

# WHB Wheal Bassett Land System

- Area:** 245 km<sup>2</sup>
- Landscape:** Low range and rises near Nackara. The ranges and rises with shallow stony soils are flanked by and interspersed with pediments on which mostly calcareous soils have developed.
- Annual rainfall:** 225 - 300 mm average
- Geology:** Folded Adelaide Geosyncline Proterozoic age rocks, including Skillogalee Dolomite, Saddleworth Formation siltstones and shales, Tapley Hill Formation calcareous siltstones, Tarcowie Siltstone, Appila Tillite and Enorama Shale. Igneous dolerite intrudes diapiric breccias in the north. Dark, often pyritic, siltstones of the Callanna Group are more common in the northern part. Holocene age outwash and alluvial deposits are more widespread across the more gently undulating landscapes in the northern part.
- Soils:** In general, the soils of the hills and rises are shallow stony loams to sandy loams, commonly calcareous, forming in weathering rock. On pediments and flats, where outwash deposits have accumulated, soils are deeper, with loamy to clay loamy surfaces and commonly calcareous throughout.
- Main soils:**
- On rock*
  - A2** Shallow calcareous loam to sandy loam
  - L1a** Shallow stony loam
  - L1b** Shallow stony loamy sand to sandy loam
  - RR** Rock outcrop
  - On outwash deposits*
  - A5** Rubbly calcareous sandy loam to clay loam on clay
  - D4** Loam to clay loam over pederic red clay
- Minor soils:**
- On rock*
  - B2** Shallow calcareous loam to sandy loam on calccrete
  - C2** Gradational loam to sandy loam on rock
  - D1** Loam over clay on rock
  - On outwash deposits*
  - A3** Deep moderately calcareous loam to sandy loam
  - A4** Deep (rubbly) calcareous sandy loam to loam
  - A6** Gradational calcareous clay loam
  - C1** Gradational sandy loam
  - C3** Friable gradational clay loam
  - D2** Loam over red clay
  - M3** Stony alluvial sandy clay loam
- Summary:** The Wheal Bassett Land System consists of a northeast to southwest trending low range on calcareous siltstones, with associated pediments and alluvial plains. Soils are rubbly calcareous soils or shallow calcareous soils on calc-siltstone. Rock outcrop is common on the ranges and rises. Red texture contrast soils are also common on pediments and plains.



**Soil Landscape Unit summary:** 50 Soil Landscape Units (SLUs) mapped in the Wheal Bassett Land System

SLU	% of area	Component	Main soils	Prop#	Notes
AAA	0.9	Undulating rises	L1RR A2	D	Undulating rises formed on fine grained rocks. Rock outcrops are common. Relief is less than 30m, slopes are 3-10%. Main soils: <u>shallow stony loam</u> - <b>L1a</b> , <u>rock outcrop</u> - <b>RR</b> and <u>shallow calcareous loam</u> - <b>A2</b> .
ADA	12.8	Undulating rises	L1RR D1	D	Non arable rocky rises formed on limestones and calc-siltstones such as Skillogalee Dolomite with very shallow loamy soils.
ADB	5.9	Rolling rises	L1RR D1	D	<b>ADA</b> Undulating rises. Relief is less than 30m, slopes are 3-10%. <b>ADB</b> Rolling rises. Relief is 9-30m, slopes are 10-30%.
ADC	0.1	Rolling low hills	L1RR D1	D	<b>ADC</b> Rolling low hills. Relief is 30-90m, slopes are 3-10% <b>ADD</b> Steep low hills. Relief is 30-90m, slopes are 30-50%.
ADD	0.3	Steep low hills	L1RR D1	D	Main soils: <u>shallow stony loam</u> - <b>L1a</b> , <u>rock outcrop</u> - <b>RR</b> and <u>loam over (pedaric) red clay on rock</u> - <b>D1</b> , with <u>shallow calcareous loam</u> - <b>A2</b> and <u>gradational loam on rock</u> - <b>C2</b> .
AKB	0.6	Rolling rises	L1RR	D	Rolling rises on quartzites, with interbedded Rhynie Sandstone and Skillogalee Dolomite. Relief is 9-30m, slopes are 10-30%. Main soils: <u>shallow stony loamy sand</u> - <b>L1b</b> and <u>rock outcrop</u> - <b>RR</b> (quartzites and sandstones), with <u>shallow calcareous loam</u> - <b>A2</b> (dolomites).
AYA	0.6	Undulating rises	A2L1 RR	D	Hills and rises on fine grained rocks, especially siltstones of the Tapley Hill Formation with extensive rock outcrop.
AYB	1.1	Rolling rises	A2L1 RR	D	<b>AYA</b> Undulating rises. Relief is less than 30m, slopes are 3-10%. <b>AYB</b> Rolling rises. Relief is less than 30m, slopes are 10-30%.
AYC	1.2	Rolling low hills	A2L1 RR	D	<b>AYC</b> Rolling low hills. Slopes are 10-30%, relief is 30-90m.
AYD	0.7	Very steep low hills	A2L1 RR	D	<b>AYD</b> Very steep low hills. Relief is 30-90m, slopes are greater than 60%. Main soils: <u>shallow calcareous loam</u> - <b>A2</b> , <u>shallow stony loam</u> - <b>L1a</b> and <u>rock outcrop</u> - <b>RR</b> .
AZA	0.7	Undulating low hills	L1RR	V	Non arable rocky low hills formed on Saddleworth Formation siltstones and mudstones, with limited areas of pediment formed on fine grained outwash and weathering rock. <b>AZA</b> Undulating low rocky hills with 10-20% pediments. Relief is less than 30m, slopes are 3-10%.
		Pediments	D4D2 D1	L	
AZB	0.3	Rolling low hills	L1RR	V	<b>AZB</b> Rolling low rocky hills. Slopes are 10-30%, relief is 30-90m.
		Pediments	D4D2 D1	L	Main soils: <b>Hills:</b> <u>shallow stony sandy loam</u> - <b>L1b</b> and <u>rock outcrop</u> - <b>RR</b> . <b>Pediments:</b> <u>loam over pedaric red clay</u> - <b>D4</b> , <u>loam over red clay</u> - <b>D2</b> and <u>loam over clay on rock</u> - <b>D1</b> , with <u>deep (rubbly) calcareous sandy loam</u> - <b>A4</b> .
EDD	2.2	Rolling rises	C2L1	D	Rolling rises formed on coarse grained rocks with 10-30% rock outcrop. Relief is less than 30m, slopes are 10-30%. Main soils: <u>gradational sandy loam on rock</u> - <b>C2</b> and <u>shallow stony loamy sand</u> - <b>L1b</b> with <u>rock outcrop</u> - <b>RR</b> .
EEB	0.5	Gently undulating rises	A2	D	Rises formed on calc-siltstones. <b>EEB</b> Gently undulating rises. Slopes are 1-3%, relief is less than 30m.
EEC	0.7	Undulating rises	A2	D	<b>EEC</b> Undulating rises. Relief is less than 30m, slopes are 3-10%.
EEH	2.3	Undulating rises	A2	D	<b>EEH</b> Undulating rises. Moderately gullied (10-20%). Relief is less than 30m, slopes are 3-10%. Main soils: <u>shallow calcareous loam</u> - <b>A2</b> , with <u>shallow stony loam</u> - <b>L1a</b> , <u>rock outcrop</u> - <b>RR</b> and <u>deep (rubbly) calcareous sandy loam</u> - <b>A4</b> .
EHC	1.5	Gently sloping plain	A2	V	Pediment plains with 10-20% low rocky rises, formed on calcareous siltstones and limestones including Tarcowie Siltstone and Tapley Hill Formation.
		Rocky outcrops	RR	L	
EHV	1.7	Gently	A2	V	<b>EHC</b> Undulating pediments. Relief is less than 30m, slopes are 3-10%. <b>EHV</b> Gently sloping pediment plains and rises. Moderately scalded (5-



		sloping plain Rocky outcrops	RR	L	10%). Pediment slopes are 1-3%. Rises have slopes of 3-10%, with relief to 30 m. Main soils: <b>Plains and Pediments:</b> <u>shallow calcareous sandy loam</u> - <b>A2</b> with <u>shallow calcareous sandy loam on calcrete</u> - <b>B2</b> and <u>rock outcrop</u> - <b>RR</b> . <b>Rocky rises:</b> <u>rock outcrop</u> - <b>RR</b> with <u>shallow stony sandy loam</u> - <b>L1b</b> .
EOB	5.7	Gently undulating rises	A2A6	D	Rises formed mainly on limestones and weathered calc-siltstones. <b>EOB</b> Gently undulating rises. Slopes are 1-3%, relief is less than 30m. <b>EOD</b> Rolling rises. Relief is 9-30m, slopes are 10-30%.
EOD	1.3	Rolling rises	A2A6 L1	D	Main soils: <u>shallow calcareous loam</u> - <b>A2</b> and <u>gradational calcareous clay loam</u> - <b>A6</b> , with <u>shallow stony loam</u> - <b>L1a</b> and <u>rock outcrop</u> - <b>RR</b> .
EVC	2.3	Undulating rises	A2	V	Rises with 20-30% rock outcrops and shallow calcareous soils formed on fine grained calcareous rocks.
		Rocky outcrops	RR	C	<b>EVC</b> Undulating rises. Slopes are 3-10%, relief is less than 9-30m. <b>EVD</b> Rolling rises. Relief is 9-30m, slopes are 10-30%.
EVD	2.0	Und. rises	A2	V	<b>EVH</b> Gently undulating rises. Moderately gullied (10-20%). Slopes are 1-3%, relief is less than 30m. Main soils:
		Rocky outcrops	RR	C	
EVH	0.8	Und. rises	A2	V	<b>Rises:</b> <u>shallow calcareous loam</u> - <b>A2</b> with <u>rubbly calcareous loam on clay</u> - <b>A5</b> and <u>shallow calcareous loam on calcrete</u> - <b>B2</b> . <b>Rocky outcrops:</b> <u>rock outcrop</u> - <b>RR</b> with <u>shallow stony loam</u> - <b>L1a</b>
		Rocky outcrops	RR	C	
EZB	0.5	Gently und. rises	A2A5 B2	V	Rises with mostly shallow calcareous soils on weathered siltstones of the Tapley Hill Formation and the Tarcowie Siltstone. Rocky outcrops are common. <b>EZB</b> Gently undulating rises. Slopes are 1-3%, relief is less than 30m.
		Rocky outcrops	RR	C	
EYC	2.4	Undulating rises	A2A5 B2	V	<b>EYC</b> Undulating rises. Relief is less than 30m, slopes are 3-10%. <b>EZR</b> Undulating rises, with saline soils. Relief is less than 30m, slopes are 3-10%. Main soils:
		Rocky outcrops	RR	C	
EZR	7.3	Undulating rises	A2A5 B2	V	<b>Rises:</b> <u>shallow calcareous sandy loam</u> - <b>A2</b> , <u>rubbly calcareous sandy loam on clay</u> - <b>A5</b> and <u>shallow calcareous sandy loam on calcrete</u> - <b>B2</b> . <b>Rocky outcrops:</b> <u>rock outcrop</u> - <b>RR</b> with <u>shallow stony sandy loam</u> - <b>L1b</b> and <u>hallow calcareous sandy loam on calcrete</u> - <b>B2</b> .
		Rocky outcrops	RR	C	
JLoo	1.6	Creek flats	D4D1	D	Creek flats formed on fine grained alluvium and weathering rocks. Severely gullied (over 20%), moderately scalded (10-50%). Main soils: <u>loam over pedaric red clay</u> - <b>D4</b> and <u>loam over clay on rock</u> - <b>D1</b> , with <u>deep moderately calcareous loam</u> - <b>A3</b> .
JMU	0.6	Plains	D4	D	Plains formed on fine grained alluvium, with quartz gravelly clay loamy surfaces. 5-10% of land is scalded Main soil is quartz gravelly <u>clay loam over pedaric red clay</u> - <b>D4</b> .
JPI	1.5	Pediments	D4A5	D	Pediments and plains formed on outwash sediments derived from fine grained basement rocks. <b>JPI</b> Gently undulating pediment plains. Moderately gullied (10-20%) and scalded (5-10%). <b>JPo</b> Creek flats. Moderately gullied (10-20%) and scalded (10-50%). <b>JPoo</b> Creek flats. Severely gullied (>20%), moderately scalded (10-50%). <b>JPtz</b> Creek flats. Severely gullied (over 20%) and scalded (over 50%), highly saline soils. Main soils: <u>clay loam over pedaric red clay</u> - <b>D4</b> and <u>rubbly calcareous clay loam on clay</u> - <b>A5</b> , with <u>friable gradational clay loam</u> - <b>C3</b> .
JPo	3.7	Creek flats	D4A5	D	
JPoo	0.2	Creek flats	D4A5	D	
JPtz	0.7	Creek flats	D4A5	D	
KBC	0.4	Undulating pediment	A5C3	D	Pediments formed on fine grained outwash with clay loam surfaced soils.
KBG	0.2	Gently undulating pediment	A5C3	D	<b>KBC</b> Undulating pediments. Slopes are 3-10%, relief is less than 9m. <b>KBG</b> Gently undulating pediments. Moderately gullied (10-20%). Slopes are 1-3%, relief is less than 9m. Main soils: <u>rubbly calcareous clay loam on clay</u> - <b>A5</b> and <u>friable gradational clay loam</u> - <b>C3</b> .



KcB	3.1	Gently undulating pediments	A5D4 C1	D	Pediments formed on fine grained outwash. Slopes are 1-3%, relief is less than 9m. Main soils: <u>rubbly calcareous clay loam on clay</u> - <b>A5</b> , <u>clay loam over pedaric red clay</u> - <b>D4</b> and <u>gradational sandy loam</u> - <b>C1</b> .
KFB	2.8	Pediments	A5	D	Gently sloping pediments formed on fine grained outwash. Slopes are 1-3%, relief is less than 9m. Main soils: <u>rubbly calcareous clay loam on clay</u> - <b>A5</b> with <u>clay loam over pedaric red clay</u> - <b>D4</b> .
KgJ	0.8	Creek flats	M3	D	Flats formed on gravelly alluvium. Moderate gully erosion (up to 5%). Main soils: <u>stony alluvial sandy clay loam</u> - <b>M3</b> with <u>rubbly calcareous sandy clay loam on clay</u> - <b>A5</b> .
KLC	0.4	Pediments	A5	D	Undulating pediments formed on fine grained outwash and fine grained rocks. Slopes are 3-10%, relief is less than 9m. Main soils: <u>rubbly calcareous loam on clay</u> - <b>A5</b> , with <u>shallow calcareous loam on rock</u> - <b>A2</b> , <u>gradational loam on rock</u> - <b>C2</b> and <u>shallow calcareous loam on calcrete</u> - <b>B2</b> .
KMo	0.6	Creek flats	A5D4	D	Creek flats formed on fine grained alluvium. 10-20% gullied and 10-50% scalded. Main soils: <u>rubbly calcareous loam on clay</u> - <b>A5</b> and <u>loam over pedaric red clay</u> - <b>D4</b> .
KOI	1.9	Pediment	A5	D	Gently sloping pediments (1-3% slope) formed on fine grained outwash. Moderately gullied (10-20%) and scalded (10-50%). Main soils: <u>rubbly calcareous clay loam on clay</u> - <b>A5</b> with <u>clay loam over pedaric red clay</u> - <b>D4</b> and <u>deep (rubbly) calcareous loam</u> - <b>A4</b> .
KQB	6.0	Pediment	A5	V	Complex of pediments formed on fine grained outwash and 20-30% low rises formed on siltstones, commonly capped by calcrete.
		Low rises	A2	C	
KQH	3.5	Pediment	A5	V	<b>KQB</b> Gently undulating pediments and rises. Slopes: 1-3%, relief: <9m. <b>KQH</b> Undulating pediments and rises. Moderately gullied (10-20%).
		Low rises	A2	C	
KQI	0.2	Pediment	A5	V	Slopes are 3-10%, relief is less than 9m. <b>KQI</b> Rolling pediments and rises. Moderately gullied (10-20%). Slopes are 10-30%, relief is up to 30m.
		Low rises	A2	C	
KQU	4.5	Plains	A5	V	<b>KQU</b> Plains and rises. Moderately scalded (5-10%). Main soils: <b>Pediments and plains:</b> <u>rubbly calcareous clay loam on clay</u> - <b>A5</b> with <u>clay loam over pedaric red clay</u> - <b>D4</b> . <b>Rises:</b> <u>shallow calcareous loam</u> - <b>A2</b> , with <u>shallow calcareous loam on calcrete</u> - <b>B2</b> and <u>rock outcrop</u> - <b>RR</b> .
		Low rises	A2	C	
KVB	8.4	Gently sloping plain	A6	D	Pediments and plains formed on calcareous outwash sediments derived from basement rock.
KVC	0.5	Undulating pediment	A6	D	<b>KVB</b> Gently sloping plains. Slopes are 1-3%, relief is less than 9m. <b>KVC</b> Undulating pediments. Slopes are 3-10%, relief is less than 9m.
KVv	0.6	Plains	A6	D	<b>KVv</b> Plains. Moderately gullied (10-20%) and scalded (10-50%).
KVV	0.3	Gently sloping plain	A6	D	<b>KVV</b> Gently sloping plains. Moderately scalded (5-10%). Slopes are 1-3%, relief is less than 9m. Main soils: <u>gradational calcareous clay loam</u> - <b>A6</b> with <u>rubbly calcareous clay loam on clay</u> - <b>A5</b> and <u>deep moderately calcareous loam</u> - <b>A3</b> .
KXB	0.6	Pediments	C1	D	Gently sloping pediment plains formed on sandy alluvium. Slopes are 1-3%, relief is less than 9m. Main soils: <u>gradational sandy loam</u> - <b>C1</b> , with <u>rubbly calcareous sandy loam on clay</u> - <b>A5</b> and <u>deep moderately calcareous sandy loam</u> - <b>A3</b> .
KZC	0.5	Undulating pediments	A5C1	D	Undulating pediments formed on sandy alluvium. Slopes are 10-30%, relief is up to 30m. Main soils: <u>rubbly calcareous sandy loam on clay</u> - <b>A5</b> and <u>gradational sandy loam</u> - <b>C1</b> with <u>deep moderately calcareous sandy loam</u> - <b>A3</b> .



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

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:

- A2** Shallow calcareous loam to sandy loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol)  
Calcareous stony loam to sandy loam grading to soft or rubbly carbonate over weathering dolomite or calc-siltstone within 50 cm.
- A3** Deep moderately calcareous sandy loam to loam (Regolithic, Calcic Calcarosol)  
Calcareous loam to sandy loam grading to a loamy to clayey subsoil without a significant carbonate accumulation in the subsoil, grading to medium to fine grained alluvium.
- A4** Deep (rubbly) calcareous sandy loam to loam (Regolithic, Hypercalcic / Lithocalcic Calcarosol)  
Calcareous sandy loam to loam grading to a very highly calcareous sandy clay loam to light clay with variable rubble, continuing below 120 cm.
- A5** Rubbly calcareous sandy loam to clay loam on clay (Regolithic, Supracalcic / Hypercalcic Calcarosol)  
Calcareous sandy loam to clay 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 to loam grading to a well structured very highly calcareous (sometimes rubbly) clay, over a red clayey substrate within 120 cm.
- B2** Shallow calcareous sandy loam to loam on calcrete (Petrocalcic, Calcic / Lithocalcic Calcarosol)  
Stony calcareous sandy loam to loam, often with a very highly calcareous more clayey subsoil, over sheet calcrete within 50 cm. This grades to rubbly carbonate over weathering basement rock within 150 cm.
- C1** Gradational sandy loam (Calcic-Hypercalcic Kandosol-Calcarosol)  
Friable sandy to loamy topsoil grading into massive red-brown alkaline loamy to clay loamy subsoil.
- C2** Gradational 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** Friable gradational clay loam (Calcic / Hypercalcic Red Dermosol)  
Loam to clay loam grading to a friable red clay with soft Class I carbonate within 50 cm, grading to alluvium within 100 cm.
- D1** Loam over clay on rock (Hypercalcic / Calcic, Red Chromosol)  
Medium thickness hard gravelly loam over a friable and finely structured red clay, calcareous with depth, grading to weathering basement rock within 100 cm.
- D2** Loam over red clay (Calcic / Hypercalcic, Red Chromosol)  
Hard setting loam (with variable quartzite stones) abruptly overlying a well structured red clay with soft Class I carbonate at depth.
- D4** Loam to clay loam over red friable clay (Calcic, Pedaric, Red Sodosol)  
Thin to medium thickness loam to clay loam over a finely structured friable red clay, calcareous from about 50 cm, grading to fine or medium grained alluvium.
- L1a** Shallow stony loam (Paralithic, Leptic Tenosol)  
Shallow stony loam, often calcareous with depth, over weathering fine grained rock shallower than 50 cm.



- L1b** Shallow stony loamy sand to sandy loam (Paralithic, Leptic Tenosol)  
Shallow stony sandy loam, often calcareous with depth, over sandstone or quartzite shallower than 50 cm.
- M3** Stony alluvial sandy clay loam (Basic, Fluvic, Clastic Rudosol OR Basic, Regolithic, Red-Orthic Tenosol)  
Thick to very thick sandy loam to sandy clay loam with more than 50% quartzite stones overlying stony alluvium.
- RR** Rock outcrop

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

