WHB Wheal Bassett Land System

Area: 245 km²

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 pedaric red clay

Minor soils: On rock

B2 Shallow calcareous loam to sandy loam on calcrete

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

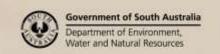
C1 Gradational sandy loamC3 Friable gradational clay loam

D2 Loam over red clay

M3 Stony alluvial sandy clay loam

Summary: The Wheal Basset Land System consists of a northeast to southwest trending low range on

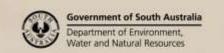
calcareous siltstones, with associated pediments and alluvial plains. Soils are rubbly calcareous soils or shallow calcareous soils on calc-siltstone. Rock outcrop is common on the ranges and rises. Red texture contrast soils are also common on pediments and plains.





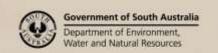
Soil Landscape Unit summary: 50 Soil Landscape Units (SLUs) mapped in the Wheal Bassett Land System

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: shallow stony loam - L1a, rock outcrop - RR and shallow calcareous loam - A2.
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	ADA Undulating rises. Relief is less than 30m, slopes are 3-10%. ADB Rolling rises. Relief is 9-30m, slopes are 10-30%.
ADC	0.1	Rolling low hills	L1RR D1	D	ADC Rolling low hills. Relief is 30-90m, slopes are 3-10% ADD 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> - L1a , <u>rock outcrop</u> - RR and <u>loam over</u> (<u>pedaric</u>) <u>red clay on rock</u> - D1 , with <u>shallow calcareous loam</u> - A2 and <u>gradational loam on rock</u> - C2 .
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: shallow stony loamy sand - L1b and rock outcrop - RR (quartzites and sandstones), with shallow calcareous loam - A2 (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	AYA Undulating rises. Relief is less than 30m, slopes are 3-10%. AYB Rolling rises. Relief is less than 30m, slopes are 10-30%.
AYC	1.2	Rolling low hills	A2L1 RR	D	AYC Rolling low hills. Slopes are 10-30%, relief is 30-90m. AYD Very steep low hills. Relief is 30-90m, slopes are greater than 60%.
AYD	0.7	Very steep low hills	A2L1 RR	D	Main soils: <u>shallow calcareous loam</u> - A2 , <u>shallow stony loam</u> - L1a and <u>rock outcrop</u> - RR .
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
		Pediments	D4D2 D1	L	outwash and weathering rock. AZA Undulating low rocky hills with 10-20% pediments. Relief is less
AZB	0.3	Rolling low hills	L1RR	V	than 30m, slopes are 3-10%. AZB Rolling low rocky hills. Slopes are 10-30%, relief is 30-90m.
		Pediments	D4D2 D1	L	Main soils: Hills: shallow stony sandy loam - L1b and rock outcrop - RR. Pediments: loam over pedaric red clay - D4, loam over red clay - D2 and loam over clay on rock - D1, with deep (rubbly) calcareous sandy loam - A4.
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: gradational sandy loam on rock - C2 and shallow stony loamy sand - L1b with rock outcrop - RR.
EEB	0.5	Gently undulating rises	A2	D	Rises formed on calc-siltstones. EEB Gently undulating rises. Slopes are 1-3%, relief is less than 30m. EEC Undulating rises. Relief is less than 30m, slopes are 3-10%.
EEC	0.7	Undulating rises	A2	D	EEH Undulating rises. Moderately gullied (10-20%). Relief is less than 30m, slopes are 3-10%.
EEH	2.3	Undulating rises	A2	D	Main soils: <u>shallow calcareous loam</u> - A2 , with <u>shallow stony loam</u> - L1a , <u>rock outcrop</u> - RR and <u>deep (rubbly) calcareous sandy loam</u> - A4 .
ЕНС	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
		Rocky outcrops	RR	L	Formation. EHC Undulating pediments. Relief is less than 30m, slopes are 3-10%.
EHV	1.7	Gently	A2	V	EHV Gently sloping pediment plains and rises. Moderately scalded (5-



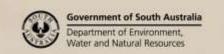


		sloping plain	1		10%). Pediment slopes are 1-3%. Rises have slopes of 3-10%, with relief
		Rocky	RR	L	to 30 m.
		outcrops	IXIX	-	Main soils:
		outcrops			Plains and Pediments: shallow calcareous sandy loam - A2 with
					shallow calcareous sandy loam on calcrete - B2 and rock outcrop - RR .
					Rocky rises: rock outcrop - RR with shallow stony sandy loam - L1b.
EOB	5.7	Gently	A2A6	D	Rises formed mainly on limestones and weathered calc-siltstones.
LOB	3.7	undulating	AZAO	ا	EOB Gently undulating rises. Slopes are 1-3%, relief is less than 30m.
		rises			EOD Rolling rises. Relief is 9-30m, slopes are 10-30%.
EOD	1.3	Rolling rises	A2A6	D	Main soils: <u>shallow calcareous loam</u> - A2 and <u>gradational calcareous</u>
EOD	1.3	Rolling rises	L1		<u>clay loam</u> - A6 , with <u>shallow stony loam</u> - L1a and <u>rock outcrop</u> - RR .
EVC	2.3	Undulating rises	A2	V	Rises with 20-30% rock outcrops and shallow calcareous soils formed on fine grained calcareous rocks.
			RR	С	
		Rocky	KK	L .	EVC Undulating rises. Slopes are 3-10%, relief is less than 9-30m.
ELID	2.0	outcrops	4.2	1,,	EVD Rolling rises. Relief is 9-30m, slopes are 10-30%.
EVD	2.0	Und. rises	A2	٧	EVH Gently undulating rises. Moderately gullied (10-20%). Slopes are
		Rocky	RR	С	1-3%, relief is less than 30m.
EX 77.7		outcrops	4.2	.,	Main soils: **Bicas: shallow calcaroous loam **A2 with rubbly calcaroous loam on
EVH	0.8	Und. rises	A2	V	Rises: shallow calcareous loam - A2 with rubbly calcareous loam on clay - A5 and shallow calcareous loam on calcrete - B2.
		Rocky	RR	С	Rocky outcrops: rock outcrop - RR with shallow stony loam - L1a
		outcrops			
EZB	0.5	Gently und.	A2A5	V	Rises with mostly shallow calcareous soils on weathered siltstones of
		rises	B2	<u> </u>	the Tapley Hill Formation and the Tarcowie Siltstone. Rocky outcrops
		Rocky	RR	С	are common.
		outcrops			EZB Gently undulating rises. Slopes are 1-3%, relief is less than 30m.
EZC	2.4	Undulating	A2A5	V	EZC Undulating rises. Relief is less than 30m, slopes are 3-10%.
		rises	B2		EZR Undulating rises, with saline soils. Relief is less than 30m, slopes
		Rocky	RR	С	are 3-10%.
		outcrops			Main soils:
EZR	7.3	Undulating	A2A5	V	Rises: shallow calcareous sandy loam - A2, rubbly calcareous sandy
		rises	B2		loam on clay - A5 and shallow calcareous sandy loam on calcrete - B2 .
		Rocky	RR	C	Rocky outcrops: rock outcrop - RR with shallow stony sandy loam -
		outcrops			L1b and <u>hallow calcareous sandy loam on calcrete</u> - B2 .
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> - D4 and <u>loam over clay on rock</u>
					- D1 , with <u>deep moderately calcareous loam</u> - A3 .
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> - D4 .
JPl	1.5	Pediments	D4A5	D	Pediments and plains formed on outwash sediments derived from fine
JPo	3.7	Creek flats	D4A5	D	grained basement rocks.
JPoo	0.2	Creek flats	D4A5	D	JPI Gently undulating pediment plains. Moderately gullied (10-20%)
JPtz	0.7	Creek flats	D4A5	D	and scalded (5-10%).
					JPo Creek flats. Moderately gullied (10-20%) and scalded (10-50%).
					JPoo Creek flats. Severely gullied (>20%), moderately scalded (10-50%).
					JPtz Creek flats. Severely gullied (over 20%) and scalded (over 50%),
					highly saline soils.
					Main soils: <u>clay loam over pedaric red clay</u> - D4 and <u>rubbly calcareous</u>
					<u>clay loam on clay</u> - A5 , with <u>friable gradational clay loam</u> - C3 .
KBC	0.4		A5C3	D	Pediments formed on fine grained outwash with clay loam surfaced
		pediment		1	soils.
KBG	0.2		A5C3	D	KBC Undulating pediments. Slopes are 3-10%, relief is less than 9m.
		undulating			KBG Gently undulating pediments. Moderately gullied (10-20%).
		pediment			Slopes are 1-3%, relief is less than 9m.
					Main soils: <u>rubbly calcareous clay loam on clay</u> - A5 and <u>friable</u>
					<u>gradational clay loam</u> - C3 .





IZ D	2.1	6 11	I A E D 4	Tn	D. I
KcB	3.1	Gently	A5D4	D	Pediments formed on fine grained outwash. Slopes are 1-3%, relief is
		undulating	C1		less than 9m.
		pediments			Main soils: <u>rubbly calcareous clay loam on clay</u> - A5 , <u>clay loam over</u>
IZED	2.0	Dadinana	A.F.	D	pedaric red clay - D4 and gradational sandy loam - C1 .
KFB	2.8	Pediments	A5	ט	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> - A5 with <u>clay loam over</u> pedaric red clay - D4 .
KgJ	0.8	Creek flats	M3	D	Flats formed on gravelly alluvium. Moderate gully erosion (up to 5%).
IXgJ	0.0	Creek nats	1013		Main soils: stony alluvial sandy clay loam - M3 with rubbly calcareous
					sandy clay loam on clay - A5.
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> - A5 , with <u>shallow calcareous</u>
					loam on rock - A2, gradational loam on rock - C2 and shallow
					<u>calcareous loam on calcrete</u> - B2 .
KMo	0.6	Creek flats	A5D4	D	Creek flats formed on fine grained alluvium. 10-20% gullied and 10-
					50% scalded.
					Main soils: rubbly calcareous loam on clay - A5 and loam over pedaric
					<u>red clay</u> - D4 .
KOl	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: rubbly calcareous clay loam on clay - A5 with clay loam over
				ļ.,	pedaric red clay - D4 and deep (rubbly) calcareous loam - A4 .
KQB	6.0	Pediment	A5	٧	Complex of pediments formed on fine grained outwash and 20-30%
IZOII.	2.5	Low rises	A2	С	low rises formed on siltstones, commonly capped by calcrete.
KQH	3.5		A5	V	KQB Gently undulating pediments and rises. Slopes: 1-3%, relief: <9m. KQH Undulating pediments and rises. Moderately gullied (10-20%).
KOL	0.2	Low rises	A2	C V	Slopes are 3-10%, relief is less than 9m.
KQI	0.2	Pediment	A5 A2	C	KQI Rolling pediments and rises. Moderately gullied (10-20%). Slopes
VOL	4.5	Low rises Plains	A5	V	are 10-30%, relief is up to 30m.
KQU	4.5	Low rises	A2	C	KQU Plains and rises. Moderately scalded (5-10%).
		LOW fises	AZ		Main soils:
					Pediments and plains: rubbly calcareous clay loam on clay - A5 with
					<u>clay loam over pedaric red clay</u> - D4 .
					Rises: shallow calcareous loam - A2, with shallow calcareous loam on
					<u>calcrete</u> - B2 and <u>rock outcrop</u> - RR .
KVB	8.4	Gently	A6	D	Pediments and plains formed on calcareous outwash sediments derived
		sloping plain			from basement rock.
KVC	0.5		A6	D	KVB Gently sloping plains. Slopes are 1-3%, relief is less than 9m.
		pediment			KVC Undulating pediments. Slopes are 3-10%, relief is less than 9m.
KVk	0.6	Plains	A6	D	KVk Plains. Moderately gullied (10-20%) and scalded (10-50%).
KVV	0.3	,	A6	D	KVV Gently sloping plains. Moderately scalded (5-10%). Slopes are 1-
		sloping plain			3%, relief is less than 9m.
					Main soils: <u>gradational calcareous clay loam</u> - A6 with <u>rubbly calcareous</u> <u>clay loam on clay</u> - A5 and <u>deep moderately calcareous loam</u> - A3 .
KXB	0.6	Pediments	C1	D	Gently sloping pediment plains formed on sandy alluvium. Slopes are
IXXD	0.0	i cuments			1-3%, relief is less than 9m.
					Main soils: gradational sandy loam - C1 , with rubbly calcareous sandy
					loam on clay - A5 and deep moderately calcareous sandy loam - A3 .
KZC	0.5	Undulating	A5C1	D	Undulating pediments formed on sandy alluvium. Slopes are 10-30%,
		pediments			relief is up to 30m.
					Main soils: <u>rubbly calcareous sandy loam on clay</u> - A5 and <u>gradational</u>
					sandy loam - C1 with deep moderately calcareous sandy loam - A3.





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 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)

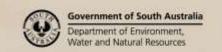
 Calcareous sandy loam to clay loam grading to a very highly calcareous rubbly sandy clay loam to light clay, over a clayey substrate deeper than 60 cm, but within 120 cm.
- A6 <u>Gradational calcareous clay loam (Pedal, Hypercalcic / Supracalcic Calcarosol)</u>
 Calcareous clay loam to loam grading to a well structured very highly calcareous (sometimes rubbly) clay, over a red clayey substrate within 120 cm.
- 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.
- Gradational sandy loam (Calcic-Hypercalcic Kandosol-Calcarosol)

 Friable sandy to loamy topsoil grading into massive red-brown alkaline loamy to clay loamy subsoil.
- 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.
- 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.
- 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.
- 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.
- 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: <u>DEWNR Soil and Land Program</u>

