

BKL Buckalowie Land System

- Area:** 46.4 km²
- Landscape:** Rocky rolling to steep ranges and rises, often steeply dissected, with very shallow soils on fine grained rocks. Very narrow valley floors are typical. Named from Buckalowie Hill & Buckalowie Creek in the area, east of Belton. The highest point in the range is Eke Hill, 710 m asl, which is just outside the mapping area. Most of the range is around 600 - 650m asl. Relief is around 100 - 110m.
- Geology:** Fine grained rocks of the Wilpena Group of the Adelaide Geosyncline, mainly siltstones and calc-siltstones of the Bunyeroo (Pwb), Ulupa (Pwu) and Brachina (Pwr) Formations
- Annual rainfall:** 275 – 360 mm average
- Soils:** Typical soils are very shallow loams over siltstones and quartzites. These occur throughout on slopes and crests.

Main soils

- L1a** Shallow stony loam
A2 Shallow calcareous loam to clay loam
RR Rock outcrop

Minor soils

On rock

- C2** Gradational loam to clay loam on rock
D1 Loam to clay loam over clay on rock
D7 Loam over poorly structured clay on rock
L1b Shallow stony sandy loam
L1c Shallow stony loamy sand

On outwash

- A5** Rubbly calcareous loam on clay
A6 Gradational calcareous clay loam
C1 Gradational sandy loam
C3 Gradational clay loam
D2 Clay loam over red clay
D4 Clay loam over pedaric red clay
E2 Red cracking clay

- Summary:** The Buckalowie Land System consists of north-east to south-west trending ranges north-east of Johnburg. The topography is rolling to steep hills and rises, with shallow soils formed on mostly, fine-grained rocks, often calcareous. Lower slopes and narrow valley floors have gradational or texture contrast soils with red clay subsoils.



Soil Landscape Unit summary: 16 Soil Landscape Units (SLUs) mapped in the Buckalowie Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
AAH	1.8	Rolling rises	L1	D	Rolling rises formed on medium grained rock, with much rock outcrop and very shallow rocky sandy loam soils. Relief is less than 30m, slope steepness is between 10 and 30%. Watercourses are eroded and incised. Main soil: <u>shallow stony sandy loam - L1b</u> .
ABC	2.8	Rolling low hills	L1RR	D	Rolling low hills with linear rocky quartzite outcrops and shallow rocky soils on interbedded fine grained rocks. Relief is 30-90m, slopes are 3-10%. Main soils: <u>shallow stony loamy sand - L1c</u> and <u>rock outcrop - RR</u> , with <u>shallow calcareous loam - A2</u> .
ADH	2.1	Rolling rises	L1	D	Non-arable rocky rises formed on limestones and calc-siltstones such as Skillogalee Dolomite with very shallow loamy soils. ADH Rolling rises with eroded watercourses. Relief is 9-30m, slopes are 10-30%. ADL Very steep hills with scalding and sheet erosion. Relief is more than 90m, slopes are more than 60%. Main soils: <u>shallow stony loam - L1a</u> and <u>rock outcrop - RR</u> , with <u>shallow calcareous loam - A2</u> and <u>gradational loam on rock - C2</u> .
ADL	17.3	Very steep hills	L1RR	D	
AFB	1.3	Rolling rises	L1A2	D	Rises and hills with shallow soils on fine grained basement rocks. AFB Rolling rises. Relief is 9-30m, slopes are 10-30%. AFC Rolling low hills. Relief is 30-90m, slopes are 10-30%. AFE Steep hills. Relief is 90-300m, slopes are 30-50%. AFJ Steep low hills with eroded watercourses; more than 20% affected by gulying. Relief is 30-90m, slopes are 10-30%. AFK Steep hills with eroded watercourses; more than 20% affected by gulying. Relief is 90-300m, slopes are 30-50%. Main soils: <u>shallow stony loam - L1a</u> and <u>shallow calcareous loam - A2</u> , with <u>rock outcrop - RR</u> .
AFC	16.8	Rolling low hills	L1A2	D	
AFE	7.1	Steep hills	L1A2	D	
AFJ	5.2	Steep low hills	L1A2	D	
AFK	29.8	Steep hills	L1A2	D	
AIJ	10.2	Steep low hills	L1RRC2	D	Steep low hills formed on fine grained rocks with shallow soils. Watercourses are eroded; more than 20% of land is affected by gulying. Relief is 30-90m, slopes are 10-30%. Main soils: <u>shallow stony loam - L1a</u> , <u>gradational loam on rock - C2</u> and <u>rock outcrop - RR</u> .
DNB	1.0	Gently undulating rises	D1	D	Gently undulating rises formed on fine grained rocks, typically Brachina Shale Formation. Slopes are 1-3%, relief is less than 30m. The soils have clay loamy surface textures. Main soils: <u>clay loam over (pedaric) clay on rock - D1</u> , with <u>clay loam over red clay - D2</u> and <u>red cracking clay - E2</u> .
EFB	0.4	Gently undulating rises	A2D7L1	D	Gently undulating rises formed on calc-siltstones of the Wonoka or Tapley Hill Formations. Slopes are 1-3%, relief is less than 30m. Minor scalding. Main soils: <u>shallow calcareous loam - A2</u> , <u>loam over poorly structured clay on rock - D7</u> and <u>shallow stony loam - L1a</u> .
EUC	0.3	Undulating rises	L1C2A2	D	Undulating rises formed on fine grained rocks. Slopes are 3-10%, relief is less than 30m. Main soils: <u>shallow stony loam - L1a</u> , <u>gradational clay loam on rock - C2</u> and <u>shallow calcareous clay loam - A2</u> .
JFH	1.6	Undulating pediments	D2D4 C1	D	Undulating pediments formed on fine grained outwash. Gulying affects 10-20% of land. Slopes are 3-10%, relief is less than 9m. Main soils: <u>clay loam over red clay - D2</u> , <u>clay loam over pedaric red clay - D4</u> and <u>gradational sandy loam - C1</u> .
JYB	1.3	Gently undulating	D4D1 D7	D	Gently undulating pediments formed on fine grained rocks and sediments. Slopes are 1-3% relief is less than 9 metres.



		pediments			Main soils: <u>clay loam over pedaric red clay - D4</u> , <u>clay loam over clay on rock - D1</u> and <u>loam over poorly structured clay on rock - D7</u> , with <u>rubbly calcareous loam on clay - A5</u> and <u>gradational loam on rock - C2</u> .
KKH	1.0	Undulating pediments	A6A5	D	Undulating pediments formed on fine grained outwash sediments. Slopes are 1-3%, relief is less than 9m. 5-10% of land is affected by gulying. Main soils: <u>gradational calcareous clay loam - A6</u> and <u>rubbly calcareous loam on clay - A5</u> , with <u>gradational clay loam - C3</u> and <u>red cracking clay - E2</u> .

PROPORTION codes assigned to Soil Landscape Unit (SLU) components:

- 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 to clay loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous stony loam to clay loam grading to soft or rubbly carbonate over weathering dolomite or calc-siltstone within 50 cm.
- A5** Rubbly calcareous loam on clay (Regolithic, Supracalcic / Hypercalcic Calcarosol)
Calcareous loam grading to a very highly calcareous rubbly sandy clay loam to light clay, over a clayey substrate deeper than 60 cm, but within 120 cm.
- A6** Gradational calcareous clay loam (Pedal, Hypercalcic / Supracalcic Calcarosol)
Calcareous clay loam grading to a well structured very highly calcareous (sometimes rubbly) clay, over a red clayey substrate within 120 cm.
- C1** Gradational sandy loam (Hypercalcic, Red Kandosol)
Friable sandy to loamy topsoil grading to massive red-brown alkaline loamy to clay loamy subsoil, highly calcareous with depth, over alluvium.
- C2** Gradational loam to clay loam on rock (Calcic / Hypercalcic Red Dermosol)
Loam to clay loam grading to a friable red clay with soft Class I carbonate within 50 cm, grading to weathering rock within 100 cm.
- C3** Gradational clay loam (Calcic / Hypercalcic Red Dermosol)
Clay loam grading to a friable red clay with abundant soft Class I carbonate within 50 cm, overlying alluvium within 100 cm.
- D1** Loam to clay loam over clay on rock (Hypercalcic / Calcic, Red Chromosol)
Medium thickness hard gravelly loam to clay loam over a friable and finely structured red clay, calcareous with depth, grading to weathering basement rock within 100 cm.
- D2** Clay loam over red clay (Calcic / Hypercalcic, Red Chromosol)
Hard setting clay loam (with variable quartzite stones) abruptly overlying a well structured red clay with soft Class I carbonate at depth.
- D4** Clay loam over red friable clay (Calcic, Pedaric, Red Sodosol)
Thin to medium thickness clay loam over a finely structured friable red clay, calcareous from about 50 cm, grading to fine or medium grained alluvium.



- D7** Loam over poorly structured clay on rock (Calcic / Hypercalcic, Red Sodosol)
Medium to thick hard loam to loam sharply overlying a coarsely structured dispersive red clay, calcareous with depth, grading to highly weathered kaolinized siltstone or quartzite.
- E2** Red cracking clay (Epicalcareous, Epipedal, Red Vertisol)
Dark strongly structured clay grading to a well structured red calcareous medium to heavy clay continuing below 100 cm. Often containing gypsum segregations in subsoil.
- L1a** Shallow stony loam (Paralithic, Leptic Tenosol)
Shallow stony loam, often calcareous with depth, overlying weathering fine grained rock shallower than 50 cm.
- L1b** Shallow stony sandy loam (Paralithic, Leptic Tenosol)
Shallow stony sandy loam, often calcareous with depth, overlying weathering fine to medium grained sandstone or tillite shallower than 50 cm.
- L1c** Shallow stony loamy sand (Paralithic, Leptic Tenosol)
Shallow stony loamy sand, often calcareous with depth, overlying quartzite shallower than 50 cm.
- RR** Rock outcrop

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

