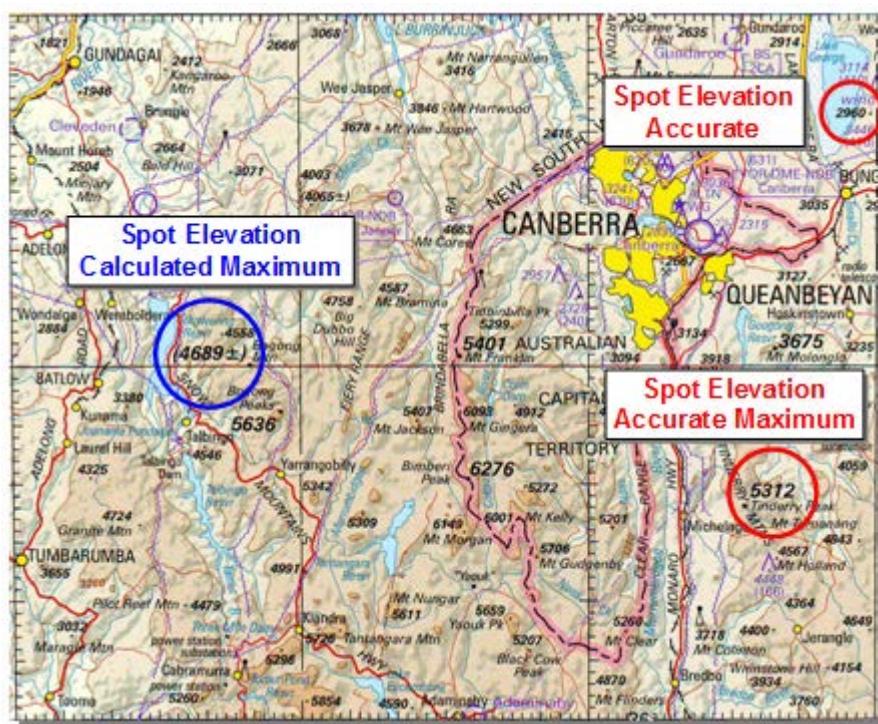
Charts are generally aligned with true north being at the top of the chart, lines of longitude represent north (red lines).

On charts that exclude lines of longitude, north is usually indicated graphically, including variation between true north and magnetic north.



### 1.8.4 Spot Elevations

Spot elevations are points with height AMSL printed alongside. These points are generally the highest point in a given area. The chart legend indicates whether height is measured in metres or feet. Elevation depicted on Australian maps is shown in feet AMSL.



From the WAC extract above various spot elevations in feet AMSL are highlighted. Values in bold depict the maximum elevation for the grid block latitude and longitude.

# CHAPTER 1

## CHARTS AND PUBLICATIONS



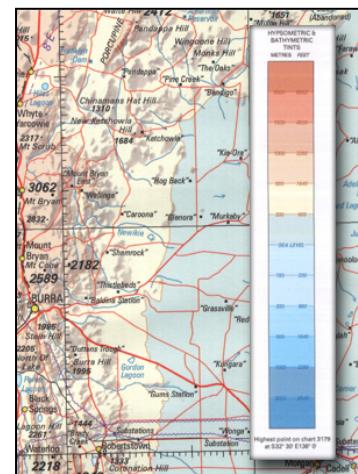
## NAVIGATION 1

### **1.8.5 Additional Relief Presentation Methods**

### 1.8.5.1 Layer or Hypsometric Tinting

This method is used in conjunction with contours. Spacing between contours is coloured with tints that vary with height above mean sea level, the colours becoming deeper/darker as height increases.

Tints represent a general indication of elevation for the areas shaded the same colour. This technique supports other ways of indicating elevation.



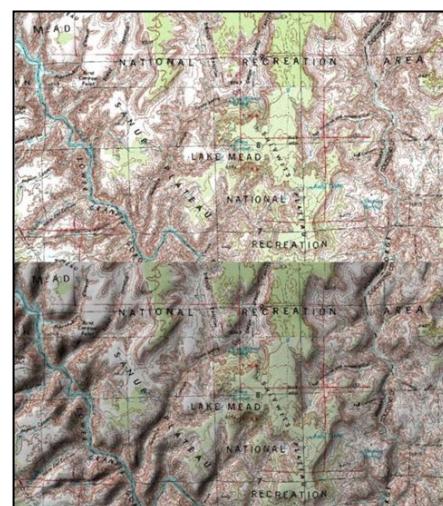
### 1.8.5.2 Hill Shading

Representation of relief features by means of variations in light and dark.

This effect represents depth and steepness of a slope, thus giving a more vigorous presentation of relief.

The two pictures on the right represent the same area. Hill shading has been applied to the bottom picture making the topography more apparent,

This technique is used on the WAC, but not the VTC or VNC.

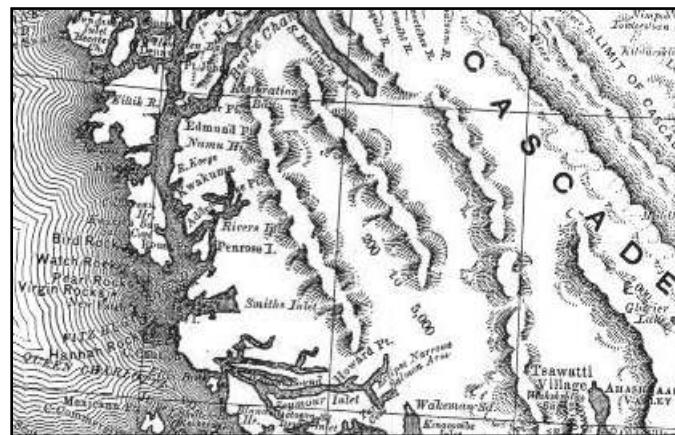


### 1.8.5.3 Hachuring

Hachuring is a method of hill shading by closely set parallel lines. E.g. the lines indicate direction of water flow, steeper slopes, are represent by darker lines.

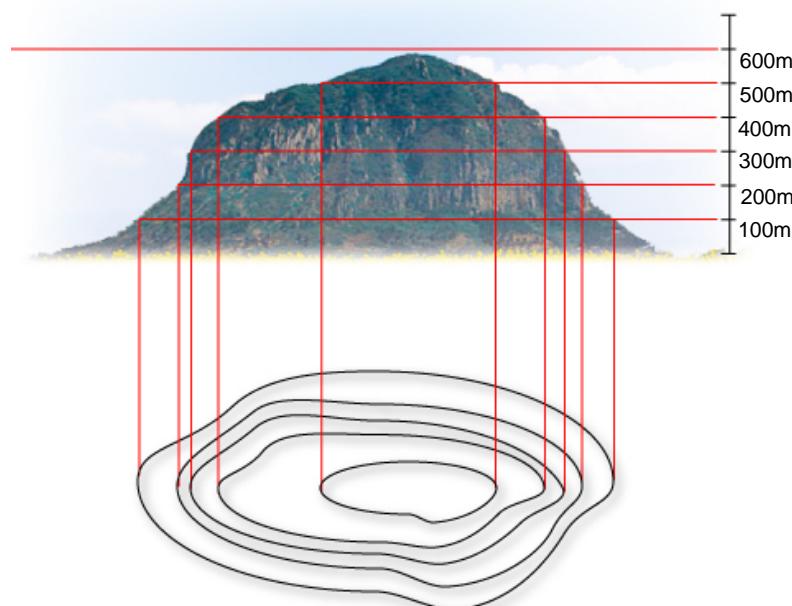
The advantage of hachuring is that terrain can be easily visualized.

The disadvantages are that no accurate information of height is available and the lines tend to obscure other detail.

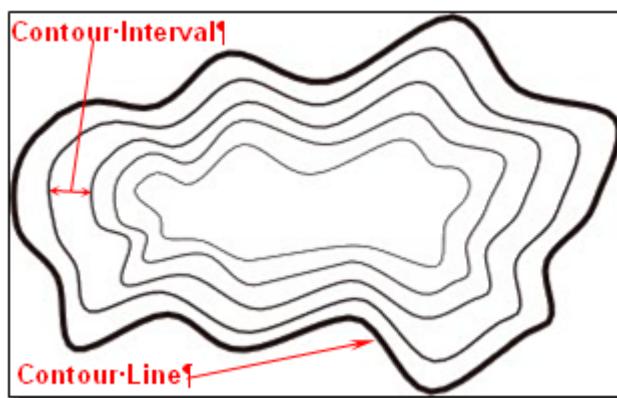


**1.8.6 Contour Lines**

An important feature of a map is to present ground features in such a manner that it can be accurately compared to the actual features and is achieved by contour lines.



A contour is an imaginary line on the surface connecting points of equal height AMSL and forming a visual indication of a relief feature that is made by mental interpretation.

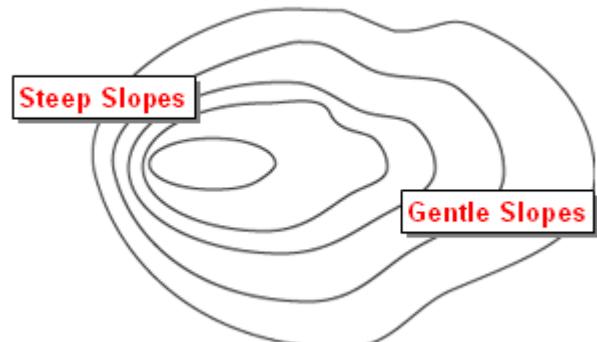


Contour intervals are the difference in elevation between adjacent contour lines and vary depending on the scale of the map.

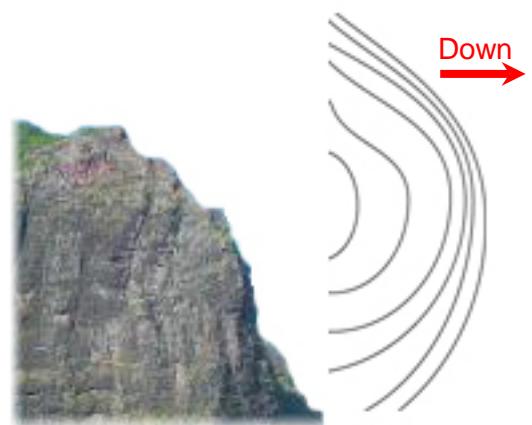
When a contour line conveys the shape of the feature the contour interval depicts the slope.

1.8.6.1 Characteristics of Contour Lines

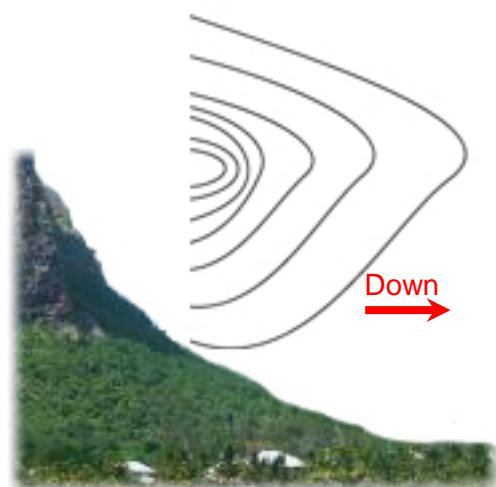
- Two different contour lines of the same elevation cannot merge and continue as one line.
- Steep slopes are represented by closely spaced contour lines. On gentle slopes contour lines are spaced further apart.



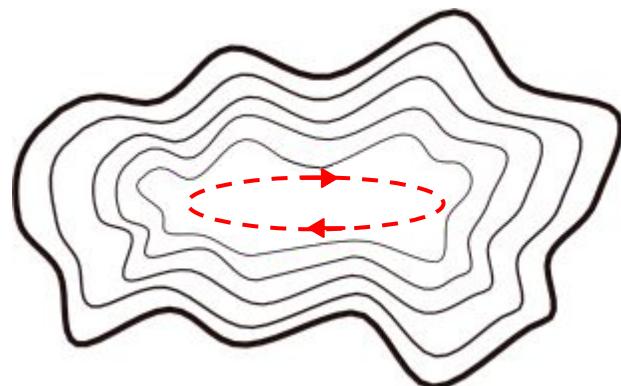
- Contour lines widely spaced at the top and closely spaced at the bottom, represents a convex slope.



- Contour lines closely spaced at the top and widely spaced at the bottom, indicate a concave slope.



- A closed contour line with one or more higher ones surrounding it indicates a hill, and with one or more lower ones enclosed, indicates a depression without an inlet.



A contour line cannot have an end within the limits of a map. It must either close upon itself or extend continuously until it disappears at the edge of a map.

## **APPENDIX A: PARAFIELD AIRPORT SPECIAL PROCEDURES**

## **Special Procedures for Arriving and Departing to the East and West of Parafield Airport**

Refer to CASA OnTrack (<http://ontrack.casa.gov.au>) for the latest Australia special departure and arrival procedures and guides at various aerodromes, including adapted procedures for fixed wing and rotary wing aircraft. Parafield Airport arrival and departure procedures are summarised below.

Parafield has a Class D airspace during Air Traffic Control (ATC) operating hours and Class G airspace after hours. ATC services are provided during daylight working hours (see Jeppesen or ERSA) and after hours Common Traffic Advisory Frequency (CTAF) procedures apply. The Parafield Control Zone (CTR) extends from the surface to 1500 feet.

The Visual Terminal Chart (VTC) below presents the following procedures:



#### Aircraft Arriving from the North-West via Danger Area 220

- Track from Dublin VFR approach point via the river mouth to Outer Harbour.
  - Initially not above 4500 feet and remain outside control area (OCTA).

- At River Mouth check point, to remain clear of the CTA, descend to 1500 feet (Parafield entry altitude).
- Request an inbound clearance from Parafield ATC (frequency 118.7 MHz) at Outer Harbour VFR approach point.
- Remain south of Bolivar Strobe tracking inbound (towards the airport) to avoid the Edinburgh aerodrome military airspace.

#### Aircraft Arriving from the East outside of Control Areas (Class G Airspace)

- Track via Warren Reservoir and Dam Wall VFR approach points.
- Approaching Warren Reservoir descend to not above 2500 feet to remain OCTA.
- Request an inbound clearance from Parafield ATC (frequency can be obtained from the ATIS) at the Dam Wall established at 1500 feet.

#### Aircraft Departing to the North-West via Danger Area 220

- Track towards St Kilda tracking point remaining south of Bolivar Strobe outbound and remaining clear of Edinburgh military airspace.
- Remain at the departure altitude of 1000 feet until St Kilda tracking point.
- Climbing to 2500 feet must be delayed until abeam the first salt evaporator, located to the north of St Kilda.
- Follow the VFR route marked on the VTC to Dublin VFR approach point. Do not climb above 2500 feet until past Middle Beach. Climbing is restricted to 4500 feet or below to remaining below controlled airspace.

#### Aircraft Departing to the East outside of Control Areas

- Track via the Substation tracking point.
- Departure altitude is initially 1000 feet until clear of traffic and established east of Parafield (departing runway 21) or north of Parafield (departing runway 26), climb 1500 feet.
- Clear of Parafield CTR at 3nm climb to 2500 feet or below.
- The CTA lower limit of 2500 feet applies until 20 DME Adelaide. Further climb to 4500 feet or below can be done 20 DME Adelaide outbound whilst tracking towards the South Para Reservoir VFR approach point.
- Outbound aircraft should track to the north of the South Para reservoir to avoid inbound aircraft tracking via the Warren Reservoir VFR approach point.

**Note:** Aircraft may NOT enter the Parafield CTR without a Parafield ATC clearance and circuit entry instructions.