JAM Jamieson Land System

Area: 533.0 km^2

Landscape: Gently undulating plain underlain by granites and gneisses which outcrop sporadically. They are largely covered by Tertiary sediments including clays equivalent to the Blanchetown Clay of the Murray Mallee. These sediments are generally veneered by highly calcareous windblown deposits. Molineaux Sand is widely distributed across the landscape as jumbled sandhills or sand spreads.

Annual rainfall: 320 – 400 mm average

Main soils:

Heggaton - **G3** (Calcic, Brown Chromosol)
Thick sand to loamy sand with a bleached A2 layer, abruptly overlying a weakly structured brown sandy clay to clay, calcareous with depth, grading to Tertiary sediments.

Lowan - **H3** (Basic, Arenic, Bleached-Orthic Tenosol)
Thick bleached sand with a thin organically darkened surface layer, grading to a yellowish sand (often with darker lamellae), continuing below 150 cm.

Cleve - **D3** (Hypercalcic, Red Sodosol)
Thin to medium thickness hard loamy sand to sandy clay loam over a red clay with coarse prismatic structure, highly calcareous from about 25 cm, grading to alluvial clay.

Minor soils:

Wiabuna (rubbly) - **A4** (Regolithic, Lithocalcic / Supracalcic Calcarosol)
Calcareous sandy loam to sandy clay loam grading to carbonate rubble.

Mangalo - **D1** (Hypercalcic, Red Chromosol OR Calcareous, Inceptic, Red-Orthic Tenosol)
Thin to medium thickness coarse loamy sand to sandy loam over a red well structured clay forming in weathering rock with abundant fine carbonate in fissures.

Skeletal soil - **L1** (Lithic / Petroferric, Leptic Tenosol / Rudosol)
Variable gravelly loamy sand to sandy clay loam over basement rock or massive ironstone at depths usually less than 50 cm.

Butler - **F2** (Hypercalcic, Brown Sodosol)
Thin to medium thickness hard loamy sand to sandy loam over a brown mottled clay with strong columnar structure, highly calcareous from about 20 cm, grading to alluvial or Tertiary clay.

Saline (alluvial) soil - **N2** (Salic / Hypersalic Hydrosol)
Miscellaneous wet saline soil influenced by rising saline groundwater tables.

Moornaba - **H2** (Calcareous, Arenic, Red-Orthic / Yellow-Orthic Tenosol)
Very thick red to brown sand, becoming weakly calcareous and often grading to an orange clayey sand with depth, overlying variable carbonate (fine to rubbly, occasionally sheet).

Bayley - **A8** (Hypergypsic Calcarosol)
Calcareous loam grading to a highly calcareous sandy clay loam over powdery gypsum.

Summary: The landscape is characterized by sandy soils on slopes (sand over clay) or sand spreads, and low, moderate and high jumbled sandhills. All these soils are water repellent, moderately to highly susceptible to wind erosion, and infertile. The moderate and high sandhills are non arable. Sandy loam soils are co-dominant with sand over clay soils on flats and gentle slopes. These include texture contrast soils with red clayey subsoils, and calcareous sandy loams over highly calcareous subsoils. These soils are moderately fertile with moderately low erosion susceptibility, but where

formed over Blanchetown Clay equivalent, subsoil boron and salt levels can be high. There are salt affected areas throughout on lower slopes, and some highly saline depressions. Basement rock highs are scattered, and include some potentially productive soils, although the land is only semi arable due to the extent of outcrop and shallow soils.

Soil Landscape Unit summary: 26 Soil Landscape Units (SLUs) mapped in the Jamieson Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
A-g	2.1	Rocky outcrop	Skeletal	D	Shallow soils, rocky outcrop - non arable.
ENB	5.6	Very gentle slopes	Mangalo	V	Slopes are potentially productive, sandhills are infertile and prone to wind erosion and water repellence.
		Low sandhills	Lowan	C	
ETB	1.5	Very gentle slopes	Mangalo	E	Soils are productive between the outcrops - semi arable. Slight water erosion potential.
		Rocky outcrops	Skeletal	E	
ETC	0.1	Gentle slopes	Mangalo	E	As for **ETB**, with moderate erosion potential.
		Rocky outcrops	Skeletal	E	
GGA	4.6	Flats	Heggaton / Cleve	V	Mix of low fertility, wind erosion prone sandy soils, and fertile sandy loam soils on flats. High boron in subsoils. Highly erodible, water repellent and infertile soils on sandhills.
		Low sandhills	Lowan	C	
GGB	15.9	Very gentle slopes	Heggaton	V	Low to very low fertility, moderate to high wind erosion potential, water repellence. Minor salinity, slight water erosion potential.
		Low sandhills	Lowan	C	
GOA	3.5	Sandy flats	Heggaton	V	Heggaton Low fertility, moderate wind erosion potential, water repellence and acidity. Cleve / Wiabuna Moderate fertility, slight wind erosion potential, boron toxicity. Lowan Very low fertility, high wind erosion potential, water repellence and acidity. **GOA** Low water erosion potential, up to 2% saline seepage **GOB** Slight water erosion potential, up to 2% saline seepage **GOK** Low water erosion potential, 2-10% saline seepage.
		Sandy loam flats	Cleve / Wiabuna	E	
GOB	12.3	Very gentle sandy slopes	Heggaton	V	
		Very gentle sandy loam slopes	Cleve / Wiabuna	E	
GOK	4.0	Sandy flats	Heggaton	E	
		Sandy loam flats	Cleve / Wiabuna	E	
		Low sandhills	Lowan	L	
GQA	5.5	Sandy flats	Heggaton	E	Mix of low fertility, wind erosion prone sandy soils, and fertile sandy loam soils on flats. Poor subsoil structure and high subsoil boron on sandy loam flats. Highly erodible, water repellent and infertile soils on sandhills.
		Sandy loam flats	Cleve / Butler	E	
		Low sandhills	Lowan	L	
GSA	7.3	Sandy to sandy loam flats	Heggaton	E	Mixture of infertile, wind erosion prone, water repellent sands; and calcareous sandy loams with moderate fertility and slight wind erosion potential. Minor salinity throughout.
			Wiabuna	E	
GXA	9.6	Sandy flats	Heggaton	V	Low to very low fertility, moderate to high wind erosion potential, water repellence. Minor salinity. Stony outcrops are semi arable.
		Low sandhills	Lowan	C	
		Stony outcrops	Skeletal	M	
GXB	3.3	Sandy flats	Heggaton	V	Mixture of infertile, water repellent sandy soils with moderate wind erosion potential, and sandy loam soils with moderate fertility, but often poor subsoil structure and high boron levels. Slight wind and water erosion potential, minor saline seepage.
		Sandy loam flats	Cleve / Wiabuna / Butler	E	
O-B	0.5	High sandhills	Lowan	D	Moderately high to extreme wind erosion potential, water repellence and very low fertility.
O-C	<0.1	Moderate sandhills	Lowan	D	
OGb	0.2	Moderate sandhills	Lowan	V	Sandy throughout. Moderate to high wind

		Swales	Heggaton	E	erosion potential and low to very low fertility. All susceptible to water repellence.
OGf	0.3	Swales	Heggaton	E	
		Low sandhills	Lowan	E	
OyE	3.0	High sandhills	Lowan	V	Sandhills: Very low fertility, moderate to very high wind erosion potential, water repellent. Swales: Sandy soils have low fertility, are water repellent and have moderate wind erosion potential. Sandy loam swales have moderate fertility, high subsoil boron, and low wind erosion potential.
		Swales	Heggaton / Cleve	E	
OyH	1.0	Swales	Heggaton / Cleve	E	
		High sandhills	Lowan	E	
OyI	4.5	Swales	Heggaton / Cleve	E	
		Moderate sandhills	Lowan	E	
OyJ	8.6	Swales	Heggaton / Cleve	E	
		Low sandhills	Lowan	E	
SMB	5.9	Very gentle slopes	Wiabuna / Cleve	D	Moderately fertile calcareous sandy loams or sandy loam over clay soils. Moderately low potential for wind and water erosion.
ZA-	0.2	Marginally saline flats	Saline alluvial	D	Too saline for cropping, but most land is suitable for revegetation with salt tolerant species for grazing, fodder or amenity.
ZD-	0.1	Salt flats	Saline soil	D	No agricultural use.
ZI-	0.3	Salt flats	Saline soil	V	Flats of no agricultural value, sandhills highly susceptible to wind erosion.
		Sandhills	Moornaba	C	
ZJ-	0.1	Marginally saline flats	Saline soil	E	Flats suitable for establishment of salt tolerant vegetation; lunettes susceptible to wind erosion.
		Gypsum lunettes	Bayley	E	

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)

Further information: DEWNR Soil and Land Program