

ISA Isabella Land System

Area: 415.3 km²

Landscape: The land is formed on Ripon / Bakara calcretes, overlain by highly calcareous silty sands of the Woorinen Formation. The surface is blanketed by windblown Molineaux Sands which have been extensively reworked into low to moderate parallel sandhills. The resulting landscape is a gently undulating plain with mixed sandy and sandy loam soils, interspersed with calcrete outcrops and with parallel sandhills draped over the surface.

Annual rainfall: 375 – 420 mm average

Main soils:

- Wiabuna (rubbly) - A4 (Regolithic, Lithocalcic / Supracalcic Calcarosol)
Calcareous sandy loam to sandy clay loam grading to carbonate rubble.
- Wiabuna (shallow) - B2a (Petrocalcic / Lithocalcic Calcarosol)
Calcareous sandy clay loam over carbonate rubble grading to sheet calcrete.
- Lowan (shallow) - G2 (Bleached, Mesotrophic, Brown Chromosol)
Very thick sand with a bleached A2 layer over a yellow to orange sandy clay loam to sandy clay.
- Wharminda - G4 (Hypercalcic, Brown Sodosol)
Thin to medium thickness sand with a bleached A2 layer abruptly overlying a hard columnar structured dispersive brown mottled clay, highly calcareous with depth, grading to alluvial or Tertiary sediments.
- Calcrete - B2b (Petrocalcic, Lithocalcic Calcarosol)
Thin calcareous sandy loam to clay loam over hard calcrete, associated with abundant surface calcrete and sheet rock.

Minor soils:

- Karkoo - G3 (Hypercalcic, Brown Sodosol / Chromosol)
Medium to thick sand with a bleached A2 layer abruptly overlying a hard columnar structured dispersive brown mottled clay, highly calcareous with depth, grading to alluvial or Tertiary sediments.
- Saline soil - N2 (Salic / Hypersalic Hydrosol)
Miscellaneous wet saline soil influenced by rising saline groundwater tables.
- Haslam - H1 (Supravescent, Hypercalcic Calcarosol OR Shelly Calcarosol)
Thick highly calcareous sand, becoming more calcareous with depth and continuing below 100 cm. These soils may consist of up to 90% fine shell fragments.

Summary: Gently undulating plains with mixed sandy soils and calcareous sandy loams, and scattered calcrete outcrops. The sandy soils are infertile and prone to wind erosion and water repellence. On flats, there is usually a dispersive clay subsoil which impedes water movement and root growth. The calcareous sandy loams are moderately fertile but often have rubble at shallow depth, restricting water holding capacity. Surface stone may interfere with cultivation. The areas of calcrete outcrop are generally non arable, with shallow soils and extensive sheet rock. There are minor saline flats.



Soil Landscape Unit summary: 16 Soil Landscape Units (SLUs) mapped in Isabella Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
GSB	12.9	Sandy rises	Karkoo	E	Gently undulating rises on Woorinen deposits with minor calcrete outcrop. Soils are mainly sand over clay, with limited calcareous sandy loams and minor shallow stony soils. Minor salinity in depressions: <u>Karkoo</u> : Sandy surface (infertile, water repellent, moderate wind erosion potential). Dispersive clay subsoil (waterlogging, poor root growth). <u>Wharminda</u> : As for Karkoo but with thinner surface soil leading to more severe waterlogging and poorer root growth, but less water repellence. <u>Wiabuna</u> : Calcareous sandy loam, moderately fertile, some boron toxicity, slight wind erosion potential. <u>Shallow Wiabuna</u> : As for Wiabuna, but with reduced waterholding capacity.
		Sandy loam rises	Wharminda	E	
GVE	2.8	Sandy depressions	Wharminda	V	
		Stony rises	Calcrete	L	
OuI	5.0	Sandy loam swales	Wiabuna	E	
		Moderate sandhills	Shallow Lowan	E	
		Sandy swales	Karkoo / Wharminda	L	
OuJ	22.6	Sandy loam swales	Wiabuna	E	
		Low sandhills	Shallow Lowan	E	
		Sandy swales	Karkoo / Wharminda	L	
QPA	11.4	Stony flats	Shallow Wiabuna / Calcrete	V	
		Low sandhills	Shallow Lowan	L	
QaA	7.4	Sandy loam flats	Wiabuna	E	
		Stony rises	Calcrete	L	
		Low sandhills	Shallow Lowan	L	
QdB	22.8	Sandy loam rises	Shallow Wiabuna	V	
		Very stony rises	Calcrete	C	
QdE	2.6	Sandy loam depressions	Shallow Wiabuna	V	
		Very stony depressions	Calcrete	C	
QmB	4.0	Very stony rises	Calcrete	V	
		Sandy loam rises	Shallow Wiabuna	C	



SKA	0.9	Sandy loam flats	Shallow Wiabuna	V	Flats formed on Woorinen deposits over calcrete. Soils are calcareous sandy loams with minor calcrete outcrop and limited sand. Soils are: <u>Shallow Wiabuna</u> Calcareous sandy loam (above) <u>Wiabuna</u> Shallow calcareous sandy loam (above) <u>Wharminda</u> Sand over clay (above) <u>Calcrete</u> Shallow stony soil (above) <u>Sh. Lowan</u> Deep sand (above) <u>Haslam</u> Deep calcareous (shell) sand with very low fertility and moderate wind erosion potential.
		Calcareous sand spreads	Haslam	L	
SLA	0.9	Sandy loam flats	Shallow Wiabuna	V	
		Very stony flats	Calcrete	C	
SUA	2.1	Sandy/sandy loam flats	Wharminda / Wiabuna	V	
		Low sandhills	Shallow Lowan	C	
SYA	0.2	Sandy loam flats	Wiabuna	D	
SgA	0.9	Sandy loam/sandy flats	Wiabuna / Wharminda	D	
ZB-	3.5	Saline flats	Saline soil	D	
ZD-	<0.1	Salt lakes	-	D	

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](#)

