PNK Pinkawillinie Land System

Area: 893.3 km^2

Landscape: Gently undulating plains and rises underlain by granitic gneisses which outcrop sporadically. The rocks are generally covered by clayey sediments or weathering products (Blanchetown Clay equivalent), which in turn are covered by highly calcareous windblown silty sands of the Woorinen Formation. More recent Molineaux Sands have blown across the landscape and have been reworked into low to moderate parallel sandhills covering about 25% of the land surface.

Annual rainfall: 280 – 360 mm average

Main soils:

Wiabuna - **A5** (Regolithic, Hypercalcic Calcarosol)
Calcareous loam becoming more clayey and calcareous with depth, grading to a very highly calcareous clay (Class I carbonate) over Tertiary clay.

Buckleboo - **D2** (Sodic, Lithocalcic, Red Chromosol)
Medium thickness sandy loam to sandy clay loam over a well structured red clay with rubbly carbonate within 50 cm, becoming less rubbly with depth over clay.

Kimba - **D3** (Hypercalcic, Red Sodosol)
Medium thickness hard loamy sand to loam overlying a strongly subangular blocky red clay, highly calcareous (Class I carbonate) from about 30 cm, grading to Blanchetown Clay equivalent.

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

Shallow Moornaba - **G1** (Calcic, Red Chromosol / Kandosol)
Thick red to brown sand, paler coloured with depth, overlying a red to orange sandy loam to sandy clay loam with variable carbonate (fine to rubbly, occasionally sheet) at depth.

Minor 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.

Wiabuna (shallow) - **B2** (Petrocalcic, Supracalcic / Lithocalcic Calcarosol)
Calcareous sandy clay loam over carbonate rubble grading to sheet calcrete.

Wiabuna (rubbly) - **A4a** (Regolithic, Lithocalcic / Supracalcic Calcarosol)
Calcareous sandy loam to sandy clay loam grading to carbonate rubble.

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

Magnesia soil - **A4b** (Epihypersodic, Regolithic, Supracalcic Calcarosol)
Calcareous sandy loam, grading to a very highly calcareous sandy clay loam with variable rubble, saline throughout.

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

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

Summary: The swales, flats and gentle slopes are dominated by sandy loam soils, some calcareous and some non-calcareous. All are moderately fertile, although subsoil boron levels are usually elevated. They have slight to moderate wind erosion potential. There is slight water erosion potential on sloping ground. The sandhills are infertile and, depending on size, have moderate to high wind erosion potential.

Soil Landscape Unit summary: 21 Soil Landscape Units (SLUs) mapped in the Pinkawillinie Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
A-g	0.4	Rocky outcrops	Skeletal	V	Non arable
			Rock outcrop	C	
HEA	0.6	Sandy loam flats	Buckleboo / Kimba	E	Mix of moderately fertile sandy loams with slight erosion potential, and infertile sands with moderate erosion potential.
			Wiabuna	L	
		Sandy flats	Heggaton	E	
HEE	0.2	Drainage depressions	Buckleboo/Kimba	V	
			Wiabuna	E	
HTA	2.3	Flats	Buckleboo/ Kimba	E	Most of the land is moderately fertile and potentially productive, although there is subsoil boron and salinity. Slight water erosion potential in **HTB**. Wind erosion potential on the sandhills is moderate. These soils are infertile and prone to water repellence.
			Wiabuna	C	
		Low sandhills	Moornaba / shallow Moornaba	L	
HTB	37.0	Very gentle slopes	Buckleboo / Kimba	E	
			Wiabuna	C	
		Low sandhills	Moornaba / shallow Moornaba	L	
IjB	3.6	Very gentle slopes	Wiabuna	V	Moderately fertile calcareous sandy loams with erosion prone, infertile soils on sandhills.
		Low sandhills	Moornaba / shallow Moornaba	C	
ImB	0.8	Very gentle slopes	Heggaton	E	Mix of moderately fertile calcareous sandy loams with slight wind erosion potential, and infertile sands with moderate erosion potential. Slight water erosion potential throughout.
			Kimba / Buckleboo	E	
			Wiabuna	C	
IrB	0.3	Very gentle slopes	Buckleboo / Kimba	E	As for **ImB** but without the sandy soils.
			Wiabuna	E	
SDU	1.4	Flats	Buckleboo / Kimba	E	Moderately fertile sandy loams with high subsoil boron, and up to 10% of the land affected by magnesia patches.
			Shallow / rubbly Wiabuna	E	
			Magnesia soil	M	
SzA	0.8	Flats	Buckleboo / Kimba	E	Moderately fertile sandy loams with high subsoil boron.
			Wiabuna	E	
U-B	<0.1	High sandhills	Moornaba / shallow Moornaba	D	Very low fertility sands with high (**U-B**) to moderately high (**U-C**) wind erosion potential.
U-C	1.6	Moderate sandhills	Moornaba / shallow Moornaba	D	
UBI	1.3	Swales	Buckleboo / Kimba	E	Moderately fertile calcareous sandy loams with subsoil boron, and infertile sandhills with moderate wind erosion potential.
			Wiabuna	C	
		Moderate sandhills	Moornaba / shallow Moornaba	E	

UhI	7.6	Swales	Buckleboo / Kimba	E	Moderately fertile non-calcareous and calcareous sandy loams with subsoil boron, and infertile sandhills with moderate wind erosion potential.
			Wiabuna	L	
		Moderate sandhills	Moornaba / shallow Moornaba	E	
UkF	0.7	Moderate / high sandhills	Moornaba / shallow Moornaba	V	Swales: Moderately fertile calcareous sandy loams with high subsoil boron and slight to moderate wind erosion potential. Sandhills: Low fertility sands with moderate (low sandhills) to high (high sandhills) wind erosion potential.
		Swales	Wiabuna	E	
UkH	9.9	Swales	Wiabuna	V	
		High sandhills	Moornaba / shallow Moornaba	E	
UkI	25.7	Swales	Wiabuna	V	
		Moderate sandhills	Moornaba / shallow Moornaba	E	
UkJ	0.8	Swales	Wiabuna	V	
		Low sandhills	Moornaba / shallow Moornaba	E	
UlI	4.9	Sandy swales	Heggaton	E	Sandy, infertile, wind erosion prone soils are dominant.
		Loamy swales	Buckleboo / Kimba	L	
			Wiabuna	L	
		Moderate / low sandhills	Moornaba / shallow Moornaba	E	
ZC-	<0.1	Salt flats	Saline soil	D	No productive potential
ZI-	0.1	Salt flats	Saline soil	V	Little productive potential - lunettes infertile and prone to wind erosion.
		Lunette	Bayley	C	

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)

Further information: DEWNR Soil and Land Program