

MIT Mitshan Land System

- Area:** 160.8 km²
- Landscape:** Gently undulating plain formed on Tertiary sediments, partly capped by Ripon / Bakara Calcrete and highly calcareous windblown silty sands of the Woorinen Formation. Overlying these deposits are low to moderate parallel dunes of siliceous sand (Molineaux / Lowan Sand), which occupy about 25% of the area.
- Annual rainfall:** 395 – 465 mm average
- Main soils:**
- Wharminda - **G4** (Hypercalcic, Brown Sodosol)
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.
- 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.
- 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.
- Deep Wharminda - **G3** (Calcic, Brown Sodosol)
Thick to very thick loose sand with a bleached A2 layer, over a hard brown mottled clay with coarse columnar structure, calcareous below 100 cm.
- Minor soils:**
- Rubbly Wiabuna - **A4** (Regolithic, Supracalcic Calcarosol)
Calcareous sandy loam grading to a rubbly very highly calcareous sandy clay loam over light clay from about 100 cm.
- 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.
- Calcrete - **B2a** (Petrocalcic, Lithocalcic Calcarosol)
Thin calcareous sandy loam to clay loam over hard calcrete, associated with abundant surface calcrete and sheet rock.
- Shallow Wiabuna - **B2b** (Petrocalcic, Lithocalcic / Supracalcic Calcarosol)
Calcareous sandy clay loam over carbonate rubble on sheet calcrete within 50 cm.
- Red brown earth (sandy) - **D5/D2** (Sodic, Calcic / Eutrophic, Red Chromosol)
Medium to thick hard sandy loam (**D2**) to loamy sand (**D5**) with a paler coloured massive sandy A2 layer, over a moderately blocky red clay with variable fine carbonates (may be absent) at depth, grading to Tertiary clay.
- Saline soil - **N2** (Salic / Hypersalic Hydrosol)
Miscellaneous wet saline soil influenced by rising saline groundwater tables.
- Summary:** Gently undulating plains characterized by low to moderate parallel siliceous sandhills with low fertility, high wind erosion potential, and frequent susceptibility to water repellence. These occupy about 25% of the land surface. Between the sandhills are sand over clay soils and calcareous sandy loams to sandy clay loams. The former are low in fertility, moderately susceptible to wind erosion, commonly water repellent, and have dispersive subsoils which impede water movement and root growth. The calcareous soils are more fertile and less prone to wind erosion, but are commonly shallow over rubble or calcrete, with consequent restricted waterholding capacity. These grade to very shallow sandy loams on sheet calcrete, which are non arable. There are minor areas affected by saline seepage.



Soil Landscape Unit summary: 11 Soil Landscape Units (SLUs) mapped in the Mitshan Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
GSA	15.2	Sandy flats	Wharminda / deep Wharminda	E	Flats formed on Tertiary clays, overlain by calcrete, Woorinen carbonates and windblown sand. Low fertility, wind erosion, water repellence, waterlogging, sporadic saline seepage and limited water holding capacity are the main issues. Soils are: <u>Wharminda</u> Low fertility sandy soil with poorly structured subsoil (waterlogging, poor root growth), moderate wind erosion potential, water repellence. <u>Wharminda (acidic)</u> As above, with acidic surface soil. <u>Lowan / sh. Lowan</u> Very low fertility, moderate to high wind erosion potential, water repellent. <u>Wiabuna</u> Moderately fertile calcareous loam with slight wind erosion potential <u>Shallow Wiabuna</u> As for Wiabuna, but with limited waterholding capacity and stony surface. <u>RBE (sandy)</u> Marginally fertile sandy loam over clay with high waterholding. <u>Calcrete</u> Very shallow and stone with abundant surface stone and sheet calcrete - nonarable.
		Acidic sandy flats	Wharminda (acidic)	C	
		Moderate sandhills	Lowan / shallow Lowan	L	
		Stony flats	Calcrete	L	
		Sandy loam flats	RBE (sandy)	L	
GVA	4.1	Sandy flats	Wharminda / deep Wharminda	E	
		Acidic sandy flats	Wharminda (acidic)	C	
		Calcareous sandy loam flats	Shallow Wiabuna	C	
		Sandy loam flats	RBE (sandy)	L	
GcA	1.4	Sandy flats	Wharminda / deep Wharminda	V	
		Acidic sandy flats	Wharminda (acidic)	C	
		Sandy loam flats	RBE (sandy)	L	
InA	2.9	Sandy loam flats	Wiabuna	V	Flats formed on Woorinen Formation materials, with mixed calcareous sandy loam and sand over clay soils. Properties as above.
		Sandy flats	Wharminda / deep Wharminda	E	
OrJ	63.4	Sandy swales	Wharminda / deep Wharminda	E	Flats as above, with 30-60% low parallel sandhills. Main issues on sandhills are low fertility, wind erosion and water repellence. Swale soils include infertile, wind erosion prone sand over poorly structured clay (Wharminda - above), and calcareous sandy loam (Wiabuna - above).
		Low sandhills	Lowan / shallow Lowan	E	
		Acidic sandy swales	Wharminda (acidic)	L	
OuJ	6.1	Sandy swales	Wharminda / deep Wharminda	E	
		Sandy loam swales	Wiabuna	E	
		Low sandhills	Lowan / shallow Lowan	E	
QCB	1.9	Stony rises	Shallow Wiabuna	D	Stony flats and rises formed on calcrete. Shallow stony soils with limited water holding capacity and areas of sheet rock restrict productivity. Calcrete soils are non arable.
QVA	2.9	Sandy loam flats	Wiabuna	V	
		Very stony flats	Calcrete	C	
ZA-	0.5	Marginally saline flats	Saline soil	D	Low lying flats where saline water tables are at or near the surface. Flats of ZA- have potential for supporting productive pastures and fodder plants, but the rest of the land is too salty for any use other than light grazing.
ZD-	0.9	Salt lakes	-	D	
ZHF	0.7	Saline flats	Saline soil	E	
		Salt lakes	-	E	

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](#)