BGO Bendigo Land System

Area: 118.0 km²

Landscape: Rolling rises and pediments. The rises which form the "spines" of these low ranges,

have shallow soils and outcropping hard rock especially on the steeper parts. The pediments which surround the rises have both calcareous and non-calcareous soils

(red soils or Kandosols).

Annual rainfall: 210 – 250 mm average

Geology: Proterozoic tillites, siltstones, dolomites and quartzites of the Umberatana Group and

Burra Group siltstones and shales of the Adelaide Geosyncline form the ridges. Pleistocene sediments occur on the pediments surrounding the hard rock areas.

Main soils: A4 Deep (rubbly) calcareous sandy loam to loam

A2 Shallow calcareous loam
L1 Shallow stony soil over rock

L1a Shallow stony loam

L1b Shallow stony sandy loam

A3 Deep moderately calcareous sandy loam to loamD4 Sandy loam to clay loam over pedaric red clay

Minor soils: A5 Rubbly calcareous sandy loam to clay loam on clay

C1 Gradational sandy loamC2 Gradational loam on rock

Friable gradational (sandy) clay loamHard gradational sandy clay loam

RR Rock outcrop

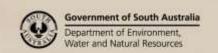
Summary: The Bendigo Land System consists of rolling rises with mostly shallow calcareous and

non-calcareous soils, and pediments with deeper soils which include gradational and

texture-contrast profiles.

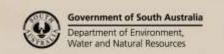
Soil Landscape Unit summary: 28 Soil Landscape Units (SLUs) mapped in the Bendigo Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
AAB	1.8	Ridges	L1A2	D	Rolling rises on limestone and calc-siltstone with very shallow loamy soils. Relief is less than 30m, slopes are 10-30%. Main soils: shallow stony loam - L1a and shallow calcareous loam - A2, with rock outcrop - RR.
ABB	1.0	Ridges	L1	D	Rolling rises with linear rocky quartzite outcrops and shallow rocky soils on interbedded fine-grained rocks. Relief is 9-30m, slopes are 10-30%. Main soils: shallow stony sandy loam - L1b, with rock outcrop - RR and shallow calcareous loam - A2.
AEB	0.5	Rises	L1	D	Non-arable rocky, rolling rises formed on mostly fine-grained rocks. Soils are very shallow. Relief is 9-30m, slopes are 10-30%. Main soils: shallowstonyloam - L1a, with shallow calcareous loam - A2.
AKH	3.1	Ridges	L1	D	Ridges of rolling rises with very shallow rocky soils formed on coarse-grained rocks. Watercourses are eroded. Relief is 9-30m, slopes are 10-30%. Main soils: shallowstonysandyloam - L1b, with rockoutcrop -



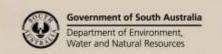


					PP and shallow calcareous loam - A2
A-t	9.6	Ridges	L1	D	RR and shallow calcareous loam - A2. Steep low hilly ridges on tillites with extensive rock outcrop.
Α-ι	7.0	Riages	LI		Relief is 30-90m, slopes are 30-50%.
					Main soils: <u>shallow stony sandy loam</u> - L1b , with <u>rock outcrop</u> - RR and <u>shallow calcareous loam</u> - A2 .
AWB	3.7	Rises	L1	D	Undulating rises with shallow rocky soils formed on quartzites
11,1,2	0.7	111303			with more than 50% interbedded calcareous rocks. Relief is 9-
					30m, slopes are 3-10%.
					Main soils: shallow stony sandy loam - L1b, with shallow
AYB	1.1	Rises	A2	D	calcareous loam- A2 and rock outcrop- RR.
AYB	1.1	Rises	A2	D	Rolling rises on fine grained rocks, especially siltstones of the Tapley Hill Formation. Relief is less than 30m, slopes are 10-
					30%.
					Main soils: shallow calcareous loam - A2, with shallow stony
					<u>loam</u> - L1a .
EFB	0.3	Rises	A2	D	Gently undulating rises with moderately shallow soils overlying
					hard calcareous rocks, typically siltstones and limestones. Minor scalding. Slopes are 1-3%, relief is less than 30m.
					Main soils: shallow calcareous loam - A2 , with shallow stony
					loam - L1a and deep (rubbly) calcareous loam - A4.
EIRz	11.2	Slopes	A4A2	D	Gently sloping fans on outwash and undulating rises formed
					over basement rock or saprolite within one metre of the
					surface. Relief is 9-30m, slopes are 3-10%. Slightly to
					moderately saline, 10-50% scalded and 5-10% gullied. Main soils: deep (rubbly) calcareous sandy loam -A4 and
					shallow calcareous loam - A2 , with deep moderately
					<u>calcareous sandy loam</u> - A3 and <u>gradational sandy loam</u> -
					C1.
EOg	4.8	Rises	A2	V	Complex of rises with mostly calcareous soils over pulverulent
		Fans	A3A4	С	weathered rock, and fans formed on medium grained
					outwash sediments. EOg Gently undulating rises and fans with eroded waterways
					and moderate salinity. Slopes are 1-3%, relief is less than 30m.
					EOh undulating rises and fans with eroded waterways and
EOh	1.5	Rises	A2	V	moderate salinity. Slopes are 3-10%, relief is less than 30m.
		Fans	A3A4	L	Main soils:
					Rises: Shallow calcareous loam - A2, with shallow stony loam - L1a and gradational loam on rock - C2.
					Fans: deep moderately calcareous loam - A3 and deep
					(rubbly) calcareous sandy loam - A4, with gradational sandy
					loam - C1, friable gradational sandy clay loam - C3 and
				_	sandy clay loam over pedaric red clay - D4 .
EPB	2.5	Rises	A2	D	Gently undulating rises and drainage depressions on
		Drainage depressions	A3A4	М	dissected remnants of calcareous pediments and basement rocks with predominantly calcareous gradational soils. Relief
		depressions			is less than 30m, slopes are 1-3%.
					Main soils:
					Rises: shallow calcareous loam - A2 with shallow stony loam -
					L1a.
					Drainage Depressions: deep moderately calcareous loam - A3 and deep (rubbly) calcareous sandy loam - A4, with
					gradational sandy loam - C1, friable gradational sandy clay
					loam - C3 and sandy clay loam over pedaric red clay - D4.
EUB	3.7	Rises	A2L1	٧	Complex of gently undulating rises on fine grained rock and
		Fans	A3A4	L	fans on alluvium. Relief is 9-30m, slopes are 1-3%.
					Main soils:
					Rises: Shallow calcareous loam - A2 and shallow stony loam - L1a.
					Fans: deep moderately calcareous loam - A3 and deep
					(rubbly) calcareous sandy loam - A4, with gradational sandy
					loam - C1, friable gradational sandy clay loam - C3 and
					sandy clay loam over pedaric red clay - D4.





EVB	1.7	Rises	A2 A 4	D	Gently undulating rises with rock outcrops formed on fine
EVB	1./		A2A4		· · · · · · · · · · · · · · · · · · ·
		Drainage	A3A4	М	grained rocks, and minor drainage depressions.
		depressions			Slopes are 1-3%, relief is less than 30m.
					Main soils:
					Rises: shallow calcareous loam - A2 and deep (rubbly)
					calcareous sandy loam - A4, with shallow stony loam - L1a.
					Drainage Depressions: deep moderately calcareous loam -
					A3 and deep (rubbly) calcareous sandy loam - A4, with
					gradational sandy loam - C1, friable gradational sandy clay
II vvv	1 1	Drainaga	D4A3	D	loam - C3 and sandy clay loam over pedaric red clay - D4. Drainage depressions and creek flats with moderately saline
JLyy	1.1	Drainage depressions	D4A3	D	subsoils. Severe gullying (over 20%) and scalding (over 50%)
		debiessions			of land affected.
					Main soils: <u>sandy clay loam over pedaric red clay</u> - D4 and
					deep moderately calcareous loam - A3, with hard
					gradational sandy clay loam - M4 and rubbly calcareous
					sandy clay loam on clay - A5 .
JOl	5.4	Fans	D4A4	V	Complex of gently undulating fans on alluvium and rises on
301	5.4	Rises	A2A4	C	medium grained basement rock. 10-50% scalding and 10-20%
		KISCS	/ \		gullying. Slopes are 1-3%, relief is less than 30m.
					Main soils:
					Fans: clay loam over pedaric red clay - D4 and deep (rubbly)
					<u>calcareous sandy loam</u> - A4 , with <u>deep moderately</u>
					calcareous loam - A3 and gradational sandy loam - C1.
					Rises: shallow calcareous loam - A2 and deep (rubbly)
					calcareous sandy loam - A4, with shallow stony sandy loam -
					L1b.
JPl	2.4	Fans	D4	D	Fans formed on outwash sediments derived from basement
					rocks.
					JPI Gently sloping fans with 10-20% land gullied and 5-10%
					scalded. Relief is less than 9m, slopes are 1-3%.
ID.	1.0	Г	D.4	_	JPq Gently sloping fans. Severely scalded (over 50%). Slopes
JPq	1.8	Fans	D4	D	are 1-3%, relief is less than 9m.
					JPyy Drainage depressions. Severely gullied (over 20%) and scalded (over 50%).
					Main soils: <u>sandy loam over pedaric red clay</u> - D4 with <u>deep</u>
					moderately calcareous sandy loam - A3, deep (rubbly)
JPyy	0.3	Drainage	D4	D	calcareous sandy loam - A4 and hard gradational sandy
		depressions			clay loam - M4.
JYG	9.4	Fans	D4	Е	Complex of gently sloping fans on alluvium and rises on
010	,.,	Rises	A2A4	E	medium grained basement rock. Moderately gullied (10-
					20%). Slopes are 1-3%, relief is less than 9m.
					Main soils:
					Fans: loam over pedaric red clay - D4 with deep moderately
					calcareous loam - A3, deep (rubbly) calcareous sandy loam
					- A4 and <u>hard gradational sandy clay loam</u> - M4 .
					Rises: shallow calcareous loam - A2 and deep (rubbly)
					<u>calcareous sandy loam</u> - A4 , with <u>shallow stony sandy loam</u> -
		_			L1b.
KcB	2.5	Fans	A4C1	D	Fans formed on medium grained outwash.
KcG	0.6	Fans	A4C1	D	KcB Gently sloping fans. Slopes are 1-3%.
Kcg	0.5	Fans	A4C1	D	KcG Gently sloping fans. Gullying affects 10-20% of land. Slopes
					are 1-3%.
					Kcg Gently undulating fans with eroded waterways and
					moderate salinity. Slopes are 1-3%.
					Main soils: deep (rubbly) calcareous sandy loam - A4 and
					gradational sandy loam - C1, with deep moderately calcareous sandy loam - A3 and sandy loam over pedaric
					red clay - D4 .
KFb	16.5	Fans	A4A3	V	Complex of fans on outwash sediments and rises on medium
131 0	10.5	1 0113	/\-/\	"	Complex of faits of convasif scalinerits and fises of medicin

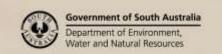




		Dises	A 2 A 4		grained reals
		Rises	A2A4	С	grained rocks. KFb Gently sloping fans and rises. Slopes are 1-3%, relief is less than 9m. Fans are moderately scalded (10-50%) and saline, rises less so. KFV Severely scalded (over 50%) gently sloping fans and rises
KFV	3.5	Fans	A4A3	V	which are only slightly scalded (0-5%). Slopes are 1-3%, relief is
KIB	1.7	Rises Fans Rises	C1A3 A2A4	C V C	less than 9m. Main soils: Fans: deep (rubbly) calcareous sandy loam - A4 and deep moderately calcareous sandy loam - A3, with sandy loam over pedaric red clay - D4, gradational sandy loam - C1 and hard gradational sandy clay loam - M4. Rises: shallow calcareous loam - A2 and deep (rubbly) calcareous sandy loam - A4, with shallow stony sandy loam - L1b. Complex of gently undulating fans on alluvium and rises on medium grained rock.
		11.500	7.27 (1	J	Main soils: Fans: gradational sandy loam - C1 and deep moderately calcareous sandy loam - A3, with sandy loam over pedaric red clay - D4 and deep (rubbly) calcareous sandy loam - A4. Rises: shallow calcareous loam on rock - A2 and deep (rubbly) calcareous sandy loam - A4, with shallow stony sandy loam - L1b.
KLB	6.5	Fans	A4A3	V	Gently sloping fans and rises formed on outwash sediments.
		Rises	A4	С	Slopes are 1-3%, relief is less than 9m. Main soils: Fans: deep (rubbly) calcareous sandy loam - A4 and deep moderately calcareous sandy loam - A3. Rises: deep (rubbly) calcareous sandy loam - A4.
KQl	1.3	Fans	A3A4	V	Complex of gently sloping fans and basement rock rises.
		Rises	A4	L	Moderately saline subsoils. 10-20% of land is gullied. Slopes are 1-3%, relief is less than 9m. Main soils: Fans: deep moderately calcareous sandy loam - A3 and deep (rubbly) calcareous sandy loam - A4 with hard gradational sandy clay loam - M4 and sandy loam over pedaric red clay - D4. Rises: deep (rubbly) calcareous sandy loam - A4 with shallow calcareous loam - A2.

PROPORTION codes assigned 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 (Paralithic, Hypercalcic / Lithocalcic Calcarosol)
 Calcareous stony loam grading to soft or rubbly carbonate over weathering dolomite or calcsiltstone within 50 cm.
- 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 <u>Deep (rubbly) calcareous sandy loam to loam (Regolithic, Hypercalcic / Lithocalcic Calcarosol)</u>
 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, Hypercalcic / Lithocalcic Calcarosol)

 Calcareous sandy loam to clay loam grading to a very highly calcareous rubbly sandy clay lo

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.

- Gradational sandy loam (Hypercalcic, Red Kandosol)
 Friable sandy loam grading to massive red-brown alkaline light sandy loam to clay loam subsoil, highly calcareous with depth, over alluvium.
- C2 <u>Gradational loam on rock (Calcic / Hypercalcic Red Dermosol)</u>
 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 (sandy) clay loam (Calcic / Hypercalcic Red Dermosol)

 Loam to clay loam grading to a friable red clay with abundant soft Class I carbonate within 50 cm, overlying alluvium within 100 cm.
- Sandy loam to clay loam over pedaric red clay (Calcic, Pedaric, Red Sodosol)
 Thin to medium thickness fine sandy loam to clay loam over a finely structured friable (pedaric) red clay, calcareous from about 50 cm, grading to fine or medium grained alluvium.
- L1a Shallow stony loam on fine grained rock (Paralithic, Leptic Tenosol)
 Shallow stony loam, often calcareous with depth, overlying weathering fine grained rock shallower than 50 cm.
- Shallow stony sandy loam on medium grained rock (Paralithic, Leptic Tenosol)
 Shallow stony sandy loam, often calcareous with depth, overlying weathering fine to medium grained sandstone or tillite shallower than 50 cm.
- M4 <u>Hard gradational sandy clay loam (Calcic, Brown / Red Dermosol / Kandosol)</u>
 Hard setting sandy loam to sandy clay loam grading to a poorly structured to massive hard red or brown sandy clay to clay, weakly to moderately calcareous with depth, over alluvial sediments.
- **RR** Rock outcrop

Further information: <u>DEWNR Soil and Land Program</u>

