

THICK SAND OVER CLAY

General Description: *Thick sand to soft light sandy loam over a coarsely structured brown clay*

Landform: Very gently undulating plain.

Substrate: Clay.

Vegetation: Red gum (*Eucalyptus camaldulensis*).



Type Site: Site No.: SE061

1:50,000 sheet: 7023-3 (Monbulla)

Hundred: Monbulla

Annual rainfall: 760 mm

Sampling date: 02/04/97

Landform: Very gentle slope of 1%

Surface: Soft with no stones

Soil Description:

Depth (cm)	Description
0-15	Black soft sandy loam with weak polyhedral structure. Clear to:
15-38	Greyish brown loose single grain sand. Gradual to:
38-50	Light brownish grey loose single grain sand. Abrupt to:
50-64	Dark grey and light brownish grey mottled hard fine sandy clay with strong coarse columnar structure. Clear to:
64-105	Grey and brownish yellow mottled firm light medium clay with strong coarse prismatic structure. Gradual to:
105-132	Grey, light grey and brownish yellow mottled firm medium clay with moderate coarse prismatic structure. Clear to:
132-170	Light olive grey and yellow firm massive fine sandy clay. Gradual to:
170-180	Light grey, grey and yellow mottled firm sandy medium clay with 2-10% fine carbonate segregations and minor carbonate nodules (2-6 mm).



Classification: Bleached-Sodic, Calcic, Grey Chromosol; thick, non-gravelly, sandy / clayey, very deep

Summary of Properties

- Drainage:** Imperfectly drained. Water perches on the coarsely structured clayey subsoil for several weeks following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is low. The thick sandy topsoil has little nutrient retention capacity, which is largely dependent on organic matter content. The subsoil has a much higher retention capacity, but is too deep for early season root growth to access. Phosphorus, potassium and copper levels are low.
- pH:** Acidic at the surface, alkaline with depth.
- Rooting depth:** 180 cm in pit, but few roots below 130 cm.
- Barriers to root growth:**
- Physical:** The coarsely structured clayey subsoil restricts root density by confining most growth to the aggregate surfaces.
 - Chemical:** There are no apparent chemical barriers, but low nutrient status and retention capacity in the topsoil limit root volume.
- Water holding capacity:** Approximately 150 mm in the root zone.
- Seedling emergence:** Satisfactory except where water repellent.
- Workability:** Soft surface is easily worked.

Erosion Potential

- Water:** Low.
- Wind:** Moderately low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S 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	4.9	4.0	-	0.09	-	1.98	11	73	8.6	1.2	0.33	60	3.65	0.30	-	4.11	0.72	0.13	0.17	2.5
0-15	5.5	4.9	-	0.11	-	2.13	11	63	9.7	1.4	0.11	47	4.55	0.26	-	5.47	1.07	0.18	0.16	2.6
15-38	6.7	6.3	-	0.02	-	0.15	1	25	2.1	0.3	0.14	9.9	1.01	0.07	-	0.80	0.13	0.04	0.04	na
38-50	6.8	6.6	-	0.02	-	0.08	1	28	1.2	0.2	0.21	7.5	0.99	0.09	-	0.60	0.10	0.03	0.04	na
50-64	8.0	7.2	-	0.09	-	0.30	1	126	8.0	0.8	0.05	13	0.93	0.26	-	8.22	2.91	0.68	0.33	5.6
64-105	8.3	7.4	-	0.09	-	0.16	1	271	7.9	0.6	0.09	6.1	1.17	0.12	-	13.72	5.97	1.49	0.70	6.8
105-132	8.4	7.4	-	0.09	-	0.07	1	257	10	0.6	0.05	5.4	1.36	0.05	-	12.40	5.28	1.49	0.66	7.5
132-170	8.4	7.4	-	0.12	-	0.07	1	293	11	0.8	0.18	3.3	1.60	0.09	-	15.82	6.50	2.01	0.78	8.0

Note: Paddock sample bulked from 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. CEC at this site is estimated from the sum of exchangeable cations.