BAN Bandon Land System

(Based on the description by Potter, Wetherby and Chittleborough (1973) in "A Description of the Land in County Albert, County Alfred and Part of County Eyre, South Australia". Dept. of Agric. S.A. Soil Cons. Branch LD1).

Gently undulating plains in the Copeville area

Area: 258.9 km^2

Annual rainfall: 280 – 320 mm average

Geology: The land is underlain by calcreted Tertiary sediments, generally Blanchetown Clay equivalent. Molineaux Sand deposits overlie the calcrete and cover about 25% of the total area.

Topography: The Land System is an undulating plain comprising benches which are remnants of an older calcreted land surface, flats and rises resulting from the erosion of the calcreted surface, and depressions which are probably solution features. Overlying all of these landscape components are low to occasionally moderate rounded sandhills with more or less east - west orientation. They occupy about 25% of the land surface. The overall appearance of the landscape is uneven due to the close association of the various facets.

Elevation: 50 - 100 m

Relief: 15 - 20 m

Soils: The soils fall into three main groups, viz. shallow over calcrete, moderately deep and calcareous over fine carbonate, and deep sandy.

Main soils
Flats and depressions
B3 Loamy sand over calcrete
Rises
B2 Shallow rubbly calcareous sandy loam
A4 Moderately deep rubbly calcareous sandy loam
Sandhills
H2 Deep sand

Main features: The Bandon Land System comprises a complex of non arable stony flats and benches, depressions with moderately deep sand to loamy sand soils, and rises and flats with variable calcareous sands to sandy loams. Deep infertile sands prone to water repellence and wind erosion occur on low to moderate sandhills draped over the main landscape. Except for the very stony land, the System is arable, but moderate limitations caused by restricted water holding capacity and marginal fertility apply to most of the land. The sandhills are generally arable with care, but some larger dunes are marginal or unsuitable for cropping.

Soil Landscape Unit summary: 11 Soil Landscape Units (SLUs) mapped in the Bandon Land System:

SLU	% of area	Main features #
QJA QJZ QOZ	1.2 3.0 3.0	Very stony flats and remnant benches with up to 30% low rounded sandhills. **QJA** Stony flats. **QJZ** Stony benches with less than 10% sandhills. **QOZ** Stony benches with 10-30% sandhills. Main soils: shallow rubbly calcareous sandy loam - **B2** (V) with deep sand - **H2** (M-C) on sandhills. The main soils are very shallow and stony, and the land is essentially non arable. The scattered sandhills have deeper soils, but they are infertile and prone to erosion and water repellence, so have limited productive potential
RBA RCA RCE	14.9 13.8 3.7	Flats and depressions underlain by calcrete with variable (often extensive) surface stone. Low rounded irregular sandhills cover up to 30% of the land surface. The depressions are up to 12 m below the main land surface. **RBA** Very gently undulating flats with 10-30% low sandhills. **RCA** Flats with less than 10% sandhills. **RCE** Circular depressions. Main soils: loamy sand over calcrete - **B3** (V-E) with shallow rubbly calcareous sandy loam - **B2** (L) on low stony rises, and deep sand - **H2** (M-C) on sandhills. The soils are moderately deep although sandy. Main limitations to cropping are restricted moisture holding capacity and marginal fertility, with stone a problem in places.
ScB ScG	32.4 6.2	Complex of gently undulating to undulating rises, slopes and depressions with up to 10% very stony patches and up to 30% low rounded sandhills. **ScB** Gently undulating rises with 10-30% sandhills. **ScG** Undulating rises to 20 m high with well defined water courses and up to 20% sand spreads. Main soils: moderately deep calcareous sandy loam - **A4** (E) with shallow rubbly calcareous sandy loam - **B2** (L) on stony rises, loamy sand over calcrete - **B3** (L) in depressions and deep sand - **H2** (L-C) on sandhills. Heavy calcrete layers are less common in these areas than on the flats and rises of the **Q__** soil landscape units in the System. However, water holding capacity and marginal fertility are the main limitations to agricultural production.
UMF UMf	2.0 12.2	Dunefields of mainly low rounded irregular sandhills superimposed on the flats and rises of the main landscape. **UMF** 60-90% moderate jumbled dunes. **UMf** 30-60% low rounded sandhills superimposed on rises. Main soils: deep sand - **H2** (E-V) on sandhills, with loamy sand over calcrete - **B3** (C-E), moderately deep calcareous sandy loam - **A4** (L-C) and shallow rubbly calcareous sandy loam - **B2** (L-C) on intervening flats and slopes. These sandhill complexes are characterized by deep sandy infertile soils prone to water repellence and wind erosion. Most are arable if appropriately managed, but the larger hills of **UMF** are not suited to cropping. The flats and swales are similar to those in **ScB** and **RBA**.
UUJ	7.6	Calcrete benches with 30-60% low rounded sandhills. Main soils: deep sand - **H2** (E) on sandhills and shallow rubbly calcareous sandy loam - **B2** (E) on intervening stony flats. Deep infertile and erosion prone sands alternate with shallow stony soils in this complex. The land is difficult to manage because of the soil variability over short distances, and the limitations of both of the major soil classes.

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:

Flats and depressions

B3 Loamy sand over calcrete (Petrocalcic, Leptic Tenosol)
Thick non calcareous loamy sand, paler coloured and slightly more clayey with depth, overlying fractured calcrete grading to very highly calcareous loamy sand to sandy clay loam with up to 50% calcrete fragments. Tertiary sediments appear at about 100 cm.

Rises

B2 Shallow rubbly calcareous sandy loam (Petrocalcic, Supracalcic Calcarosol)
Thin calcareous sandy loam, more clayey and nodular with depth over a Class III B rubble layer from about 15 cm, with calcrete at about 25 cm. Below the calcrete is a very highly calcareous sandy clay loam, becoming more clayey with depth.

A4 Moderately deep rubbly calcareous sandy loam (Lithocalcic Calcarosol)
Thin to medium thickness calcareous sandy loam to light sandy clay loam over a highly calcareous sandy clay loam with abundant carbonate nodules, grading to softer very highly calcareous sandy clay loam.

Sandhills

H2 Deep sand (Calcareous, Arenic/Argic/Regolithic, Brown-Orthic Tenosol)
Thick loose non calcareous sand over a calcareous brown clayey sand to light sandy clay loam.

Further information: DEWNR Soil and Land Program