Soil characterisation sites and data sheets

Detailed representative soil profile data can be downloaded for over 1100 sites across South Australia

Soils are a key driver of plant health and productivity. Different soil conditions can influence important factors such as water and nutrient availability, drainage, erodibility, and physical and chemical barriers to root growth. To provide important background information for land management and agricultural production, the Government of South Australia has undertaken a significant land resource assessment program to describe and map the soils of southern South Australia.

Gathering soil profile descriptions (or site data) was a fundamental part of this work. The field survey program largely concluded in 2001, however soil site data collection continues on an opportunistic basis.

To date, over 1100 *Soil characterisation sites* have been captured, providing detailed representative examples of soil variability. At *Soil characterisation sites*, pits are excavated to depths of 1.5–2 m, and soil profiles are described and photographed. Samples are taken from each soil layer (horizon) to be dried, ground and then analysed for a range of properties relevant to plant growth and agricultural land management. This information is summarised into two-page *Soil characterisation site data sheets* that are accessible (refer overleaf) from the interactive online mapping sites:

- **NatureMaps** – *Public*: http://www.naturemaps.sa.gov.au/
- **EnvMaps** – *SA Government only:* http://maps.env.sa.gov.au/

Soil pit field days, held at 'soil characterisation sites', provide a valuable way to engage and educate farmers and other land managers about soils. Soil morphology and chemical data are interpreted and discussed. This builds understanding of the implications for water movement, nutrient availability, soil stability, plant and root growth, and hence broader impacts for land use and management.

Accessing *Soil characterisation site data sheets*

The following step-by-step guide will help you access the *Soil characterisation site data sheets*.

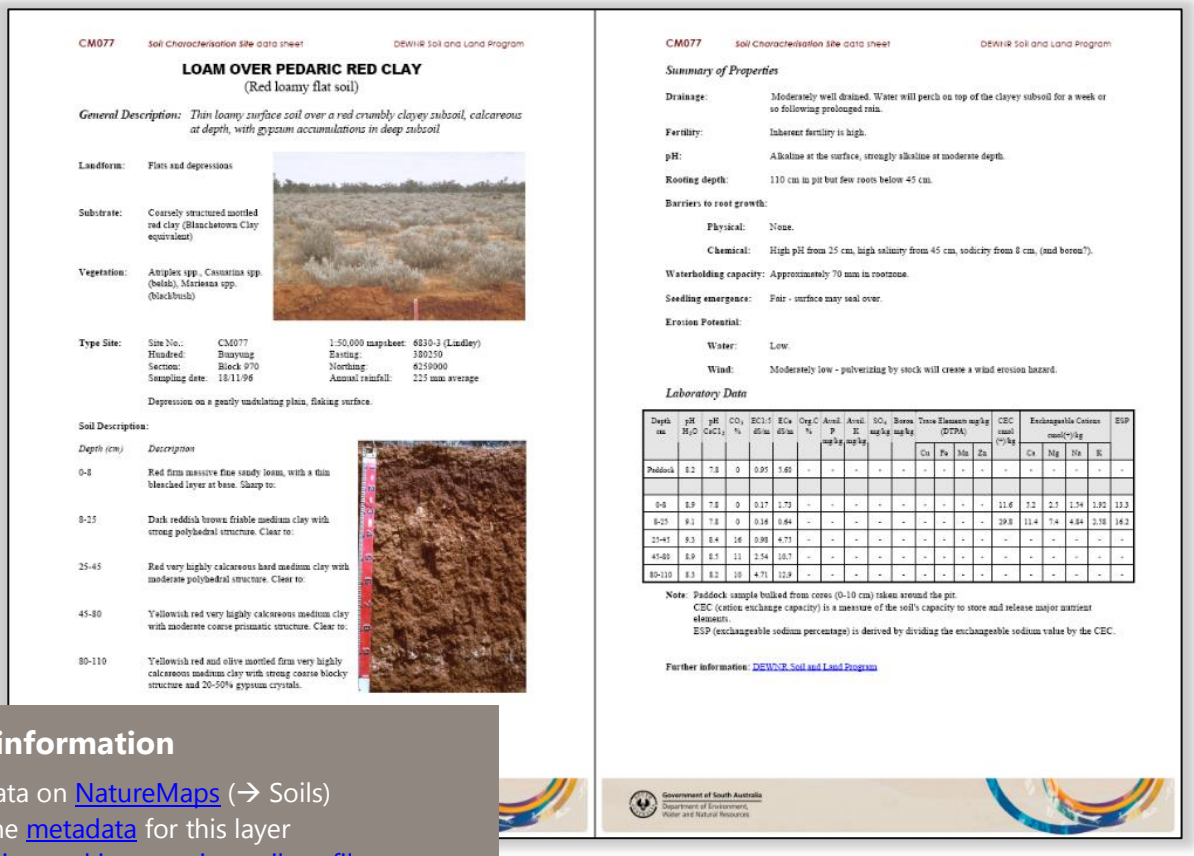
1. Open NatureMaps *(Public)* START using Nature Maps or EnvMaps *(SA Govt only)* START using EnvMaps 3.0

2. Navigate to your area of interest and display a range of data layers including soils.
   Open the **Soils** folder in the **Layers** list.

3. Turn on the ★ Soil Characterisation Sites layer by clicking in the box ☑
   You will see the *Soil characterisation sites* displayed on the map

4. Click on a *Soil characterisation site* of interest: 

5. In the pop-up window, click on Link to Data Sheet to open the associated *Soil characterisation site data sheet* (PDF) which can be viewed or saved.



CM077 Soil Characterisation Site data sheet DEWNR Soil and Land Program

LOAM OVER PEDARIC RED CLAY
(Red loamy flat soil)

General Description: *Thin loamy surface soil over a red crumbly clayey subsoil, calcareous at depth, with gypsum accumulations in deep subsoil*

Landform: Flats and depressions

Substrate: Coarsely structured mottled red clay (Blanchetown Clay equivalent)

Vegetation: Atriplex spp., Casuarina spp. (belah), Maireana spp. (blackbush)

Type Site: Site No.: CM077; Hundred: Bunyung; Section: Block 970; Sampling date: 18/11/96; 1:50,000 mapsheet: 6830-3 (Lindley); Easting: 380250; Northing: 6259000; Annual rainfall: 225 mm average

Depression on a gently undulating plain, flaking surface.

Soil Description:

Depth (cm)	Description
0-8	Red firm massive fine sandy loam, with a thin bleached layer at base. Sharp to:
8-25	Dark reddish brown friable medium clay with strong polyhedral structure. Clear to:
25-45	Red very highly calcareous hard medium clay with moderate polyhedral structure. Clear to:
45-80	Yellowish red very highly calcareous medium clay with moderate coarse prismatic structure. Clear to:
80-110	Yellowish red and olive mottled firm very highly calcareous medium clay with strong coarse blocky structure and 20-50% gypsum crystals.

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Summary of Properties

Drainage: Moderately well drained. Water will perch on top of the clayey subsoil for a week or so following prolonged rain.

Fertility: Inherent fertility is high.

pH: Alkaline at the surface, strongly alkaline at moderate depth.

Rooting depth: 110 cm in pit but few roots below 45 cm.

Barriers to root growth:

Physical: None.

Chemical: High pH from 25 cm, high salinity from 45 cm, sodicity from 8 cm, (and boron?).

Waterholding capacity: Approximately 70 mm in rootzone.

Seedling emergence: Fair - surface may seal over.

Erosion Potential:

Water: Low.

Wind: Moderately low - pulverizing by stock will create a wind erosion hazard.

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) Cu	Fe	Mn	Zn	CEC cmol(+)/kg	Exchangeable Cations cmol(+)/kg Ca	Mg	Na	K	ESP
Paddock	8.2	7.8	0	0.95	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-8	8.9	7.8	0	0.17	1.73	-	-	-	-	-	-	-	-	-	11.6	7.2	2.5	1.54	1.92	13.3
8-25	9.1	7.8	0	0.16	0.84	-	-	-	-	-	-	-	-	-	29.8	11.4	7.4	4.84	2.78	16.2
25-45	9.3	8.4	16	0.98	4.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45-80	8.9	8.5	11	2.54	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80-110	8.3	8.2	10	4.71	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Government of South Australia
Department of Environment, Water and Natural Resources

Further information

- View data on NatureMaps (→ Soils)
- Read the metadata for this layer
- Describing and interpreting soil profiles
- Read more about soil and land information
- Contact Mapland

Downloads:

- Spatial dataset
- Assessing Agricultural Lands (Maschmedt 2002)
- Soils of Southern SA book Part 1 and Part 2