

## SANDY CLAY LOAM OVER SODIC RED CLAY

**General Description:** *Hard sandy loam to sandy clay loam over a coarsely structured sodic red clay, calcareous with depth, forming in reworked, or highly weathered, quartzitic sandstone*

**Landform:** Gently undulating rises.

**Substrate:** Mixture of quartzite gravelly clay outwash sediment, and highly weathered quartzitic sandstone, mantled by soft windblown carbonates.

**Vegetation:**

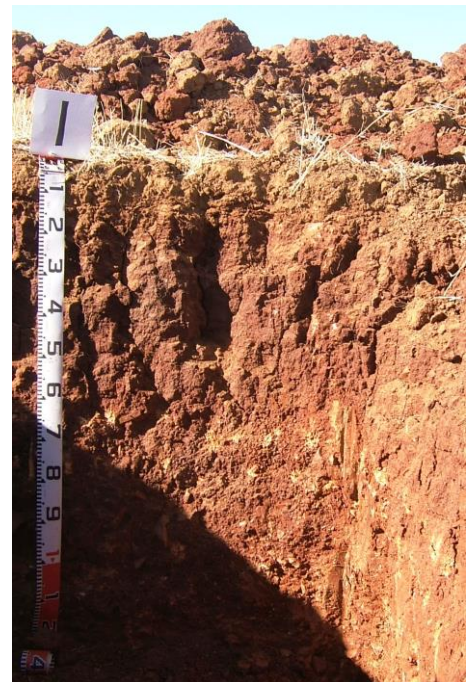


<b>Type Site:</b>	Site No.:	CM113	1:50,000 mapsheet:	6630-1 (Burra)
	Hundred:	Kingston	Easting:	306620
	Section:	187	Northing:	6285940
	Sampling date:	12/02/2013	Annual rainfall:	430 mm average

Alluvial fan at base of low rise, 2% slope. Hard setting surface, minor quartz stones.

### Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-11	Dark reddish brown hard sandy clay loam with moderate granular structure, and 2-10% quartz gravel to 6 mm Abrupt to:
11-60	Red very hard medium clay with strong coarse prismatic, breaking to coarse angular blocky structure. Gradual to:
60-100	Red hard moderately calcareous medium clay with moderate medium angular blocky structure, and 10-20% quartz and calcrete gravel to 6 mm. Clear to:
100-120	Dark red hard very highly calcareous light clay with weak medium angular blocky structure, 2-10% soft calcareous segregations, and 20-50% silcrete and calcrete fragments to 60 mm.



**Classification:** Calcic, Mesonatric, Red Sodosol; medium, slightly gravelly, clay loamy / clayey, deep



## Summary of Properties

- Drainage:** Moderately well to imperfectly drained. The sodic clay subsoil has restricted permeability, causing subsoil saturation for a week to several weeks following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is moderate, as indicated by the exchangeable cation data. The sandy clay loam surface has relatively low nutrient retention capacity, but the subsoil's capacity is high. There are no apparent nutrient element deficiencies, other than a marginal zinc level, and organic carbon levels are satisfactory for this soil type / rainfall zone.
- pH:** Acidic at the surface, alkaline with depth.
- Rooting depth:** Some roots to 70 cm, but most growth is shallower than 50 cm.
- Barriers to root growth:**
- Physical:** High clay strength limits root proliferation.
  - Chemical:** Elevated sodicity, pH, salinity, and boron concentration combine to limit root growth.
- Waterholding capacity:** Approximately 75 mm in potential rootzone.
- Seedling emergence:** The surface sets hard and seals when dry, affecting emerging seedlings in unfavourable weather conditions.
- Workability:** The surface soil tends to shatter if worked too dry, and puddle if worked too wet, so there is a limited moisture range for effective working.
- Erosion Potential**
- Water:** Moderate low. Soil is erodible, but slope is gentle.
  - Wind:** Low.

## 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 %	NO <sub>3</sub> mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> -S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	5.6	4.6	0	0.092	0.53	1.75	11	62	410	11.7	0.9	1.72	74	108	1.01	6.7	4.02	1.33	0.35	0.98	5.2
0-11	6.8	5.8	0	0.078	0.67	1.50	5	54	424	8.2	1.0	1.78	75	97.4	0.84	5.8	3.30	1.19	0.34	0.93	5.9
11-60	8.8	7.8	2.2	0.610	1.67	0.66	< 1	4	612	53.1	11.6	1.72	8	3.11	0.27	33.5	12.0	13.5	6.46	1.57	19.3
60-100	8.8	8.0	6.3	0.955	3.44	0.28	1	3	600	231	14.0	0.91	7	1.24	0.20	33.6	10.7	12.9	8.49	1.54	25.3
100-120	9.0	8.0	12.2	0.876	5.06	0.23	2	4	551	273	9.4	0.77	8	2.19	0.21	32.4	11.2	11.5	8.26	1.41	25.5

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

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.

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

