WTN Warnertown Land System

Sandhill country immediately south east of Port Pirie

Area: 96.4 km^2

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 loam
A5 Calcareous sandy clay loam
Soils 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 UIJ	21.6 67.9	Dunefields. More than 60% dunes 5-10 m high. 30-60% low dunes less than 5 m high. Main soils: deep calcareous sand - **H2a** (V in **UIF**, E in **UIJ**) and deep non calcareous sand - **H2b** (L) on the dunes and calcareous sandy loam - **A4a,** rubbly calcareous sandy loam - **A4b** and calcareous 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 - **A6** (L) and marginally saline rubbly calcareous loam - **A4c** (E) on more marginal areas, with saline loam - **N2** (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)
(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:

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 Calcareous sandy clay loam (Regolithic, Hypercalcic Calcarosol)
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