BOU Boucaut Land System

Marginally to highly saline flats extending from north east of Snowtown to the Broughton River flood plain between Redhill and Koolunga.

Area: 95.8 km^2

Annual rainfall 375 – 390 mm average

Geology: Gypseous clays of old lake beds, overlain in places by rubbly carbonates (Bakara and Woorinen Formation), and soft gypsum deposits.

Topography: Flat to very gently inclined plains interspersed with highly saline depressions and salt flats which are seasonally inundated. Low gypsum lunettes occur on the eastern and southern margins of the salt flats. There are occasional low stony calcreted rises. The plains are marginally to highly saline as a result of salty near surface water tables.

Elevation: 90 - 100 m

Relief: Less than 10 m (floor of salt flat to crest of lunette or calcrete rise)

Soils: Calcareous loams are most common, with subdominant non calcareous gradational loams, wet saline soils and gypsum deposits.

Main soils

A6 Calcareous clay - non to marginally saline flats
C4 Deep hard gradational loam - non to marginally saline flats
M4 Deep hard gradational loam - non to marginally saline flats
N2 Wet saline soil - salt flats

Minor soils

D4 Loam over friable red clay - flats
A4 Rubbly calcareous loam - low to very low stony rises
C3 Shallow gradational loam - low rises
A8 Gypseous calcareous loam - lunettes

Main features: The Boucaut Land System is characterized by a complex of marginally saline flats and salinas, with minor stony and gypsum rises. The soils on the less saline flats are deep, well structured and fertile, but productivity is limited by high subsoil salt and boron levels. The salt flats, stony rises and gypsum lunettes have limited agricultural value.

Soil Landscape Unit summary: 7 Soil Landscape Units (SLUs) mapped in the Boucaut Land System:

SLU	% of area	Main features #
QMB	0.6	Low rises up to 10 m high with slopes of 2-3% and up to 20% surface cover of calcrete stones. They are formed on sheet and rubbly calcrete of the Bakara and Woorinen Formations. The calcrete is underlain at depth (100 - 200 cm) by a heavy impermeable clay (Hindmarsh Clay). Main soils: rubbly calcareous loam - **A4** (V) and shallow gradational loam - **C3** (L). These soils are typically shallow and although deeper soils are interspersed amongst them, water holding capacity and workability problems are the most limiting features. Alkalinity and reduced fertility caused by the high carbonate contents of the soil also affect productivity.
VAD VAE	6.1 3.7	Saline flats formed on old lake bed sediments. **VAD** Samphire and saltbush flats with 10-20% salt lakes. **VAE** Seasonally inundated salinas. Main soil: saline swamp soil - **N2**. The flats are highly saline and wet for extended periods. The salinas are too saline to support any vegetation. The samphire / saltbush flats are only suitable for light grazing due to the low productivity and fragility of the vegetation. As well as being wet and saline, all soils are highly alkaline and have very high levels of sodium and boron near the surface.
VGA	28.9	Very gently undulating plains formed on old lake bed clayey sediments with limited stony areas. Main soils: calcareous clay loam - **A6** (E) with rubbly calcareous loam - **A4** (L), deep hard gradational loam - **C4** (L), loam over friable red clay - **D4** (L) and deep hard gradational loam - **M4** (M). These flats are generally arable despite the moderate to high levels of subsoil salt, boron and sodium. These limitations appear to be more concentrated and closer to the surface on the flats compared with the low rises.
VIB VIC	40.0 12.0	Flats with occasional low rises (old lunettes) formed on old lake bed clayey sediments. The land is all salt affected. **VIB** Marginally saline land. **VIC** Highly saline land with samphire, saltbush and bluebush. Main soils: calcareous clay loam - **A6** (E) and deep hard gradational loam - **C4** and **M4** (E), with loam over friable red clay - **D4** (L), rubbly calcareous loam - **A4** (L), and shallow gradational loam - **C3** (M) on stony areas. Saline variants of all these soils dominate **VIC**. Gypseous calcareous loam - **A8** (M) occurs on lunettes. The saline soils have associated toxic levels of boron and sodicity at moderately shallow depths. **VIB** is marginally arable - good early rains flush enough salts from the surface to allow crop establishment, and slightly elevated land is sufficiently leached of salts for cropping to be viable. **VIC** is mostly too saline and wet for cropping, but is suitable for grazing of chenopod shrubs.
VJF	8.7	Complex of marginally to highly saline flats, salt lakes and lunettes, formed on old lake floor sediments. Main soils are similar to those for **VIB** and **VIC**, but with saline swamp soil - **N2** (C) in the salt lakes, and gypseous calcareous loam - **A8** (L) on lunettes. This complex landscape has minimal cropping potential due to the highly saline near surface water table. This water table is at the surface in the scattered salt flats which are characteristic of the unit. The lunettes adjacent to the salt flats are only marginally suitable for cropping because of the high gypsum content of the soil (very difficult to maintain satisfactory fertility).

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 Rubbly calcareous loam (Regolithic, Supracalcic / Lithocalcic Calcarosol)
Rubbly calcareous loam grading to Class III B, III C or II carbonate at moderately shallow depth.

A6 Calcareous clay loam (Regolithic, Hypercalcic Calcarosol)
Calcareous clay loam to clay grading to very highly calcareous clayey Class I carbonate layer. There is variable soft and crystalline gypsum in the subsoil.

A8 Gypseous calcareous loam (Gypsic Calcarosol)
Highly calcareous loam grading to light brown clay loam with abundant fine gypsum.

C3 Shallow gradational loam (Sodic, Lithocalcic, Red Dermosol)
Clay loam grading to a red friable clay over Class III B or III C carbonate.

C4 Deep hard gradational loam (Sodic, Hypercalcic, Red / Brown Dermosol)
Clay loam to clay grading to a well structured red or brown clay underlain by soft Class I carbonate.

D4 Loam over friable red clay (Hypercalcic, Pedaric, Red Sodosol)
Firm to hard loam to clay loam over a friable fine blocky structured red subsoil, calcareous with depth.

M4 Deep hard gradational loam (Sodic, Calcic, Red Dermosol)
Hard loam to clay loam grading to a red or brown coarsely structured clay, calcareous with depth, over medium to fine grained alluvium.

N2 Saline swamp soil (Gypsic, Hypersalic Hydrosol)
Medium to fine textured soil, red to grey brown, calcareous with depth and with crystalline gypsum throughout. Highly saline and wet for much of the year.

Further information: DEWNR Soil and Land Program