# THICK SAND OVER GREY SANDY CLAY

***General Description:*** *Medium to thick sand over a reddish sandy clay loam to sandy clay, highly calcareous at depth*

**Landform:** Undulating plain with frequent closely spaced parallel sandhills.

**Substrate:** Tertiary sandy clay (Parilla Sand equivalent).

**Vegetation:** Mallee

**Type Site:**

| | | | |
|---|---|---|---|
| Site No.: | MM136 | 1:50,000 mapsheet: | 6928-3 (Halidon) |
| Hundred: | Chesson | Easting: | 426120 |
| Section: | 26 | Northing: | 6148520 |
| Sampling date: | 22/02/1999 | Annual rainfall: | 300 mm average |

Swale. Loose surface with no stones.

**Soil Description:**

| *Depth (cm)* | *Description* |
|---|---|
| 0-9 | Brown loose loamy sand. Abrupt to: |
| 9-45 | Reddish yellow loose sand. Sharp to: |
| 45-63 | Grey and yellowish red very hard sandy medium clay with coarse columnar structure. Clear to: |
| 63-108 | Red and light grey friable (moist) very highly calcareous sandy light clay with coarse blocky structure and 20-50% fine carbonate segregations. Gradual to: |
| 108-155 | Red and light brownish grey friable (moist) highly calcareous sandy clay loam with weak coarse blocky structure. |

**Classification:** Calcic, Mottled-Subnatric, Grey Sodosol; thick, non-gravelly, sandy / clayey, deep

## *Summary of Properties*

**Drainage:** Imperfectly drained. Water perches on the dispersive clayey subsoil for a week or more at a time following heavy or prolonged rainfall.

**Fertility:** Inherent fertility is low as indicated by the exchangeable cation data. Regular phosphorus applications are necessary. Nitrogen levels depend on cropping history and legume status of pastures. Zinc and copper deficiencies are likely. P, Cu and Zn are all deficient at sampling site. Organic carbon levels are also low.

**pH:** Slightly alkaline at the surface, strongly alkaline with depth.

**Rooting depth:** Not recorded. Estimate 63 cm, with few roots below 45 cm, from pit data.

**Barriers to root growth:**

**Physical:** The dense, dispersive subsoil clay restricts root growth to the surfaces of aggregates, thereby reducing water uptake capacity. prevent significant deeper root growth.

**Chemical:** High pH and sodicity from 63 cm prevent significant deeper root growth.

**Waterholding capacity:** Approximately 55 mm in the rootzone.

**Seedling emergence:** Satisfactory, although water repellence may reduce establishment in dry seasons.

**Workability:** Soft / loose surface is easily worked.

**Erosion Potential:**

**Water:** Low.

**Wind:** Moderate.

## *Laboratory Data*

| Depth cm | pH $H_2O$ | pH $CaCl_2$ | $CO_3$ % | EC1:5 dS/m | ECe dS/m | Org.C % | Avail. P mg/kg | Avail. K mg/kg | $SO_4$ 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 | 7.7 | 7.7 | 0.2 | 0.09 | 1.2 | 0.47 | 7 | 112 | - | 1.0 | 0.2 | - | 2.1 | 0.2 | 4.0 | 2.7 | 0.71 | < 0.1 | 0.24 | 2.5 |
| | | | | | | | | | | | | | | | | | | | | |
| 0-9 | 7.4 | 7.2 | < 0.1 | 0.09 | 1.2 | 0.57 | 10 | 123 | - | 0.8 | 0.1 | - | 2.4 | 0.2 | 4.1 | 3.6 | 1.1 | < 0.1 | 0.42 | 2.4 |
| 9-45 | 7.6 | 7.3 | < 0.1 | 0.05 | 0.7 | 0.06 | 1 | 48 | - | 0.4 | 0.1 | - | 0.6 | 0.1 | 2.0 | 1.0 | 0.4 | < 0.1 | 0.09 | na |
| 45-63 | 9.1 | 8.1 | < 0.1 | 0.11 | 1.0 | 0.12 | 3 | 192 | - | 1.7 | 0.1 | - | 0.1 | 0.1 | 13.6 | 4.1 | 5.6 | 2.0 | 0.48 | 14.7 |
| 63-108 | 9.7 | 8.2 | 17 | 0.36 | 3.4 | 0.12 | 1 | 642 | - | 5.0 | 0.8 | - | 0.3 | 0.2 | 13.8 | 3.3 | 6.9 | 3.8 | 0.52 | 27.5 |
| 108-155 | 9.7 | 8.7 | 1.2 | 0.35 | 4.9 | 0.05 | 2 | 105 | - | 5.1 | 0.4 | - | 0.1 | 0.1 | 10.1 | 1.2 | 4.8 | 4.0 | 0.35 | 39.6 |

**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.

**Further information:** DEWNR Soil and Land Program