BUC Buccleuch Land System

(Based on the description by A. K. McCord in "A Description of Land in the Southern Mallee of South Australia")

Flat plains in the Buccleuch - Sherlock area

Area: 60.0 km²

Annual rainfall: 365 – 380 mm average

Geology: The land is underlain by Bungunnia Limestone, usually within a metre of the surface.

The limestone is variably calcreted. Minor coastal dune remnants (Bridgewater

Formation) protrude through the surface.

Topography: Flat to very gently undulating plain with occasional rises of Bridgewater Formation

calcarenites

Elevation: 13 - 17 m

Relief: 2 - 4 m

Soils: The soils are typically shallow sandy loams over calcrete or highly calcareous rubbly

materials.

Main soils

B1/A1 Grey calcareous sandy loam

B2 Red-brown calcareous sandy loam over calcrete

B3 Red sandy loam over calcrete

Minor soils

H2 Deep sand

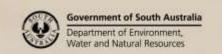
Main features: The Buccleuch Land System is characterized by extensive flats of grey highly

calcareous soils with strong nutrient fixation properties. Although fully arable and moderately deep, the productivity of this land is limited. Other soils which are less calcareous at the surface are usually very shallow and stony, often semi arable and

with low productive potential.

Soil Landscape Unit summary: 4 Soil Landscape Units (SLUs) mapped in the Buccleuch Land System:

SLU	% of area	Main features #		
MxB	3.2	Low rises formed on calcreted Bridgewater Formation, with extensive surface stone and minor sand spreads. Main soils: red-brown calcareous sandy loam over calcrete - B2 (V) and red sandy loam over calcrete - B3 (L).		
		Key properties: Drainage: All soils are well drained. Fertility: Moderately low due to low clay content and high pH. Physical condition: No soil physical limitations to root growth. Root zone depth is determined by depth to hard calcrete which is variable from very shallow to moderately deep.		

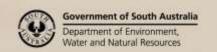




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		AWHC:	Moderate to low depending on depth to calcrete.		
		Salinity:	Low at the surface, but may be moderate in the carbonate below the		
		,	calcrete.		
		Erosion potential:	Water: Moderately low to low depending on slope. Wind: Low.		
		Water repellence:	Nil.		
		•	· ····		
		Rockiness:	Variable, often sufficient to warrant picking or rolling. Occasional sheet		
			rock at the surface.		
			plated rises have moderately shallow to shallow calcareous sandy loams		
		which are generally	arable, but productivity is invariably limited by one or more of		
		insufficient water ho	olding capacity, low fertility or stoniness.		
NaA	25.3		creted Bungunnia Limestone equivalent. There is extensive surface		
NaP	9.4		30% coverage of low sandhills.		
1 1002	, , ,		ess than 10% stony or sandy rises.		
			0-30% low sandhills.		
			<u>rn calcareous sandy loam over calcrete</u> - B2 (E) and <u>red sandy loam over</u>		
			<u>slcrete</u> - B3 (E) on calcreted flats, with <u>grey calcareous sandy loam</u> - B1/A1 (M) on flats		
		where the underlyir	ng limestone has not been calcreted. <u>Deep sand</u> - H2 (M-C) occurs on		
		low sandhills.			
		Key properties:			
		Drainage:	Well to rapidly drained.		
		Fertility:	Moderately low due to low clay content. Deep sands are highly infertile.		
		Terminy.			
			B1/A1 soils have high fixation capacity, particularly for phosphorus and		
			a range of trace elements.		
		Physical condition:			
			to and hardness of calcrete. This is usually moderately shallow. Sands		
			have physically unrestricted root zones.		
		AWHC:	Moderately low to low.		
		Salinity:	Low at the surface but may be moderate to high in subsoil carbonate		
			layers.		
		Erosion potential:	Water: Low. Wind: Low to moderate (sandhills).		
		Water repellence:	Nil (stony soils) to high (sands)		
		Rockiness:	Moderate amounts of surface calcrete, often sufficient to warrant		
			picking or rolling. Outcrops of sheet rock are minor.		
			ts are difficult to work and shallowness of soil over calcrete is a major		
	limitation to productivity. Limited areas of deep		tivity. Limited areas of deep sands and very highly calcareous "grey soils"		
		are fully arable but	infertile.		
NcA	62.1		gunnia Limestone equivalent.		
			areous sandy loam - B1/A1 (D).		
		<u> </u>	<u> </u>		
		Key properties:			
			Well drained.		
		Drainage:			
		Fertility:	Low due to high levels of carbonate in surface soil which fixes		
			phosphorus and trace elements.		
		Physical condition:			
		AWHC:	Moderate.		
		Salinity:	Low at surface, high with depth.		
		Erosion potential:	Water: Low		
		23.21. 20.01	Wind: Low, but will blow if over-cultivated or heavily grazed.		
		Water repellence:	Nil.		
		Rockiness:	Nil to minor		
			ey mallee" soils are notorious for fixation of phosphorus and trace		
		elements. Water ho	Iding capacities and workability are not significantly limiting.		

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:

B1/A1 Grey calcareous sandy loam (Hypervescent, Supracalcic Calcarosol)

Grey brown very highly calcareous sandy loam to light sandy clay loam, becoming greyer and more calcareous with depth and with increasing calcrete fragments, over limestone at about 60 cm.

- Red-brown calcareous sandy loam over calcrete (Petrocalcic, Supracalcic Calcarosol)

 Thin calcareous sandy loam grading to a calcareous sandy clay loam overlying calcreted limestone at about 15 cm. The limestone softens with depth to a very highly calcareous sandy clay with abundant limestone fragments.
- Red sandy loam over calcrete (Petrocalcic, Red Kandosol)

 Thin sandy loam grading to a red sandy clay loam overlying calcreted limestone at about 20 cm.

 The limestone softens with depth to a very highly calcareous sandy clay loam with abundant limestone fragments.
- H2 <u>Deep sand (Basic, Arenic, Brown-Orthic Tenosol)</u>
 Greyish brown loose sand, becoming yellow with depth overlying calcrete at variable depth.

Further information: DEWNR Soil and Land Program

