

# EMU Emu Land System

Rocky low hills north-west of Pallamana

**Area:** 24.6 km<sup>2</sup>

**Annual rainfall:** 360 – 460 mm average

**Geology:** The land is underlain by metamorphosed sandstones of the Backstairs Passage Formation. These outcrop extensively throughout the system. Most are mantled by a veneer of soft carbonate. There are minor deposits of medium to coarse grained alluvial sediments derived from erosion of the rocky highs.

**Topography:** The landscape consists of an upland area on the eastern edge of the Mount Lofty Ranges adjacent to the Murray Plains. The land has been dissected by a series of water courses including Salt Creek to produce a landscape of rounded low hills and slopes with gradients of up to 30% leading to narrow drainage depressions. The slopes are rocky and eroded in places. Water courses are also commonly eroded. There is minor saline seepage.

**Elevation:** 70 - 230 m

**Relief:** Up to 50 m

**Soils:** The soils are characteristically moderately deep to shallow over basement rock. Surface soils are loamy sands to sandy loams, usually gravelly and often with a red more clayey subsoil. Lower subsoil carbonate accumulations are variable. Deep texture contrast, uniform or gradational soils occur on creek flats. All have coarse textured surfaces.

#### Main soils

*Shallow soils formed on basement rocks (metasandstones or greywackes)*

**L1** Moderately deep (**L1a**) to shallow (**L1b**) loamy fine sand

*Moderately deep soils formed on basement rocks (metasandstones or greywackes)*

**D1** Sandy loam over red clay

**K3** Sandy loam over brown clay

#### Minor soils

*Moderately deep soils formed on basement rocks (metasandstones or greywackes)*

**C2** Gradational sandy loam

**D7** Loamy sand over dispersive sandy clay

*Soils formed on alluvial sediments*

**D3** Sandy loam over red sandy clay

**M1** Deep alluvial sand

**M4/D2** Gradational loamy sand

**Main features:** The Emu Land System is characterized by rounded rocky rises and low hills with a mixture of shallow stony soils and texture contrast soils. All have coarse grained surfaces which are marginally fertile and are highly erodible. About half of the land is too rocky or steep for uses other than rough grazing, and most of this type of land is uncleared. The gentler slopes with less rock outcrop are farmed, but productivity is limited by poor surface structure, erosion potential and frequently lack of soil depth.



**Soil Landscape Unit summary:** 6 Soil Landscape Units (SLUs) mapped in the Emu Land System:

SLU	% of area	Main features #
ALB ALH	14.1 27.1	<p>Rough slopes and low hills formed on metasandstones. There is extensive rocky outcrop.</p> <p><b>ALB</b> Rounded rises up to 20 m high with slopes of 5-20%. There is 20-50% rock outcrop.</p> <p><b>ALH</b> Dissected slopes of 10-30% adjacent to Salt Creek, with relief of up to 50 m. There is 50% or more rock outcrop. There is some erosion of water courses feeding Salt Creek, and minor saline seepage.</p> <p>Main soils: <u>moderately deep loamy fine sand</u> - <b>L1a</b> (E) and <u>shallow stony loamy sand</u> - <b>L1b</b> (E) with <u>sandy loam over brown clay</u> - <b>K3</b> (L) and <u>gradational sandy loam</u> - <b>C2</b> (M). These slopes are too rocky and usually too steep for cultivated agriculture, although minor gentler slopes with little outcrop are cropped. Much of the land is uncleared and used for rough grazing.</p>
DcC	30.8	<p>Undulating rises with slopes of 3-10% formed on metasandstones. There is less than 5% rock outcrop and variable surface stone.</p> <p>Main soils: <u>sandy loam over red clay</u> - <b>D1</b> (E) and <u>sandy loam over brown clay</u> - <b>K3</b> (C), with <u>loamy sand over dispersive sandy clay</u> - <b>D7</b> (L) and <u>gradational sandy loam</u> - <b>C2</b> (L). <u>Moderately deep loamy fine sand</u> - <b>L1a</b> (M) and <u>shallow stony loamy sand</u> - <b>L1b</b> (M) occur where rock is shallow. These soils are generally moderately deep and fertile. Poor surface structure, high erodibility and often lack of profile moisture are the main limitations.</p>
DtC DtH	11.7 11.6	<p>Undulating slopes formed on metasandstones. There is 10-20% rocky outcrop, usually in linear reefs. Slopes are 5-12%.</p> <p><b>DtC</b> Slopes with minor water courses.</p> <p><b>DtH</b> Slopes with well defined and often eroded water courses and minor saline seepage.</p> <p>Main soils: <u>moderately deep loamy fine sand</u> - <b>L1a</b> (E) and <u>shallow stony loamy sand</u> - <b>L1b</b> (C), with <u>sandy loam over brown clay</u> - <b>K3</b> (L), <u>sandy loam over red clay</u> - <b>D1</b> (L) and <u>gradational sandy loam</u> - <b>C2</b> (L). This land is rockier and soils are shallower and sandier than <b>DcC</b>. Rocky reefs restrict cropping, and sandier surfaces are highly erodible. Soil depth is variable, but will often limit crop yield.</p>
JKC	4.7	<p>Outwash fans with slopes of 3-8% formed on locally derived outwash sediments. There is minor water course erosion.</p> <p>Main soils: <u>sandy loam over red sandy clay</u> - <b>D3</b> (E) with <u>deep alluvial sand</u> - <b>M1</b> (C) and <u>gradational loamy sand</u> - <b>M4/D2</b> (L). These small areas have deep soils of moderate to moderately low fertility. The main limitation is erosion potential, due to high runoff from adjacent slopes.</p>

## # PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

- |  |                                       |
|--|---------------------------------------|
| (D) Dominant in extent (>90% of SLU)         | (C) Common in extent (20–30% of SLU)  |
| (V) Very extensive in extent (60–90% of SLU) | (L) Limited in extent (10–20% of SLU) |
| (E) Extensive in extent (30–60% of SLU)      | (M) Minor in extent (<10% of SLU)     |



**Detailed soil profile descriptions:**

*Moderately deep soils formed on basement rocks (metasandstones or greywackes)*

- D1** Sandy loam over red clay (Calcic / Hypercalcic, Red Chromosol)  
Medium thickness reddish brown loamy sand to loam, abruptly overlying a red well structured clay with abundant rock fragments, with variable soft carbonate from about 30 cm, grading to weathering rock at depths ranging from 50 cm to 100 cm.
- K3** Sandy loam over brown clay (Eutrophic, Brown Chromosol)  
Medium thickness stony sandy loam, overlying a red or brown well structured clay grading to weathering non-calcified sandy schist or metasandstone.
- C2** Gradational sandy loam (Hypercalcic, Red Kandosol)  
Medium thickness red brown sandy loam grading to a reddish weakly structured sandy clay loam overlying massive soft to semi-hard carbonate grading to metasandstone or schist within 100 cm.
- D7** Loamy sand over dispersive sandy clay (Calcic, Red Sodosol)  
Medium thickness loamy sand to sandy loam sharply overlying a reddish dispersive sandy clay loam to sandy clay, calcareous from about 40 cm, grading to sandy basement rock at about 70 cm.

*Shallow soils formed on basement rocks (metasandstones or greywackes)*

- L1a** Moderately deep loamy fine sand (Paralithic, Leptic Tenosol)  
Very thick reddish brown to greyish brown loamy fine sand with variable rock fragments, overlying weathering rock by 100 cm.
- L1b** Shallow stony loamy sand (Lithic, Leptic Rudosol)  
Medium thickness reddish brown massive loamy sand to sandy loam with abundant rock fragments, overlying hard rock.

*Soils formed on alluvial sediments*

- D3** Sandy loam over red sandy clay (Calcic, Red Chromosol / Sodosol)  
Medium thickness reddish brown loamy sand to light sandy clay loam, overlying a red sandy clay loam to light clay with moderate blocky structure and a yellowish very highly calcareous sandy clay from 65 cm. The profile overlies a brown and red clayey sand to sandy clay, with decreasing carbonate content from 100 cm.
- M1** Deep alluvial sand (Arenic Rudosol)  
Very deep, gravelly loamy sand formed on gritty red or brown alluvial sand.
- M4/D2** Gradational loamy sand (Calcic, Red Kandosol / Chromosol)  
Medium to thick loamy sand to sandy loam grading to a weakly structured red sandy clay loam, becoming calcareous and more clayey from about 65 cm and grading to alluvial clayey sand to sandy clay from about 100 cm.

**Further information:** [DEWNR Soil and Land Program](#)

