

# BUV Bundaleer Reservoir Land System

Irregular rises and low hills in the Bundaleer Reservoir area

- Area:** 56.3 km<sup>2</sup>
- Annual rainfall** 415 – 495 mm
- Geology:** Mixed diapiric rocks comprising contorted shales, dolomites and siltstones. Distinctive black carbonaceous shales occur in places. Parts of the landscape are deeply weathered, with silcrete development in places. Most of the rocks are mantled by finely divided aeolian carbonates. There are significant areas of locally derived alluvium as valley fill. These sediments are also mantled by carbonates.
- Topography:** Moderately to strongly dissected rises and low hills with slopes generally in the range 4 - 20%, but up to 70% where the Broughton River has cut through the landscape. The northern two thirds of the land drains westwards into the Baderloo - Bundaleer Creek system, which joins the Broughton River near the western edge of the Land System. The southern third of the land drains directly into the Broughton. The striking topographic feature of the Land System is the degree of historic erosion, presumably associated with the unique geology of the area. Gullied water courses and evidence of extensive scalding are widespread.
- Elevation:** 420 m in the north east, to 230 m where the Broughton flows out in the south west
- Relief:** Maximum relief is 100 m (Broughton River gorge), but typically 20 - 50 m
- Soils:** Loamy texture contrast soils are most common, with a variety of shallow loamy soils over rock on rising ground, and deep alluvial soils on flats.

Main soils

- A2** Calcareous loam - rising ground
- D1** Hard loam over red clay on rock - rises
- L1** Shallow stony soil - rockier ground
- D2** Hard loam over red clay - fans and flats

Minor soils

- D3** Loam over dispersive red clay - gentler slopes
- C2** Gradational loam - rising ground
- M4/M1** Miscellaneous creek flats soil - creek flats

- Main features:** The degree of historic erosion, evidenced by gulying and scalding, is the major feature of the undulating to rolling low hills of the Bundaleer Reservoir Land System. There is a mixture of steep, rocky and non arable hills, and semi arable moderately steep rises and gentle slopes, but all facets of the land appear to have been degraded. The predominant soils are inherently productive, being moderately deep and naturally fertile, but soil structure decline with associated runoff, erosion and root growth problems is a major management issue. There are also some areas which are still unstable due to the long term effects of gully or sheet erosion.



**Soil Landscape Unit summary:** 17 Soil Landscape Units (SLUs) mapped in Bundaleer Reservoir Land System:

SLU	% of area	Main features #
AXC AXi AXj	1.5 9.8 6.4	<p>Moderately steep to steep rocky ridges and low hills formed over basement rocks, deeply weathered and silcreted in places.</p> <p><b>AXC</b> Moderately steep rocky ridges with slopes of 15-25% and up to 30 m high.</p> <p><b>AXi</b> Moderately steep strongly dissected rocky low hills with eroded water courses and scalded areas. Slopes are 10-30%. Relief is up to 60 m.</p> <p><b>AXj</b> Steep strongly dissected rocky ridges with slopes of 30-70%, relief to 100 m, eroded water courses and scalded areas.</p> <p>Main soils: <u>shallow stony soil</u> - <b>L1</b> (E), with <u>calcareous loam</u> - <b>A2</b> (C), <u>gradational loam</u> - <b>C2</b> (L) and <u>hard loam over red clay on rock</u> - <b>D1</b> (L). These slopes are non arable because of their slopes, severe erosion potential, extensive rockiness and shallow, low fertility soils. Deeply weathered, kaolinitic soils are often associated with high levels of stored salts, so recharge of groundwater should be controlled in these areas.</p>
DXC DXH DXI DXW DXm	4.9 4.6 0.9 4.6 35.6	<p>Complex of rises and low hills formed on basement rocks, and locally derived alluvium in valleys.</p> <p><b>DXC</b> Gentle slopes of 5-10%.</p> <p><b>DXH</b> Undulating rises with slopes of 4-10%, relief to 30 m and eroded water courses.</p> <p><b>DXI</b> Moderate slopes of 10-20% with eroded water courses.</p> <p><b>DXW</b> Undulating low hills with slopes of 4-10% and relief to 40 m. Scalded land is common.</p> <p><b>DXm</b> Undulating rises and low hills with slopes of 4-10% and relief to 70 m. Scalded land and eroded water courses are common.</p> <p>Main soils: <u>hard loam over red clay on rock</u> - <b>D1</b> (E) or over alluvium - <b>D2</b> (L), with <u>calcareous loam</u> - <b>A2</b> (E) and <u>loam over dispersive red clay</u> - <b>D3</b> (L). The soils are inherently productive but historic erosion has degraded their structure. The soils are consequently prone to excessive runoff and further erosion, difficulty in working and emergence / root growth problems. Protection of eroded water courses and scalded areas where still active is a key management issue.</p>
EQD EQI EQX EQn	7.8 3.0 1.9 9.9	<p>Uneven rises and low hills with rocky reefs interspersed with non stony land. Slopes are 5-20% and relief is up to 30 m.</p> <p><b>EQD</b> Isolated rises and crests.</p> <p><b>EQI</b> Rolling rises with eroded water courses.</p> <p><b>EQX</b> Rises and crests with scalded patches.</p> <p><b>EQn</b> Rolling rises with eroded water courses and scalded patches.</p> <p>Main soils: <u>calcareous loam</u> - <b>A2</b> (E), <u>shallow stony soil</u> - <b>L1</b> (E) and <u>hard loam over red clay on rock</u> - <b>D1</b> (C). This land is only semi arable due to a combination of moderate slopes, rocky outcrops and historically degraded soils. Protection of eroded water courses and scalded areas where still active is a key management issue.</p>
ESD	1.4	<p>Stony rises with slopes of 10-25%, up to 30 m high.</p> <p>Main soils: <u>shallow stony soil</u> - <b>L1</b> (E) and <u>calcareous loam</u> - <b>A2</b> (E) with <u>hard loam over red clay on rock</u> - <b>D1</b> (L) formed over basement rock. Rocky reefs, shallow stony soils and sometimes moderate slopes limit cropping of these areas. The arable land is generally confined to strips between the reefs of rock. Water erosion is a potential problem because of the high runoff from the shallow soils and rocky areas.</p>
JEJ	2.2	<p>Outwash fans and creek flats formed over alluvial outwash sediments. Slopes are 2-10%. Baderloo Creek, which flows through this unit, and its tributaries have eroded channels.</p> <p>Main soils: <u>hard loam over red clay</u> - <b>D2</b> (E) and <u>loam over dispersive red clay</u> - <b>D3</b> (E) formed over alluvium. The soils are deep, inherently fertile and generally moderately well drained. The main limitations are poor soil structure causing reduced water infiltration, increased erosion potential and surface waterlogging, working difficulty and seedling emergence problems. Watercourse erosion is significant.</p>



JXJ	3.4	Complex of outwash fans and creek flats formed on alluvium, and rises formed on basement rock. Slopes are 2-10%. Main soils on fans and flats: <u>hard loam over red clay - D2 (E)</u> , with <u>loam over dispersive red clay - D3 (L)</u> and <u>miscellaneous creek flat soil - M4/M1 (L)</u> . <u>Calcareous loam - A2 (E)</u> is dominant on rises, with <u>hard loam over red clay on rock - D1 (M)</u> . The soils are generally deep and inherently fertile. Soil physical problems and associated erosion potential are the main limitations.
XJK	0.5	Narrow creek flats with eroded stream banks. Main soils: deep <u>miscellaneous creek flat soil - M4/M1 (V)</u> , with <u>hard loam over red clay - D2 (C)</u> . As the land occurs as a narrow strip in steeper country, it is used for grazing. Watercourse protection is the main management concern.
-R-	1.6	Bundaleer Reservoir.

# 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** Calcareous loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol)  
Calcareous stony loam to clay loam grading to soft or rubbly carbonate at shallow depth, overlying basement rock within 100 cm of the surface.
- C2** Gradational loam (Hypercalcic / Supracalcic, Red Dermosol)  
Clay loam to loam grading to a red well structured clay with abundant soft to rubbly carbonate at depth overlying basement rock which is commonly deeply weathered.
- D1** Hard loam over red clay on rock (Calcic, Red Chromosol)  
Hard setting sandy loam to clay loam abruptly overlying a red strongly structured clay with soft carbonate at depth grading to weathering basement rock or highly altered (kaolinized or ferruginized) material.
- D2** Hard loam over red clay (Calcic, Red Chromosol)  
Hard setting sandy loam to clay loam abruptly overlying a red strongly structured clay with soft carbonate at depth grading to alluvium.
- D3** Loam over dispersive red clay (Calcic, Red Sodosol)  
Hard setting sandy loam to clay loam sharply overlying a red poorly structured dispersive red clay with soft carbonate at depth.
- L1** Shallow stony soil (Paralithic / Lithic, Leptic Rudosol / Tenosol)  
Stony sandy loam to clay loam directly overlying basement rock or silcrete. Carbonate may or may not be present in fissures in the underlying substrate material.
- M4/M1** Alluvial soil (Tenosol / Kandosol)  
Thick silty loam to clay loam, continuing below 100 cm (M1), or with increasing clay content at depth (M4). Gravelly and sandy lenses are common.

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

