

## THICK SAND OVER BROWN SODIC CLAY

**General Description:** *Loamy sand topsoil, with a bleached subsurface layer, over dark yellowish brown dispersive clay*

**Subgroup soil:** G3

**Landform:** Gently undulating plain.  
Site is on a slight rise.

**Substrate:** Alluvial clay

**Vegetation:** Grasses and clover.



<b>Type Site:</b>	Site No:	SE151	1:50,000 mapsheet:	7022-1 (Nangwarry)
	Hundred:	Mingbool	Easting:	495280
	Section:	242E	Northing:	5836380
	Sampling date:	24/10/08	Annual rainfall:	720 mm average

### Soil Description:

Depth (cm)	Description
0–15	Hardsetting, strongly repellent, dark brown, loamy sand with single-grain structure. Large worms evident.
15–44	Bleached, loamy sand with single-grain structure. Large worms evident.
44–60	Dark yellowish brown yellowish brown and orange-brown, dispersive, sandy medium heavy clay with weak, very coarse columnar parting to moderate fine lenticular structure.
60–90	High-strength, dark yellowish brown, yellowish brown and light olive brown, sandy medium heavy clay with massive structure and 2–10% hard carbonate fragments.
90–120	Light olive brown, yellowish brown and greenish grey, sandy medium heavy clay with massive structure, 10–20% hard carbonate fragments and 10–20% soft carbonate segregations.
120–145	Moderately calcareous, greenish grey and yellowish brown, dispersive, sandy medium heavy clay with massive structure and 20–50% hard carbonate fragments.
145–155	Slightly calcareous, greenish grey and yellowish brown, sandy medium heavy clay with massive structure and >50% hard carbonate fragments.



**Classification:** Hypocalcic, Mottled-Subnatric, Brown Sodosol; thick, non-gravelly, sandy/clayey, moderate.



## Summary of Properties

- Drainage:** Drainage is moderate to imperfect.
- Fertility:** Inherent fertility is low in the topsoil (especially in the bleached subsurface layer), but relatively higher in the subsoil, as the sandy topsoil has limited capacity to retain and provide nutrients, unlike the clayey subsoil. However, much of the soil's fertility is provided by the organic matter present in the surface soil. Maintenance and improvement of surface soil organic matter and residues is important for maintenance of fertility and protection against erosion. Phosphorus, potassium, sulfur and, probably, boron levels are low.
- pH:** Soil pH is acidic in the topsoil and upper subsoil, but is alkaline below this. Liming should be considered as part of a productive farming system.
- Rooting depth:** Viewed in the pit: most roots occur above 60 cm, with some to 90 cm.
- Barriers to Root Growth:**
- Physical:** Dispersiveness and high strength in the subsoil are likely to limit root growth.
  - Chemical:** Low levels of some nutrients (e.g. phosphorus and zinc), and probably low oxygen levels associated with seasonal perched water, may limit root growth with depth.
- Waterholding capacity:** Moderate. Total available: approx 85 mm  
 $[(0.15 \times 100) + (0.29 \times 80) + (0.16 \times 160) + (0.3 \times 150 \times 0.5)]$ .
- Seedling emergence:** Good.
- Workability:** Good.
- Erosion Potential:**
- Water:** Low.
  - Wind:** Moderate. Residue retention and maintenance of surface cover are important for protection against erosion.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO <sub>4</sub> -S mg/kg	Boron mg/kg	Al CaCl <sub>2</sub> mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg						Est. ESP
													Cu	Fe	Mn	Zn		Ca	Mg	Na	K	Al	H	
Paddock	6.8	5.9	0.2	0.04	0.45	1.6	8	42	10	3	0.4	0	1.0	110	7.4	2.4	3.3	2.5	0.5	0.2	0.0	0.0	0.0	6
0-15	6.3	5.3	0.2	0.04	0.38	1.2	12	42	8	3.1	0.3	0	0.7	121	5.8	1.7	2.8	2.1	0.4	0.2	0.0	0.0	0.0	7
15-44	6.3	5.4	0.2	0.02	0.18	0.3	8	16	2	2.8	0.3	0	0.7	170	1.7	0.3	1.0	0.6	0.1	0.2	0.0	0.0	0.0	17
44-60	6.6	5.6	0.2	0.03	0.15	0.6	2	74	4	5.1	1.6	0	0.4	60	2.1	0.2	11.0	6.5	4.0	0.3	0.2	0.0	0.0	3
60-90	8.3	7.6	0.6	0.09	0.36	0.3	2	85	2	12.2	2.2	0	0.3	13	1.8	0.4	13.2	7.6	4.9	0.4	0.2	0.0	0.0	3
90-120	8.9	8.1	0.4	0.17	0.39	0.1	2	76	3	13.9	1.6	0	0.2	15	2.0	0.2	17.0	11.1	5.1	0.6	0.2	0.0	0.0	3
120-145	8.9	7.9	6.5	0.16	0.44	0.1	2	89	3	7.8	0.6	0	0.2	12	3.3	0.2	17.7	14.3	2.9	0.3	0.2	0.0	0.0	2
145-155	8.9	7.9	1.8	0.14	0.41	0.1	2	189	5	5.4	0.4	0	0.1	11	3.1	0.6	20.7	16.9	3.1	0.3	0.2	0.1	0.1	2

**Note:** Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

Sum of cations approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.

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

