BOL Booleroo Land System

Undulating rises between Booleroo Centre and Appila

Area: 132.4 km²

Annual rainfall: 400 – 470 mm average

Geology: Siltstones, sandstones and quartzites of the Saddleworth, Rhynie and Cradock

Formations, and associated locally derived medium to fine grained alluvium.

Topography: Undulating rises formed on basement rock, and gently sloping to level pediments and

plains formed on outwash sediments derived from the rising ground. The Land System includes the upper catchment of Rocky River Creek (flowing south) and a small part of the upper catchment of Rotten Creek (flowing north west). Slopes range from 1% in

the Rocky River Creek flats to 10% on the steepest of the rising ground.

Elevation: 340 m on the Rocky River Creek flats to 450 m on the rising ground to the east

Relief: Maximum relief is 40 m, and usually less than 30 m

Soils: Most soils are sandy loam texture contrast soils with clayey subsoils which are

commonly dispersive. Gradational calcareous and non calcareous loams make up

most of the other soils.

Main soils

Soils formed on rises

A2 Shallow calcareous loam

D1 Hard loam over red clay on rock

C2a Shallow loam over red clay with rubble Soils formed on alluvium or deeply weathered rock

C3 Gradational loam

D3 Hard loam over poorly structured red clay

Minor soils

Soils formed on lower slopes and flats on alluvium or deeply weathered rock

A5 Deep calcareous loamD2 Hard loam over red clay

D3/D7 Hard sandy loam over poorly structured red clay on deeply weathered rock

M2 Deep gradational loamSoils formed on basement rock risesC2b Scalded gradational loam

D7 Hard sandy loam over dispersive clay on rock

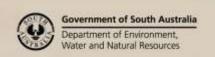
L1 Shallow stony loam

Main features: The Booleroo Land System is an almost fully arable undulating landscape

characterized by texture contrast soils. Many of these are poorly structured, with hard setting sandy loam surfaces and dispersive subsoils. These properties are associated with excessive runoff and erosion, poor workability, impeded root growth and reduced waterholding capacity. Modified surface management practices and the use of gypsum can help to alleviate the problem. Other soils include better structured loam over clay profiles, gradational loams and calcareous loams. These are often

shallow but fertile and easy to manage. Control of erosion is an important

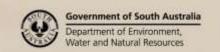
management consideration.





Soil Landscape Unit summary: 13 Soil Landscape Units (SLUs) mapped in the Booleroo Land System:

SLU	% of area	Main features #
DDB	6.6	Rises formed on fine grained rocks.
DDC	18.7	DDB Slopes of 1-3%.
		DDC Slopes of 3-10%.
		Main soils: <u>hard loam over red clay on rock</u> - D1 (E), with <u>shallow loam over red clay with</u> <u>rubble</u> - C2a (C), <u>hard sandy loam over dispersive clay on rock or deeply weathered</u>
		rock - D7 or D3/D7 (L), shallow calcareous loam - A2 (L) and scalded gradational loam -
		C2b (M). The land is fully arable with soil structural problems and erosion potential being
		the main limitations. The most common soils have hard setting surfaces and often have
		dispersive subsoils which adversely affect water penetration, seedling emergence and
		workability. The more calcareous soils (C2a and A2) have more favourable physical
DVD	<i>T</i> 1	properties.
DKB DKC	5.1 3.0	Rises formed on coarse grained rocks. DKB Slopes of 2-4%.
DIC	3.0	DKC Slopes of 4-10%.
		Main soils: <u>hard sandy loam over dispersive clay on rock or deeply weathered rock</u> - D7
		or D3/D7 (E), with shallow loam over red clay with rubble - C2a (C), hard loam over red
		<u>clay on rock</u> - D1 (L), <u>shallow calcareous loam</u> - A2 (L) and <u>scalded gradational loam</u> -
		C2b (M). Poor soil structure leading to excessive runoff, reduced waterholding capacity,
		patchy emergence and erosion is a feature of many soils, especially D7 and D3/D7 , in
		this landscape. Sandy and quartzitic surfaces cause accelerated implement abrasion.
EGB	19.1	The more calcareous soils (C2a and A2) have more favourable properties. Rises formed on fine grained rock.
EGC	4.0	EGB Slopes of 2-4%.
		EGC Slopes of 4-10%
		Main soils: shallow calcareous loam - A2 (E), with hard loam over red clay on rock - D1
		(C), shallow loam over red clay with rubble - C2a (L) and shallow stony loam - L1 (L). This
		landscape is arable although many soils are shallow over carbonate layers or rock and
		prone to rapid moisture depletion. Alkalinity of the calcareous A2 soils and associated
		nutrient fixation affects fertility. The deeper D1 and C2a soils are fertile and potentially productive soils provided erosion is controlled.
ESC	0.7	Semi arable rises on basement rock.
ESD	0.5	ESC Rises with slopes of 5-15%.
		ESD Rocky rises with slopes of 10-20%.
		Main soils: shallow calcareous loam - A2 (E) and shallow loam over red clay with rubble -
		C2a (E), with shallow stony loam - L1 (C). Rocky reefs and associated shallow soils
	10 /	between the outcrops restrict the cropping productivity of this landscape.
JDB	10.6	Lower slopes and flats formed on fine grained alluvium.
JDF JDJ	7.0 1.3	JDB Gentle slopes of 2-4%. JDF Flats with eroded watercourses.
3123	1.5	JDJ Eroded drainage depressions.
		Main soils: <u>hard loam over poorly structured red clay</u> - D3 (E) and <u>hard loam over red</u>
		clay - D2 (E), with deep gradational loam - M2 (L), loam over red clay with rubble - C3
		(M) and <u>deep calcareous loam</u> - A5 (M). The land is potentially productive with deep,
		inherently fertile soils. The main limitation is the adverse physical condition of the most
		common soil (D3). Hard setting surfaces and dispersive subsoils cause excessive runoff
		(contributing to erosion), patchy emergence and restricted workability. Poor root growth in poorly structured soils can result in low water use efficiency. The D2 soils have similar
		but less severe characteristics and the less common C3 and A5 soils are well structured.
		Erosion in watercourses and sporadic salinity are minor problems.
KDB	22.0	Flats and gentle slopes formed on fine grained alluvium.
KDE	1.4	KDB Gentle slopes of 2-5%.
		KDE Drainage depressions.
		Main soils: <u>loam over red clay with rubble</u> - C3 (E), with <u>hard loam over poorly structured</u>
		red clay - D3 (C), hard loam over red clay - D2 (L) and deep calcareous loam - A5 (M).
		The soils are generally well structured (except the D3 soils) and fertile, but often with limited water holding capacity. Erosion is usually not a problem (except in creeks). There
		is sporadic saline seepage.
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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, Hypercalcic / Lithocalcic Calcarosol)

 Calcareous, often stony, sandy loam to sandy clay loam over Class III A, B or C carbonate grading to weathering rock within a metre.
- A5 <u>Deep calcareous loam (Pedal, Hypercalcic / Lithocalcic Calcarosol)</u>
 Calcareous loam to clay loam grading to a well structured clayey subsoil with a layer of rubbly or soft carbonate over alluvium.
- C2a Shallow loam over red clay with rubble (Supracalcic, Red Chromosol / Dermosol)

 Loam over a well structured red clay with rubbly carbonate at shallow depth over weathering fine grained rock within 100 cm.
- Scalded gradational loam (Sodic, Calcic, Red Dermosol)

 Medium thickness to thin (depending on degree of soil loss) saline sandy loam to clay loam grading to a well structured red clayey subsoil with fine to rubbly carbonate at moderately shallow depth, overlying weathering rock.
- Gradational loam (Supracalcic / Lithocalcic, Red Dermosol)
 Friable loam to clay loam grading to a well structured red clay with rubbly or soft carbonate at moderately shallow depth over alluvium.
- Hard loam over red clay on rock (Calcic / Hypercalcic, Red Chromosol)
 Hard loam to clay loam abruptly overlying a well structured red clay with soft Class I carbonate over weathering rock by 100 cm.
- Hard loam over red clay (Calcic, Red Chromosol)
 Hard sandy loam to clay loam abruptly overlying a well structured red clay with soft carbonate at depth, grading to alluvium below 100 cm.
- Hard loam over poorly structured red clay (Calcic, Red Sodosol)
 Hard sandy loam to clay loam abruptly overlying a coarsely structured and dispersive red clay with soft carbonate at depth, grading to alluvium below 100 cm.
- D3/D7 Hard sandy loam over dispersive red clay on deeply weathered rock (Hypercalcic, Red Sodosol)
 Hard sandy loam to clay loam abruptly overlying a coarsely structured and dispersive red clay
 with soft carbonate at depth, grading to deeply weathered rock below 100 cm.
- Hard sandy loam over dispersive clay on rock (Calcic / Supracalcic, Red Sodosol)

 Hard setting sandy loam to clay loam sharply overlying a poorly structured dispersive red clay grading to soft or rubbly carbonate over weathering sandstone (sandy loam soils) or siltstone (loam and clay loam soils).
- L1 Shallow stony loam (Calcareous, Paralithic, Leptic Tenosol)
 Shallow stony loam over weathering rock with carbonate accumulations.
- M2 <u>Deep gradational loam (Calcic / Hypercalcic, Red Dermosol)</u>
 Loam to clay loam grading to a well structured red clay, calcareous at depth over alluvium.

Further information: DEWNR Soil and Land Program

