

BWM Booleroo Whim Land System

Undulating rises and broad valleys between Booleroo Centre and Booleroo Whim

- Area:** 84.3 km²
- Annual rainfall** 370 – 420 mm average
- Geology:** Siltstones and quartzites of the Saddleworth and Cradock Formations, capped by variable soft to rubbly carbonate. Between these basement rock highs are locally derived fine to medium grained alluvial sediments.
- Topography:** The Land System is a basement rock residual high lying between Booleroo Creek and Rotten Creek. The landscape is undulating with well defined drainage depressions and a broad valley flat associated with Booleroo Creek. Slopes range from 1% on Booleroo Creek flat to 15% on some quartzite ridges, but slopes are mostly less than 10%.
- Elevation:** 310 m on the lower slopes adjacent to the Rotten Creek valley to 418 m at the highest point 3 km north of Booleroo Centre.
- Relief:** Maximum relief is 30 m
- Soils:** Most soils are moderately deep to shallow over weathering rock. They are generally loamy with more clayey subsoils. Many are calcareous. Deeper soils over alluvium occur on lower slopes and flats. These generally have gradational or texture contrast profiles with loamy surfaces over red clayey subsoils.

Main soils

Soils formed over weathering rock on rises

- A4/A2** Shallow calcareous loam
D1 Hard loam over friable red clay on rock
C2 Shallow gradational loam

Soils formed on alluvium on lower slopes, fans and flats

- C3** Deep gradational loam

Minor soils

Soils formed on alluvium

- D2** Hard loam over friable red clay
D3 Hard sandy loam over dispersive red clay
A5 Deep calcareous loam

Soils formed over weathering rock

- D7** Hard sandy loam over dispersive red clay
L1 Shallow stony loam

- Main features:** The Booleroo Whim Land System is undulating land almost all of which is arable. Soils are mostly moderately shallow over rock, which often limits moisture storage capacity. Calcareous soils are the most common soils on slopes. They have higher pH and lower clay content than associated red loam over clay soils. Although less fertile, they are physically more favourable. On lower slopes, hard setting loam over clay soils are most common. These are deep and fertile, but have poor structure, making them erodible and less favourable for root growth. There is moderate potential for erosion throughout.



Soil Landscape Unit summary: 9 Soil Landscape Units (SLUs) mapped in the Booleroo Whim Land System:

SLU	% of area	Main features #
DDC	5.1	Rises with slopes of 3-8 % formed on fine grained rocks. Main soils: <u>hard loam over friable red clay on rock</u> - D1 (E) and <u>hard sandy loam over dispersive red clay</u> - D7 (C), with <u>shallow gradational loam</u> - C2 (C) and <u>shallow calcareous loam</u> - A2 (L). This land is arable with inherently fertile and productive soils. Structural problems represent the main limitation. Hard setting surfaces are common (D1 and D7 soils) causing excessive runoff, and affecting seedling emergence and workability. These are therefore the most erosion prone soils. Dispersive subsoils in the D7 soils exacerbate these problems. The other soils, although sometimes shallow, are well structured.
EAB EAC	0.7 3.4	Rises formed on quartzite EAB Slopes of 2-3% EAC Slopes of 5-15%. Main soils: <u>shallow calcareous loam</u> - A4/A2 (V) with <u>shallow gradational loam</u> - C2 (C) and <u>hard loam over friable red clay on rock</u> - D1 (L). Soils are generally well structured but often shallow with consequent low water holding capacities. The calcareous soils also have reduced nutrient availability due to their high surface pH. Most of the soils are relatively stable, but the slope of much of the land predisposes it to erosion.
EGB EGC	57.0 4.2	Rises formed on fine grained rock. EGB Slopes of 2-4%. EGC Slopes of 3-8%. Main soils: <u>shallow calcareous loam</u> - A4/A2 (V) with <u>hard loam over friable red clay on rock</u> - D1 (C) and <u>shallow gradational loam</u> - C2 (L). Soils are generally well structured but often shallow with consequent low water holding capacity. The D1 soils have hard setting surfaces making them the most erosion-prone soils and predisposing them to emergence and workability problems. The calcareous soils have reduced nutrient availability due to their high surface pH. They are also moderately saline at depth. This reduces water holding capacity. The calcareous and gradational soils are relatively resistant to erosion.
ESD	0.3	Semi arable rocky rises on basement rock with slopes of 10-20%. Main soils: <u>shallow gradational loam</u> - C2 (E) and <u>shallow calcareous loam</u> - A2 (E), with <u>hard loam over friable red clay on rock</u> - D1 (L) and <u>shallow stony loam</u> - L1 (L). Rocky reefs and moderate slopes restrict cropping on this landscape. Shallow soils and reduced nutrient availability due to high pH (calcareous soils) are further limitations.
JEF	7.2	Outwash slopes and flats of 1-2% formed on fine grained alluvium. Main soils: <u>hard loam over friable red clay</u> - D2 (V), with <u>deep gradational loam</u> - C3 (L) and <u>hard sandy loam over dispersive red clay</u> - D3 (L). This landscape has deep inherently fertile soils. The main limitation is the adverse physical condition of the most common soils (D2 and D3). Hard setting surfaces cause excessive runoff (contributing to erosion), patchy emergence and restricted workability. Sub-optimal root growth in the poorly structured D3 soils can result in low water use efficiency. The less common C3 soils are well structured and the most favourable.
KDB KDE	8.1 14.0	Outwash slopes and valleys formed on fine grained alluvium. KDB Fans with slopes of 2-5%. KDE Broad drainage valleys with slopes of up to 2%. Main soils: <u>deep gradational loam</u> - C3 (E), with <u>hard loam over friable red clay</u> - D2 (C), <u>deep calcareous loam</u> - A5 (L) and <u>hard sandy loam over dispersive red clay</u> - D3 (L). Surfaces of D2 and D3 soils set hard, but subsoil structure (with the exception of the dispersive D3 soils) is good. All soils are inherently fertile. Erosion is usually only a minor problem.

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

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|--|---------------------------------------|
| (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:

- A4/A2** Shallow calcareous loam (Regolithic / Paralithic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous loam becoming more clayey with depth grading to soft or rubbly carbonate over weathering rock at depths ranging from 50 cm to more than a metre. Extensive (rises).
- A5** Deep calcareous loam (Regolithic, Hypercalcic / Calcic Calcarosol)
Calcareous loam becoming more clayey with depth grading to a highly calcareous clay over alluvium deeper than 100 cm. Minor (lower slopes).
- C2** Shallow gradational loam (Hypercalcic / Lithocalcic, Red Dermosol)
Friable loam to clay loam grading to a well structured red clay over soft or rubbly carbonate at moderately shallow depth, overlying weathering rock. Limited (rises).
- C3** Deep gradational loam (Calcic / Lithocalcic, Red Dermosol)
Friable loam to clay loam grading to a well structured red clay over soft or rubbly carbonate, overlying alluvium or highly weathered rock deeper than 100 cm. Limited (lower slopes).
- D1** Hard loam over friable red clay on rock (Calcic / Lithocalcic, Red Chromosol)
Hard loam to clay loam abruptly overlying a red well structured clay grading to soft or less commonly rubbly carbonate over weathering rock. Limited (rises).
- D2** Hard loam over friable red clay (Calcic / Supracalcic, Red Chromosol)
Hard loam to clay loam abruptly overlying a red well structured clay grading to soft (or rubbly) carbonate over alluvium deeper than 100 cm. Minor (lower slopes).
- D3** Hard sandy loam over dispersive red clay (Calcic, Red Sodosol)
Hard setting sandy loam to sandy clay loam sharply overlying a dispersive red clay with soft (or rubbly) carbonate at depth, grading to alluvium deeper than 100 cm. Minor (lower slopes).
- D7** Hard sandy loam over dispersive red clay on rock (Calcic, Red Sodosol)
Hard setting sandy loam to sandy clay loam sharply overlying a dispersive red clay with soft (or rubbly) carbonate at depth, grading to weathering rock. Minor (rises).
- L1** Shallow stony loam (Calcareous, Paralithic, Leptic Tenosol)
Shallow stony non calcareous loam grading to weathering rock with variable soft carbonate in fissures. Minor (rocky rises).

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

