

CTW Caltowie Land System

Flats, gentle slopes and undulating rises in the upper catchment of Yackamoorundie Creek, north and south of Caltowie.

Area: 134.0 km²

Annual rainfall 425 – 490 mm average

Geology: Fine to medium grained valley floor sediments capped by a veneer of wind deposited calcareous materials which are usually finely divided (silt and clay sized particles), but may be partially indurated into rubbly nodules or semi-hard massive sheets. Below the sediments and outcropping through them on the margins of the valley are siltstones of the Saddleworth Formation. These rocks are also capped by carbonates, but a greater proportion is in rubbly or sheet form.

Topography: The Land System comprises flat to gently inclined outwash fans of the upper Yackamoorundie Creek valley, although there is a small area in the north which drains into Appila Creek. The valley is bounded on the west by the Mt. Mary - Caltowie Hill Range and on the east by the Mt. Lock Range. The gentle slopes abutting these ranges grade toward the creek flat running in a north - south direction down the centre of the valley. In the south west, where there is no well defined flanking range, the Land System includes some gently undulating basement rock rises.

Elevation: The highest elevation is 530 m in the north east grading to 330 m where Yackamoorundie Creek flows into the Georgetown Land System.

Relief: Most of the Land System has even slopes with little relief. Rises formed on basement rock have up to 30 m of relief.

Soils: Most soils are deep overlying alluvium. Texture contrast and gradational forms are most common. Both have loamy surfaces and well structured red clayey subsoils. Some are calcareous throughout. Shallower calcareous loams and loam over clay on bedrock occur on rises.

Main soils

Soils formed on lower slopes and flats on alluvium

D2 Hard loam over red clay

A3 Calcareous loam

Minor soils

Soils formed on lower slopes and flats on alluvium

C3a Gradational loam

A4 Rubbly calcareous loam

C3b Gradational loam over rubble

Soils formed on basement rock on rises

A2 Shallow calcareous loam

C2/D1 Shallow loam over red clay

Main features: The Caltowie Land System is flat to gently sloping land characterized by deep loamy soils. These are inherently productive. Limitations are due to poor surface structure in texture contrast soils (with adverse effects on water infiltration, workability, emergence and root growth), high subsoil alkalinity in calcareous soils, and saline seepage in the area east of Caltowie. Limited rising ground on basement rock has mainly shallow calcareous soils, productivity on which is mainly limited by lack of moisture holding capacity and sub optimal fertility.



Soil Landscape Unit summary: 12 Soil Landscape Units (SLUs) mapped in the Caltowie Land System:

SLU	% of area	Main features #
EGB EGC	10.2 1.6	Rises formed on fine grained rock. EGB Rises with slopes of 1-4%. EGC Rises with slopes of 4-10%. Main soils: <u>shallow calcareous loam</u> - A2 (V), with <u>shallow loam over red clay</u> - C2/D1 (E). The rises are fully arable, although moisture shortages limit crops in dry finishes. Improvement of hard setting surface soils to reduce water loss and erosion through runoff is the main management issue.
JDA JDB JDC JDE	20.2 34.9 2.4 0.2	Flats, outwash fans and drainage depressions formed on fine grained alluvium. JDA Flats with slopes of less than 2%. JDB Fans with slopes of 2-4%. JDC Fans with slopes of 4-8%. JDE Drainage depressions. Main soils: <u>hard loam over red clay</u> - D2 (E), with <u>calcareous loam</u> - A3 (C), <u>rubbly calcareous loam</u> - A4 (L), and <u>gradational loam</u> - C3a/C3b (L). The entire unit is arable. Hard setting surface soils are the main management problem, because of their adverse effects on runoff / erosion, workability, seedling emergence, and moisture retention. Most soils are reasonably fertile, deep and well drained.
JEA JEB JEE JEO JEP JEQ	3.6 14.3 4.4 1.3 5.3 1.6	Broad flats, outwash fans and creek flats formed on fine grained alluvium. JEA Flats with slopes of less than 1%. JEB Fans with slopes of 2-5%. JEE Creek terraces. JEO Creek terraces with sporadic saline seepage. JEP Marginally saline flats. JEQ Marginally saline fans. Main soils: <u>hard loam over red clay</u> - D2 (V), with <u>gradational loam</u> - C3a (C). Most of this land has deep well drained fertile soils with only slight limitations to agriculture. Hard setting surface soils are the main limitation, causing reduced water infiltration, restricted opportunities for working and patchy emergence. They add to the erosion potential on sloping land. Salinity is a problem east of Caltowie.

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

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



Detailed soil profile descriptions:

- A2** Shallow calcareous loam (Paralithic Calcic / Supracalcic Calcarosol)
Calcareous loam grading to soft or rubbly carbonate over weathering rock within 50 cm.
- A3** Calcareous loam (Regolithic, Calcic Calcarosol)
Calcareous loam grading to highly calcareous clay loam over alluvium.
- A4** Rubbly calcareous loam (Regolithic, Supracalcic / Lithocalcic Calcarosol)
Calcareous loam becoming more clayey with depth over rubbly Class III B/C carbonate grading to alluvium below 100 cm.
- C2/D1** Shallow loam over red clay (Supracalcic / Hypercalcic, Red Dermosol / Chromosol)
Hard loam over a well structured red clay with soft or rubbly carbonate at shallow depth grading to weathering rock within 100 cm.
- C3a** Gradational loam (Hypercalcic, Red Dermosol)
Friable clay loam grading to a well structured red clay with soft Class I carbonate from about 60 cm, over alluvium deeper than 100 cm.
- C3b** Gradational loam over rubble (Supracalcic / Lithocalcic, Red Dermosol)
Friable clay loam grading to a well structured red clay with rubbly Class III B or III C carbonate from about 60 cm, over alluvium deeper than 100 cm.
- D2** Hard loam over red clay (Calcic / Hypercalcic, Red Chromosol)
Hard setting sandy loam to clay loam overlying a strongly structured red clay with soft Class I carbonate at about 65 cm grading to alluvium below 100 cm.

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

