

# CGA Cape Gantheaume Land System

Jumbled shelly sand dune deposits on Kangaroo Island's southern coast. The system is bordered by the sea to the south and east, younger shell sand dunes to the west, and calcreted dunes and plains to the north.

**Area:** 79.2 km<sup>2</sup>

**Annual rainfall:** 550 – 615 mm average

**Geology:** The area is dominantly recently deposited shell sand (Holocene age Gantheaume Sand member of St. Kilda Formation). Minor areas of more recently deposited shell sand occurs adjacent to coastal clifftops (Semaphore Sand member of St. Kilda Formation). Older calcreted calcarenite has surface to near surface expression (Pleistocene age Bridgewater Formation) on old jumbled dunes, on some cliff top areas, and in some depressions.

**Topography:** Jumbled dune morphology with some depression areas. Dunes can be over 30 m high. Calcarenite coastal cliffs form the coast line. These cliffs often have rocky lower slopes, and often have rocky reefs extending from their bases.

**Elevation:** From sea-level at cliff-bases, with lowest inland elevations of about 20 m in depressions in the north-west of the system, and highest elevations of over 110m on dune peaks in the west of the system.

**Relief:** From less than 10 m to 30 m

**Main Soil:** **H1** Deep shell sands

**Minor soils:**  
**A1-B1** Moderate to shallow shelly soil on calcrete  
**B2** Shallow to very shallow calcareous soil on calcrete  
**B2-B1-B3** Very shallow organic soil on calcrete

**Main Features:** The system is non-arable due to fragile and infertile soils, or else shallow rubbly soils, and is covered by native scrub. Nature conservation is the main priority here.

**Soil Landscape Unit summary:** Cape Gantheaume Land System (CGA)

| SLU  | % of area                                      | Main features #  |
|--|--|--|
| M-A<br>M-B<br>M-C                                | 0.1<br>0.8<br>0.03                             | Non-arable sheet calcrete areas.<br>Main soils: mostly not soil, but exposed calcrete outcrop ( <b>RR</b> ). With areas of very shallow, dark and organic loamy to sandy soil on calcrete, sometimes shelly <b>B2-B1-B3</b> ( <i>Petrocalcic Rudosol</i> ). With minor to limited areas of deeper shell sand deposits.<br><br><b>M-A</b> – level to slightly sloping (0-3%, 1e)<br><b>M-B</b> – slopes (3-10%, 2e)<br><b>M-C</b> – slopes (10-20%, 3e)   |
| MbA<br>MbC<br>MbD<br>MbDg<br>MbE<br>MbYA<br>MbYB | 0.1<br>0.5<br>0.5<br>0.6<br>0.1<br>1.4<br>11.0 | Non-arable calcreted areas: with moderate depth to shallow shelly soils.<br>Main soils: moderate depth to shallow shelly loamy to sandy soil <b>A1-B1</b> ( <i>Petrocalcic Shelly Calcarosol</i> ). Often with some shallow rubbly loamy to sandy calcareous soil on calcrete <b>B2</b> ( <i>Petrocalcic Calcarosol</i> ). Some deeper shell sands on very low dunes <b>H1</b> ( <i>Shelly Calcarosol-Rudosol</i> ). Minor shallow loamy to sandy soil on calcrete <b>B3</b> ( <i>Petrocalcic Tenosol</i> ). |



|      |      |   |
|------|------|---|
|      |      | <b>MbA</b> – coastal plains (1-2%, 1-2e)<br><b>MbC</b> – slopes with some low dunes (3-10%, 3-2e)<br><b>MbD</b> – slopes (10-20%, 4e)<br><b>MbDg</b> – coastal slopes (10-20%, 4e, 3g)<br><b>MbE</b> - depression<br><b>MbYA</b> – mostly low jumbled dunes (<5m, 2e)<br><b>MbYB</b> – mostly moderate size jumbled dunes (5-15m, 3e) |
| WAB  | 3.1  | Unconsolidated coastal calcarenite cliffs. Often with rocky bases.<br><b>WAB</b> – calcarenite cliffs (slopes >100%)  |
| WGC  | 6.2  | Non-arable shell sand dunes.  |
| WGD  | 49.5 | Main soil: mostly deep shell sand <b>H1</b> ( <i>Shelly Calcarosol-Rudosol</i> ). Some shallower shell soils, especially in depressions ( <b>A1-B1</b> ).   |
| WGE  | 8.2  |   |
| WGEa | 4.0  |   |
| WGQ  | 2.3  | <b>WGC</b> – mostly high jumbled dunes (>15m)   |
| WGR  | 10.5 | <b>WGD</b> – mostly moderate size jumbled dunes (5-15m)   |
| WGd  | 0.1  | <b>WGE</b> – mostly low jumbled dunes/swales (<5m). Can have some moderate depth to shallow soils on calcrete.  |
| WGo  | 0.1  | <b>WGEa</b> – mostly low coastal dunes (<5m). Semi-active rounded dunes with some moderate depth to shallow soils on calcrete.  |
|      |      | <b>WGQ</b> – depressions with very low sand mounds/dunes. Can have some calcrete or 'massive' shell sand at moderate to shallow depth.  |
|      |      | <b>WGR</b> – wetter depression flats: often with some sand mounds. Can have calcrete or 'massive' shell sand at moderate to shallow depth.  |
|      |      | <b>WGd</b> – active/bare mostly moderate size jumbled dunes (5-15m)   |
|      |      | <b>WGo</b> – active/bare sand dunes/spreads on 30-100% slopes   |
| WT-  | 0.8  | Rocky reefs at the base of cliffs.  |

# Classes in the 'Soil Landscape Unit summary' table (eg. 2-1e, 3w, 2y, etc) describe the predominant soil and land conditions, and their range, found in Soil Landscape Units. The number '1' reflects minimal limitation, while increasing numbers reflect increasing limitation. Letters correspond to the type of attribute:

|                       |                   |                  |              |
|-----------------------|-------------------|------------------|--------------|
| a - wind erosion      | e - water erosion | f - flooding     | g - gullyng  |
| r - surface rockiness | s - salinity      | w - waterlogging | y - exposure |

### Detailed soil profile descriptions:

#### Main Soil:

**H1** Deep shell sands (*Shelly Calcarosol-Rudosol*). Deep fine shell sand soil: dark grey, grey-brown, brown or light grey topsoil over light grey to brown subsoil. Usually with an organic build-up in, and some leaching of carbonate from topsoil layers. Jumbled dunes and depressions.

#### Minor soils:

**A1-B1** Moderate to shallow shelly soil on calcrete (*Petrocalcic Shelly Calcarosol*). Moderate to shallow depth dark grey, grey-brown or brown, often rubbly, fine shell sand on calcrete. Some soils in depressions are rubbly over unconsolidated, but massive coarse light grey shell sand. Organic build-up in surface layers, especially in depressions; and some leaching of carbonate has occurred. Old dunes and some depressions.

**B2** Shallow to very shallow calcareous soil on calcrete (*Petrocalcic Calcarosol*). Shallow to very shallow rubbly loamy to sandy soil on calcrete. Usually calcareous throughout. Old dunes and some depressions.

**B2-B1-B3** Very shallow organic soil on calcrete (*Petrocalcic Rudosol*). Very shallow, dark and organic rich, usually calcareous, rubbly loamy to sandy soil on calcrete. Can be shelly. Found on wind-swept coastline where the land surface is a mosaic of bare calcrete outcrop and calcrete covered by a thin veneer of soil.

Further information: [DEWNR Soil and Land Program](#)

