# WTN Warnertown Land System

Sandhill country immediately south east of Port Pirie

**Area**: 96.4 km<sup>2</sup>

**Annual rainfall**: 350 - 400 mm average

**Geology**: Medium to fine textured alluvial or lacustrine sediments, capped by soft to rubbly

carbonates of the Woorinen Formation, in turn overlain by Molineaux Sand.

**Topography**: Very gently undulating dunefield with predominantly low parallel dunes or sandy rises with

a north west to south east orientation, and occasional fields of larger dunes. There are significant areas of saline flats and swales where salty groundwater has reached the surface.

The Land System has an overall gradient of 0.5% to the north west.

**Elevation**: 10 m in the north west near Port Pirie to 100 m in the south east near Nurom

**Relief**: The sand dunes and rises provide the only relief. They vary in height from a metre or two to

between 5 - 10 metres.

**Soils**: The soils are almost all calcareous, ranging from deep sands on sand dunes, to gradational

sandy loam to clay loam profiles (with or without rubble) on flats.

Soils of sand dunes

**H2a** Deep calcareous sand

**H2b** Deep non calcareous sand - dunes

Soils of swales and flats

**A4a** Calcareous sandy loam

A4b Rubbly calcareous sandy loamA5 Calcareous sandy clay loamSoils of marginally saline swales and flats

**A4c** Marginally saline rubbly calcareous loam

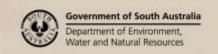
**A6** Marginally saline calcareous loam

**N2** Saline loam

**Main features**: The Warnertown Land System is low sandhill country with low fertility, wind erosion prone

soils on the rises and moderately shallow to deep calcareous loamy soils on the flats. These are moderately fertile but lack of waterholding capacity is a limitation in the shallower types. Salinization is common in the lower lying swales where the ground water table is near the

surface. Most of this land is non arable.





#### Soil Landscape Unit summary: 3 Soil Landscape Units (SLUs) mapped in the Warnertown Land System

SLU	% of area	Main features #
UIF	21.6	Dunefields.
UIJ	67.9	More than 60% dunes 5-10 m high.
		30-60% low dunes less than 5 m high.
		Main soils: <u>deep calcareous sand</u> - <b>H2a</b> (V in <b>UIF</b> , E in <b>UIJ</b> ) and <u>deep non calcareous sand</u> - <b>H2b</b> (L)
		on the dunes and <u>calcareous sandy loam</u> - <b>A4a</b> , <u>rubbly calcareous sandy loam</u> - <b>A4b</b> and <u>calcareous</u>
		sandy clay loam - A5 (E in UIJ, C in UIF) in the swales. The sands are difficult to manage because of
		their low fertility, susceptibility to wind erosion and moderately low waterholding capacities. The
		heavier soils in the swales are potentially more productive as they are more fertile and stable (more
		clayey), but are commonly shallow over carbonate which limits waterholding capacity.
VKJ	10.5	Flat swales with variable levels of salinity, formed on old lake floor sediments, often calcrete capped.
		Main soils: marginally saline calcareous loam - <b>A6</b> (L) and marginally saline rubbly calcareous loam -
		<b>A4c</b> (E) on more marginal areas, with <u>saline loam</u> - <b>N2</b> (E) on wetter highly saline flats. These flats are
		marginally to highly saline and generally non arable. Given the low rainfall, the most productive
		pasture base is probably salt tolerant shrubs such as saltbush, although only on drier sites.

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

(D) Dominant in extent (>90% of SLU)

(C) Common in extent (20–30% of SLU)

(V) Very extensive in extent (60–90% of SLU)

(L) Limited in extent (10–20% of SLU)

(E) Extensive in extent (30–60% of SLU)

(M) Minor in extent (<10% of SLU)

#### **Detailed soil profile descriptions:**

# A4a Calcareous sandy loam (Regolithic, Hypercalcic Calcarosol)

Calcareous loamy sand to sandy loam, grading to a light sandy clay loam over very highly calcareous sandy clay loam to sandy clay from about 60 cm.

## **A4b** Rubbly calcareous sandy loam (Regolithic, Supracalcic Calcarosol)

Calcareous loamy sand to sandy loam with significant rubble at shallow depth, grading to a highly calcareous sandy clay loam, with clayey substrate from about 100 cm

#### A4c Marginally saline rubbly calcareous loam (Regolithic, Lithocalcic Calcarosol)

Calcareous sandy loam to clay loam overlying rubbly or semi-hard carbonate at about 30 cm, becoming less rubbly with depth, marginally saline throughout.

#### A5 <u>Calcareous sandy clay loam (Regolithic, Hypercalcic Calcarosol)</u>

Calcareous clay loam over a yellowish red calcareous clay grading to a red clay with variable fine carbonate.

#### A6 Marginally saline calcareous loam

Calcareous loam becoming more clayey and calcareous with depth, grading to a coarsely structured clay from about 100 cm, marginally saline throughout.

## **H2a** Deep calcareous sand (Regolithic, Calcic Calcarosol)

Very thick reddish calcareous sand, becoming more calcareous with depth and grading to highly calcareous red clayey sand below 100 cm.

### **H2b** Deep non calcareous sand (Calcareous, Arenic, Red-Orthic Tenosol)

Very thick non calcareous sand grading to a red calcareous clayey sand at about 100 cm.

## N2 Saline loam (Salic Hydrosol)

10 - 20 cm calcareous sandy loam to clay loam over a brown very highly calcareous clay loam (often with a rubbly calcrete pan at 25 cm) grading to a saturated grey, brown and yellow mottled clay from 50 cm.

Further information: DEWNR Soil and Land Program

