# VERY THICK SAND OVER RED CLAY

***General Description:*** *Thick to very thick reddish brown soft sand to loamy sand with a paler coloured subsurface layer, over a red light clay, calcareous with depth*

**Landform:** Alluvial plains of the Bremer River.

**Substrate:** Medium to fine grained alluvium.

**Vegetation:**

**Type Site:** Site No.: CH164

| | | | |
|---|---|---|---|
| 1:50,000 sheet: | 6727-3 (Alexandrina) | Hundred: | Strathalbyn |
| Annual rainfall: | 390 mm | Sampling date: | 28/11/06 |
| Landform: | Alluvial plain, 0% slope. | | |
| Surface: | Soft with no stones. | | |

**Soil Description:**

| *Depth (cm)* | *Description* |
|---|---|
| 0-15 | Reddish brown soft single grain loamy sand. Gradual to: |
| 15-40 | Yellowish red soft single grain light loamy sand. Diffuse to: |
| 40-85 | Yellowish red soft single grain sand. Clear to: |
| 85-110 | Yellowish red, red and dark reddish brown firm light clay with strong medium angular blocky structure. Diffuse to: |
| 110-150 | Yellowish brown and brown firm light medium clay with strong medium angular blocky structure and 2-10% nodular carbonate segregations (2-6 mm). |

**Classification:** Hypocalcic, Mesonatric, Red Sodosol; very thick, non-gravelly, sandy / clayey, very deep

## *Summary of Properties*

**Drainage:** Well drained. No part of the profile is likely to remain wet for more than a day or so following heavy or prolonged rainfall.

**Fertility:** Inherent fertility is low, as indicated by the exchangeable cation data, and is due to sandiness of the topsoil. At the sampling site, zinc levels appear low, but concentrations of other tested nutrient elements are satisfactory.

**pH:** Neutral at the surface, alkaline with depth.

**Rooting depth:** 110 cm in sampling pit, with occasional roots persisting to 150 cm.

**Barriers to root growth:**

**Physical:** The subsoil at 85 cm impedes root growth to a minor extent, but there are no physical barriers above this. Subsoil sodicity is probably higher than in a natural soil due to the effects of irrigation water.

**Chemical:** There are no apparent chemical limitations, although sodicity is approaching toxic levels below 110 cm.

**Water holding capacity:** (Estimates for potential root zone of grape vines)

Total available: 115 mm
Readily available: 60 mm

**Seedling emergence:** Satisfactory.

**Workability:** The soft sandy surface is easily worked over a range of moisture conditions.

**Erosion Potential**

**Water:** Low.

**Wind:** Moderately low.

## *Laboratory Data*

| Depth cm | pH $H_2O$ | pH $CaC1_2$ | $CO_3$ % | EC 1:5 dS/m | ECe dS/m | Org.C % | Avail. P mg/kg | Avail. K mg/kg | Cl mg/kg | $SO_4$-S mg/kg | Boron mg/kg | React Fe 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 | |
| 0-15 | 6.4 | 5.8 | 0 | 0.180 | 1.95 | 0.90 | 57 | 229 | 157 | 36.8 | 0.5 | 477 | 4.06 | 74 | 56.5 | 1.86 | 6.1 | 4.59 | 0.55 | 0.48 | 0.46 | 7.9 |
| 15-40 | 6.7 | 6.1 | 0 | 0.038 | 0.60 | 0.21 | 20 | 160 | 24 | 8.1 | 0.4 | 434 | 1.04 | 35 | 51.9 | 0.20 | 2.7 | 1.88 | 0.22 | 0.20 | 0.36 | na |
| 40-85 | 6.9 | 6.2 | 0 | 0.043 | 0.78 | 0.14 | 2 | 180 | 32 | 7.4 | 0.3 | 320 | 1.02 | 18 | 25.3 | 0.08 | 2.3 | 1.42 | 0.26 | 0.28 | 0.36 | na |
| 85-110 | 8.1 | 7.1 | 0 | 0.274 | 2.35 | 0.40 | 2 | 419 | 151 | 72.5 | 3.0 | 831 | 4.00 | 67 | 114 | 0.23 | 17.2 | 5.83 | 7.46 | 2.87 | 1.00 | 16.7 |
| 110-150 | 8.7 | 7.6 | 0.3 | 0.339 | 2.31 | 0.28 | 2 | 460 | 191 | 59.3 | 3.6 | 862 | 4.86 | 79 | 147 | 0.33 | 20.5 | 8.19 | 6.54 | 4.71 | 1.07 | 23.0 |

**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.