

# THICK LOAMY SAND OVER MOTTLED BROWN CLAY

**General Description:** *Thick loamy sand over poorly structured brown mottled clay with calcareous subsoil*

**Landform:** Ridge – corridor system of ancient stranded shoreline.

**Substrate:** Calcarenite and lagoonal/fluvial clays.

**Vegetation:**



**Type Site:** Site No.: SE024

1:50,000 sheet:	7023-1 (Struan)	Hundred:	Robertson
Annual rainfall:	555 mm	Sampling date:	11/03/05
Landform:	Footslope of Naracoorte Range, 3% slope		
Surface:	Soft with no stones		

**Soil Description:**

<i>Depth (cm)</i>	<i>Description</i>
0-12	Dark brown loamy sand, single grain, loose when dry, water repellent. Sharp break to:
12-45	Very dark greyish brown loamy sand, massive, very firm when dry. Diffuse change to:
45-73	Dark brown loamy sand, massive, very firm when dry. Sharp change to:
73-106	Yellowish brown heavy clay, mottled red, with strong 50-100mm columnar structure, breaking to strong 20-50mm polyhedral structure, very firm when moderately moist. Sharp change to:
106-111	Dark brown light medium clay, mottled pinkish white, with strong 20-50mm polyhedral structure. Much carbonate as soft veins and hard fragments. Sharp break to:
111-150	Red heavy clay, massive, very firm when moderately moist.



**Classification:** Mottled, Hypercalcic, Brown Chromosol; very thick, non-gravelly, sandy / clayey, deep

## Summary of Properties

- Drainage:** Imperfect. Water can perch on top of the clayey subsoil for up to several weeks following heavy or prolonged rainfall. Where topsoil is more than 50 cm thick, perched water tables are unlikely to be a serious problem. Where topsoil is thinner than 30 cm, this duration of waterlogging is significant. Note that topsoil thickness varies from 30 cm to 75 cm in less than a metre across the pit face, so considerable variability in waterlogging across a paddock is likely.
- Fertility:** Inherent fertility is moderately low as indicated by the exchangeable cation data. Test results show marginal phosphorus concentrations and low copper.
- pH:** Slightly to moderately alkaline throughout. Topsoil alkalinity and detectable carbonate due to lime dust from adjacent laneway.
- Rooting depth:** Most root development is in the surface horizons and into the upper clay. Few roots penetrate into and below the carbonate layer at 106 cm.
- Barriers to root growth:**
- Physical:** Compacted hard cap on clayey subsoil restricts root development.
  - Chemical:** There are no apparent chemical barriers.
- Water holding capacity:** Approximately 100 mm in the potential root zone. Varies depending on thickness of topsoil (refer to profile image).
- Seedling emergence:** Water repellent surface affects germination. There is potential for sand blasting of emerging plants.
- Workability:** Sandy surface is easily worked, but cultivation increases erosion hazard.
- Erosion Potential**
- Water:** Low
  - Wind:** Moderate due to sandy surface.

## 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	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-12	7.7	7.2	1.0	0.3	3.7	1.1	31	495	124	18.8	0.6	0.57	48	3.45	36.4	10.0	8.09	0.52	0.08	1.33	0.8
12-45	8.0	7.2	0.3	0.1	0.9	0.3	32	126	23	3.5	0.3	0.66	85	1.05	31.2	5.4	4.78	0.20	0.02	0.35	0.4
45-73	8.1	7.0	0.4	0.1	0.3	0.1	24	75	2	2.0	0.3	0.50	90	0.24	45.1	2.9	2.50	0.18	0.01	0.16	na
73-106	7.6	6.6	0.4	0.1	0.2	0.3	3	399	6	2.5	1.0	0.23	62	0.27	41.2	33.3	21.8	9.63	0.48	1.37	1.4
106-111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
111-150	8.3	7.5	0.7	0.1	0.3	0.3	4	274	5	2.6	2.1	0.24	37	0.78	45.4	26.4	17.4	7.89	0.41	0.75	1.6

**Note:** Sum of cations, in a neutral to alkaline soil, 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.