

BAR Baroota Land System

Near coastal plains extending from south of Port Augusta through Mambray Creek, Baroota and Port Germein to the Warnertown area.

Area: 206.0 km²

Annual rainfall 270 – 410 mm average

Geology: Medium to fine grained alluvial sediments, usually mantled by soft carbonate, and overlain in places by red windblown sand. There are three quartzite hills in the system (part of a buried mountain chain of which only the highest peaks project above the present day surface).

Topography: Very gently inclined plains with slopes of less than 1%. Apart from the three quartzite hills, the main topographic features are two major watercourses and two areas of sand rises. Baroota Creek crosses the land system before entering the sea at Pt. Germein. It is contained within a single well defined channel. Mambray Creek on the other hand splits into a number of channels before entering the sea. Some of these are incised up to 10 m. Low sand ridges and spreads are prominent, particularly in the southern areas, between Pt. Germein and Pt. Pirie, on the Mambray Creek flood plain and west of Nectar Brook.

Elevation: Excluding the quartzite hills, the range in elevation of the plain is from 5 m on the western margin to 40 m on the eastern side.

Relief: The three quartzite hills (Mt. Grainger, Mt. Gullet and Mt. Mambray) are 64 m, 40 m and 20 m respectively above the surrounding plains. The plains have even grades with no relief except for watercourses (maximum of 5 m incision) and sand rises (maximum height 3 m).

Soils: Deep gradational loams and sandy loams, both calcareous and non calcareous are the most common soils, with deep sands.

Main soils

A4	Calcareous sandy loam
A6	Calcareous clay loam
D5	Loamy sand over red clay loam
H2	Deep sand
M4	Gradational sandy loam

Minor soils

C3	Gradational loam
D3/D2	Loam over red clay
M1/A3	Gradational loamy sand
B2	Shallow stony calcareous sandy loam

Main features: The Baroota Land System is an old alluvial plain partially covered by low sand hills. The main soils are deep, well structured and moderately fertile, but productive potential is limited by marginal rainfall. Heavier soils are generally less productive than sandier soils in low rainfall areas, due to their poor moisture release characteristics. There are significant areas of light sandy soils which are susceptible to wind erosion. Fertility maintenance is a major management issue on all soil classes.



Soil Landscape Unit summary: 9 Soil Landscape Units (SLU) mapped in the Baroota Land System:

SLU	% of area	Main features #
AVC	1.0	Isolated low quartzite hills with slopes of 6-20%, calcrete capped and partially covered by sand spreads. Main soils: <u>shallow stony calcareous sandy loam</u> - B2 (E) and <u>deep sand</u> - H2 (E). The hills are very limited in extent and have little agricultural value due to the limitations of shallow stony soil variably covered by infertile sand.
KGA	13.1	Plains with slopes of 1-2% formed on medium to fine textured sediments. The main soils are <u>gradational loam</u> - C3 (E), with <u>calcareous clay loam</u> - A6 (L), <u>loamy sand over red clay loam</u> - D5 (L) and <u>loam over red clay</u> - D2 (L). These soils are generally deep, well structured and moderately fertile. Potential for erosion is moderately low but the risk of poor yields and resulting inadequate surface cover is always present due to the low rainfall.
KPA KPT KPU KPF	36.9 4.7 7.9 1.7	Plains formed on medium, fine and coarse textured alluvial sediments. KPA Plains with slopes of less than 2% and low sandy rises. KPT Marginally saline plains. KPU Plains with 5-10% scalded areas. KPF Marginally saline plains including the eroded lower reaches of Mambray Creek. Main soils: <u>calcareous clay loam</u> - A6 (E), with <u>gradational sandy loam</u> - M4 (C), <u>calcareous sandy loam</u> - A4 (L). <u>Gradational loamy sand</u> - M1/A3 , <u>loam over red clay</u> - D3 and <u>loamy sand over red clay loam</u> - D5 are all minor. The most extensive soils are deep, well structured, medium textured and alkaline, with moderate natural fertility. Potential yields are limited by low rainfall. There is a significant proportion of low fertility sandy soil prone to wind erosion. These are less attractive for cropping.
USE USJ USK	1.2 10.2 23.3	Sand rises and dunes overlying flood plains. USE Steep sided jumbled dunes, severely eroded in the past. USJ 30-60% cover of low sand dunes overlying alluvial plain sediments. USK Alluvial plain covered by very low sand rises and hummocks. Main soils: <u>deep sand</u> - H2 (and associated non calcareous deep sands) (E-V) on the sandy rises, with <u>gradational sandy loam</u> - M4 (L-E), <u>loamy sand over red clay loam</u> - D5 (M-L), <u>gradational loamy sand</u> - M1/A3 (M-L) and <u>calcareous clay loam</u> - A6 (M-L) on flats. Wind erosion potential on the low fertility sandy soils is the main limitation. Cropping these soils in the prevailing rainfall is risky. The heavier flats are more stable and fertile and have potential for good yields in better seasons.

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

- (D) Dominant in extent (>90% of SLU)
- (V) Very extensive in extent (60-90% of SLU)
- (E) Extensive in extent (30-60% of SLU)
- (C) Common in extent (20-30% of SLU)
- (L) Limited in extent (10-20% of SLU)
- (M) Minor in extent (<10% of SLU)



Detailed soil profile descriptions:

- A4** Calcareous sandy loam (Regolithic, Supracalcic / Calcic Calcarosol)
Calcareous sandy loam grading to a very highly calcareous sandy clay loam with soft or rubbly (Class III A or III B) carbonate, overlying medium grained alluvium.
- A6** Calcareous clay loam (Regolithic, Calcic Calcarosol)
Calcareous clay loam grading to a very highly calcareous clay (Class I carbonate) overlying fine grained alluvium.
- B2** Shallow stony calcareous sandy loam (Petrocalcic Calcarosol)
Medium thickness calcareous sandy loam overlying sheet calcrete capping hard quartzite.
- C3** Gradational loam (Calcic, Red Dermosol)
Loam to clay loam grading to a well structured red clay with abundant fine Class I carbonate below 50 cm, overlying alluvium.
- D3/D2** Loam over red clay (Calcic, Red Sodosol / Chromosol)
Hard sandy loam to clay loam over red clay, dispersive in Sodosols and non dispersive in Chromosols, with a Class I carbonate layer below 50 cm.
- D5** Loamy sand over red clay loam (Calcic, Red / Brown Chromosol)
Thick firm to hard massive loamy sand overlying a hard massive red or brown sandy clay loam to clay loam with minor fine carbonate, overlying medium to coarse textured alluvium from about 100 cm.
- H2** Deep sand (Calcic Calcarosol)
Very thick calcareous sand over a highly calcareous clayey sand Class IV carbonate layer.
- M1/A3** Gradational loamy sand (Calcic, Red Kandosol / Epibasic, Regolithic, Calcic Calcarosol)
Non calcareous loamy sand grading to a moderately calcareous red sandy clay loam over alluvium.
- M4** Gradational sandy loam (Calcic, Red Kandosol)
30 - 40 cm sandy loam to loamy sand, weakly calcareous from about 20 cm, over a moderately to highly calcareous red to orange light sandy clay loam grading to a massive red sandy clay loam with Class III A carbonate from 50 cm, overlying alluvial clayey sand to sandy clay from about 100 cm.

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

