

**THICK SAND OVER CLAY**

(Wharminda soil - thick surface)

**General Description:** *Thick sand over a coarsely structured dispersive brown clay, calcareous with depth*

**Landform:** Gently undulating dunefield.

**Substrate:** Tertiary clay.

**Vegetation:**

<b>Type Site:</b>	Site No.:	EL042	1:50,000 mapsheet:	5929-1 (Kiana)
	Hundred:	Mitchell	Easting:	545100
	Section:	40	Northing:	6237350
	Sampling date:	03/03/1992	Annual rainfall:	425 mm average

Lower dune slope (1-2%). Loose surface with 2-10% calcrete stones (20-60 mm).

**Soil Description:**

<i>Depth (cm)</i>	<i>Description</i>
0-12	Dark brown loose sand. Clear to:
12-30	Pale brown loose sand. Gradual to:
30-60	Brownish yellow loose sand with a thin bleached layer at the base. Sharp to:
60-100	Yellowish brown and red very hard medium heavy clay with strong coarse columnar structure. Gradual to:
100-160	Yellowish brown and red hard medium clay with minor fine carbonate segregations. Gradual to:
160-	Yellowish brown and red hard medium clay with more than 50% fine carbonate segregations.



**Classification:** Calcic, Mesonatric, Brown Sodosol; very thick, slightly gravelly, sandy / clayey, deep



## Summary of Properties

- Drainage:** Moderately well drained. Water ponds on the top of the clayey subsoil for a week or so at a time, but the thickness of the surface sand prevents waterlogging from being a serious problem.
- Fertility:** Inherent fertility is low, as indicated by the exchangeable cation data which reflects low surface soil clay content and organic matter. Regular phosphorus applications are essential (levels are very low at sampling site). Zinc and copper deficiencies may also occur depending on seasonal conditions. Nitrogen levels are dependent on cropping history and legume content of pastures. Sulphur levels, although not measured, are likely to be low.
- pH:** Alkaline at the surface, strongly alkaline in the deep subsoil.
- Rooting depth:** 100 cm in pit, but few roots below 12 cm.
- Barriers to root growth:**
- Physical:** The dense dispersive clayey subsoil inhibits strong even root growth.
  - Chemical:** There are no chemical barriers within the upper 100 cm, but low nutrient status and retention capacity limit root growth.
- Waterholding capacity:** Approximately 60 mm in the rootzone, but only about 30 mm are actually available due to poor root distribution patterns.
- Seedling emergence:** Satisfactory, except in seasons when water repellence is a problem.
- Workability:** Loose surface is easily worked.
- Erosion Potential:**
- Water:** Low.
  - Wind:** Moderate.

## 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	
0-12	8.1	7.0	0	0.0	0.3	0.38	7.2	8	-	0.3	0.18	13	2.5	0.47	2.0	1.34	0.20	0.04	0.04	na
12-30	7.8	6.8	0	0.0	0.2	0.08	12	16	-	0.3	0.05	10	0.10	0.17	0.9	0.44	0.11	0.03	0.03	na
30-60	7.6	6.8	0	0.0	0.4	0.03	15	23	-	4.7	0.09	3.0	0.03	0.14	0.9	0.48	0.13	0.03	0.03	na
60-100	8.3	6.8	1	0.2	0.6	0.15	3.0	370	-	0.4	0.03	13	0.16	0.20	15.7	3.54	6.11	2.60	1.00	16.6
100-160	9.5	8.3	2	0.4	0.9	0.06	2.0	560	-	9.1	0.04	4.0	0.12	0.23	21.1	4.65	9.81	5.14	1.44	24.4
160+	9.7	8.1	62	0.3	1.1	0.13	3.2	290	-	5.2	0.13	2.2	0.23	0.25	10.3	4.27	5.31	1.90	0.72	18.4

**Note:** 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](#)

