

CAD Cadell Land System

(Based on the description of the western portion of the Murtho Land Unit 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 flats within the north-west bend of the River Murray in the Morgan - Cadell area

Area: 37.0 km²

Annual rainfall: 240 – 250 mm average

Geology: The System comprises two geological features. Underlying the entire area, and exposed on lower lying areas, is calcrete in sheet but more commonly rubbly form. Overlying a limited proportion of the landscape are deposits of windblown Molineaux Sand.

Topography: The System is a gently undulating calcrete plain, stony where the calcrete is exposed on some flats. Extensive dunefields of mainly low jumbled sandhills occur particularly in the west. These are highly unstable once exposed.

Elevation: 35 - 45 m

Relief: 6 - 9 m

Soils: Soils are generally calcareous sandy loams to sands, the main variations attributable to depth and texture.

Main soils

Flats and non sandy rises

A4 Calcareous loamy sand

B2 Shallow calcareous sandy loam

Sand hills

H2 Deep calcareous sand

Main features: The Cadell Land System is a gently undulating plain of dunefields and flats. The flats are stony with soils typically shallow calcareous loamy sands to sandy loams over rubbly calcrete. Most of the flats are arable although with limited productive potential due to shallow depth and marginal fertility. The sandhills are low but given the rainfall represent a potentially high wind erosion hazard. In addition the soils are infertile. Consequently large areas of the sandhills are uncleared.



Soil Landscape Unit summary: 5 Soil Landscape Units (SLUs) mapped in the Cadell Land System:

SLU	% of area	Main features #
QMA QME	12.7 1.3	<p>Stony flats formed on hard calcrete, with occasional solution hole depressions.</p> <p>QMA Flats. QME Depressions.</p> <p>Main soils: <u>shallow calcareous sandy loam - B2 (V)</u> with <u>calcareous loamy sand - A4 (L)</u>. The majority of soils are non arable due to shallow profiles and extensive surface stone and sheet calcrete. The deeper A4 soils are sometimes arable, but water holding capacity is a moderate to severe limitation.</p>
SgA ShA	10.5 49.2	<p>Very gently undulating flats and rises formed on rubbly Bakara Calcrete, overlain by up to 30% low sandy rises. There is patchy but generally minor surface stone.</p> <p>SgA Flats with 10-30% sandhills. ShA Flats with less than 10% sandhills.</p> <p>Typical soils: <u>calcareous loamy sand - A4 (E)</u>, with <u>shallow calcareous sandy loam - B2 (C)</u> and <u>deep calcareous sand - H2 (M-C)</u> on sandy rises. This land represents the potentially more productive parts of the Cadell System, due to a higher proportion of deeper, non sandy soils. The land is fully arable, although some soils have limited water holding capacity. There are moderate amounts of salt in the subsoils. The sandy rises have low fertility and are prone to wind erosion.</p>
UMJ	26.3	<p>Dunes and sand spreads of Molineaux Sand covering between 30% and 60% of the land surface. The swales and flats between the rises are underlain by rubbly Bakara Calcrete.</p> <p>Typical soils: <u>deep calcareous sand - H2 (E)</u> on sandhills, sandy rises and sandy swales, and <u>calcareous loamy sand - A4 (E)</u> in lower lying swales and on non sandy rises. These areas are characterized by deep, low fertility soils prone to wind erosion. Water repellence may a problem in some years. The sandhills have moderate to high wind erosion potential, but most of the area is under scrub.</p>

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 non sandy rises

A4 Calcareous loamy sand (Supracalcalcic / Lithocalcalcic Calcarosol)

Medium thickness calcareous loamy sand grading to a rubbly sandy loam over gritty semi hard carbonate at about 50 cm, merging with a highly calcareous yellow sandy clay loam at about 100 cm.

B2 Shallow calcareous sandy loam (Petrocalcalcic Calcarosol)

Thin calcareous sandy loam to light sandy clay loam over a highly calcareous sandy clay loam with abundant carbonate nodules on sheet calcrete at about 30 cm.

Sand hills

H2 Deep calcareous sand (Hypercalcalcic Calcarosol)

Thick slightly calcareous red brown sand grading to a paler coloured and highly calcareous sand over soft to semi-hard carbonate at about 200 cm.

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

