

## SANDY LOAM OVER BROWN CLAY

**General Description:** *Sandy loam with variable ironstone gravel over a coarsely structured brown clay, calcareous with depth*

**Landform:** Plateau or summit surface of undulating low hills.

**Substrate:** Deeply weathered kaolinized sandstone.

**Vegetation:** Kangaroo Island mallee (*Eucalyptus cneorifolia*).



|                   |                |        |                    |                    |
|-------------------|----------------|--------|--------------------|--------------------|
| <b>Type Site:</b> | Site No.:      | CK001  | 1:50,000 mapsheet: | 6426-1 (Penneshaw) |
|                   | Hundred:       | Dudley | Easting:           | 765050             |
|                   | Section:       | 121    | Northing:          | 6038850            |
|                   | Sampling date: | 8/3/93 | Annual rainfall:   | 585 mm average     |

Very gently undulating summit surface, 1% slope. Firm surface with no stones.

### Soil Description:

| Depth (cm) | Description  |
|------------|--|
| 0-9        | Dark brown soft massive sandy loam with 10-20% ironstone nodules (2-6 mm). Abrupt to:  |
| 9-14       | Pink friable massive sandy loam with 20-50% ironstone nodules (2-6 mm). Sharp to:  |
| 14-30      | Yellowish brown, brown and red hard medium heavy clay with strong very coarse prismatic, breaking to polyhedral structure. Diffuse to:   |
| 30-60      | Yellowish brown and red firm medium clay with strong very coarse prismatic, breaking to polyhedral structure. Diffuse to:  |
| 60-95      | Light olive brown, yellowish brown and red firm medium clay with strong very coarse prismatic structure (as above), and minor fine carbonate. Clear to:                                  |
| 95-140     | Grey, yellowish brown and red firm slightly calcareous medium clay with coarse prismatic structure (as above), 10-20% ironstone nodules and 2-10% fine carbonate segregations. Clear to: |
| 140-155    | Weathering sandstone.  |



**Classification:** Bleached-Mottled, Hypocalcic, Brown Chromosol; medium, gravelly, loamy / clayey, deep



## Summary of Properties

- Drainage:** Imperfectly drained, due to the tight clay subsoil at shallow depth. The soil may remain wet for several weeks following heavy or prolonged rainfall.
- Fertility:** Natural fertility is moderate to high, as indicated by the exchangeable cation data. Surface soil fertility relies on organic carbon being maintained above 2%. Ironstone gravel ties up phosphorus which is low at pit site. Trace element concentrations are adequate in surface.
- pH:** Acidic at surface, alkaline with depth.
- Rooting depth:** 95 cm in pit, but few roots below 60 cm.
- Barriers to root growth:**
- Physical:** The coarsely structured tight clay subsoil restricts root density.
  - Chemical:** Marginal surface soil acidity impedes near surface root growth. Low subsoil trace element concentrations restrict deeper root growth.
- Waterholding capacity:** 120 mm in rootzone, but up to 40 mm effectively unavailable due to low root density.
- Seedling emergence:** Good to fair. Organic matter levels need to be maintained to preserve surface structure.
- Workability:** Fair. Ironstone gravel causes excessive implement wear.
- Erosion Potential:**
- Water:** Low.
  - Wind:** Low.

## 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    |     |
| Paddock  | 4.8                 | 4.4                  | 0                 | 0.11       | 0.64     | 2.2     | 7              | 190            | -                     | 0.9         | 0.7                         | 230 | 1.7  | 0.7  | 8.3             | 4.59                            | 0.62 | 0.10 | 0.44 | 1.2 |
| 0-9      | 5.1                 | 4.6                  | 0                 | 0.07       | 0.27     | 2.6     | 23             | 240            | -                     | 1.0         | 0.6                         | 160 | 1.3  | 0.6  | 11.5            | 5.84                            | 1.51 | 0.18 | 0.59 | 1.6 |
| 9-14     | 5.3                 | 4.8                  | 0                 | 0.06       | 0.14     | 0.51    | 11             | 110            | -                     | 0.4         | 0.1                         | 120 | 0.2  | 0.4  | 4.1             | 2.10                            | 0.41 | 0.12 | 0.21 | 2.9 |
| 14-30    | 6.3                 | 5.8                  | 1                 | 0.09       | 0.15     | 0.63    | <2             | 520            | -                     | 4.9         | 0.8                         | 18  | 0.1  | 0.2  | 22.7            | 12.6                            | 5.80 | 0.55 | 1.73 | 2.4 |
| 30-60    | 7.5                 | 7.1                  | 1                 | 0.12       | 0.28     | 0.11    | <2             | 680            | -                     | 8.2         | 0.1                         | 4   | <0.1 | <0.1 | 22.5            | 11.4                            | 4.07 | 0.57 | 1.73 | 2.5 |
| 60-95    | 7.8                 | 7.5                  | 1                 | 0.14       | 0.32     | 0.07    | <2             | 670            | -                     | 8.6         | 0.1                         | 3   | 0.1  | 0.1  | 19.5            | 11.3                            | 3.89 | 0.56 | 1.72 | 2.9 |
| 95-140   | 8.0                 | 7.6                  | 1                 | 0.14       | 0.39     | 0.03    | <2             | 590            | -                     | 8.4         | 0.1                         | 2   | <0.1 | 0.1  | 16.0            | 8.85                            | 3.29 | 0.53 | 1.36 | 3.3 |

**Note:** Paddock sample bulked from 20 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](#)

