

## SAND OVER SODIC BROWN CLAY

**General Description:** *Sandy surface soil with a bleached subsurface layer overlying a brown mottled columnar structured clay, with calcrete nodules at depth*

**Landform:** Flats between relict coastal dunes.

**Substrate:** Interbedded clays and limestones of the Padthaway Formation.

**Vegetation:** Mallee broombush with blue gum.



<b>Type Site:</b>	Site No.:	SE045	1:50,000 mapsheet:	6925-1 (Keith)
	Hundred:	Stirling	Easting:	437500
	Section:	383	Northing:	5991500
	Sampling date:	08/11/1995	Annual rainfall:	505 mm average

Flat. Soft surface. Watertable at 120 cm, EC = 8.48 dS/m.

### Soil Description:

Depth (cm)	Description
0-10	Dark grey soft loamy sand. Clear to:
10-28	Bleached soft sand. Sharp to:
28-50	Yellowish brown and olive brown mottled firm medium clay with coarse columnar structure, breaking to angular blocky. Clear to:
50-67	Light brown, olive and red mottled firm medium clay with moderate coarse angular blocky structure. Abrupt to:
67-100	Pale olive, yellow and red mottled firm medium clay with strong coarse prismatic, breaking to blocky structure. Clear to:
100-122	Olive grey and yellow brown mottled firm medium clay with 20-50% calcrete fragments and 10-20% soft carbonate segregations. Clear to:
122-130	Calcrete pan in watertable.



**Classification:** Supracalcic, Mottled-Subnatric, Brown Sodosol; medium, non-gravelly, sandy/clayey, deep.



## Summary of Properties

**Drainage:** Imperfectly drained. The sodic clay subsoil causes water to "perch", saturating part of the soil for up to several weeks.

**Fertility:** Natural fertility is low due to the low clay content - this is supported by the low CEC values. Organic matter is the main contributor to nutrient retention in the surface. The data indicate that phosphorus, sulphur, potassium and magnesium are adequately supplied, but calcium may be deficient. Note phosphorus leaching.

**pH:** Neutral at the surface, alkaline with depth.

**Rooting depth:** 100 cm in pit but few roots below 67 cm.

### Barriers to root growth:

**Physical:** The sodic clay subsoil prevents roots from proliferating freely.

**Chemical:** The groundwater is marginally saline and will restrict root growth - a potential problem if the watertable rises. Salt and boron levels in the soil are not limiting.

**Waterholding capacity:** Approximately 90 mm in rootzone (moderate).

**Seedling emergence:** Good except where non wetting is a problem.

**Workability:** Good.

### Erosion Potential:

**Water:** Low.

**Wind:** Moderately low.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.6	7.1	0	0.38	2.87	2.6	32	138	27	1.9	0.54	12	4.2	2.6	8.1	4.28	3.54	0.30	0.16	3.7
0-10	7.2	6.8	0	0.41	2.96	1.6	32	166	25	0.9	-	-	-	-	5.5	3.08	2.13	0.26	0.20	4.7
10-28	8.0	7.5	0	0.34	3.28	0.1	25	83	16	0.1	-	-	-	-	1.2	0.55	0.44	0.04	0.05	na
28-50	8.1	7.7	0.1	0.58	3.20	0.4	12	592	25	3.7	-	-	-	-	24.4	8.85	10.73	1.71	2.04	7.0
50-67	8.5	8.0	1.3	0.49	2.36	0.2	<4	533	21	2.0	-	-	-	-	21.6	9.30	9.86	1.86	1.77	8.6
67-100	8.7	7.7	0.1	0.30	1.72	0.1	<4	415	24	1.5	-	-	-	-	19.4	8.47	6.77	2.20	1.23	11.3
100-122	8.8	8.2	8.3	0.58	2.34	0.1	<4	492	42	1.3	-	-	-	-	20.3	10.83	7.07	2.67	1.38	13.2

**Note:** Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.  
CEC (cation exchange capacity) is a measure of the soil's capacity to store and release major nutrient elements.  
ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC.

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

