

MIV Minvalara Land System

Outwash fans on the eastern side of Black Rock Plain, Southern Flinders Ranges

Total Area: 85.8 km²

Annual rainfall: 290 – 345 mm average

Geology: Fine grained outwash sediments derived from the low hills to the east (Black Rock and Udnawadloo Land Systems). They commonly contain grit, gravel and stone layers (mainly quartzite). The sediments are capped in places by hardened carbonate (calcrete).

Topography: Very gently to gently inclined outwash fans abutting the Depot Hill Range and grading to Black Rock Plain to the west. Slopes range from 6% adjacent to the footslopes of the range to 2% where the fan merges imperceptibly with the plain. Watercourses cross the land flowing eastwards. There are occasional remnant bedrock rises protruding through the sediments.

Elevation: The change in elevation from east to west across the fan is 480 m to 430 m in the north, and 500 m to 450 m in the south.

Relief: The fans slope evenly from east to west so there is little relief other than that provided by the occasional bedrock highs which are up to 20 m above the general land surface.

Soils: The main soils are loams to sandy loams with red clayey subsoils. Texture profiles are either contrasting or gradational, and subsoil structure varies from friable and crumbly to hard and dispersive. There are some calcareous soils as well.

Main soils

Soils formed on alluvium on fans

- D2** Loam over red clay
- D3** Sandy loam over dispersive red clay
- A4** Calcareous sandy loam
- C3** Gradational loam

Minor soils

Soils formed in weathering rock on rises

- A2/B2** Shallow calcareous loam

Main features: The Minvalara Land System is very gently to gently sloping land with shallow stony soils on basement rock rises grading to outwash fans. Most soils are deep and inherently fertile, although poorly structured surfaces are common. Most of the non rocky land is cropped to some extent, but the over riding limitation is low rainfall.



Soil Landscape Unit summary: 9 Soil Landscape Units (SLUs) mapped within the Minvalara Land System:

SLU	% of area	Main features #
EFC	2.2	Undulating rises formed on basement siltstone. Slopes are 3-12% and relief is 20 m. There is about 10% rocky outcrop. Main soil: <u>shallow calcareous loam</u> - A2/B2 (D). This is semi arable low rainfall land with rocky outcrops and shallow stony soils which are calcareous and prone to nutrient deficiencies. Most of the land is susceptible to erosion.
JJB	35.4	Fans formed on outwash sediments.
JJC	11.2	JJB Very gently inclined slopes of 2-3% with well defined watercourses at intervals ranging from 400 m to 1200 m, and up to 10% surface quartzite stones.
JJE	1.0	
JJG	20.0	JJC Gently inclined slopes of 3-6% with well defined watercourses at intervals ranging from 200 m to 600 m, and up to 20% surface quartzite stones.
JJH	1.0	
JJU	0.7	JJE Drainage depression.
JJI	19.7	JJG Outwash fans with slopes of 2-3% and eroded watercourses. JJH Outwash fans with slopes of 3-5% and eroded watercourses. JJU Very gentle slopes of less than 2% with 5-10% scalding and minor surface stone. JJI Outwash fans with slopes of 2-3%, eroded watercourses and 5-10% scalding. Main soils: <u>loam over red clay</u> - D2 (E), <u>sandy loam over dispersive red clay</u> - D3 (C), and <u>gradational loam</u> - C3 (C), with <u>calcareous sandy loam</u> - A4 (L). The main limitations are physical with hard setting surfaces and often poorly structured subsoils leading to poor infiltration, erosion on slopes, restricted workability and patchy emergence. Scalded areas indicate that these characteristics have caused problems in the past.
KOV	8.8	Very gentle slopes of less than 3% formed on alluvium. Main soils: <u>calcareous sandy loam</u> - A4 (V) with <u>gradational loam</u> - C3 (C). There are large areas on the plains with deep relatively fertile soils but low rainfall; extensive scalded patches and subsoil salinity restrict cropping opportunities.

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

(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)

Detailed soil profile descriptions:**A2/B2** Shallow calcareous loam (Paralithic / Petrocalcic, Hypercalcic / Lithocalcic Calcarosol)

Calcareous stony light sandy clay loam to loam, becoming more calcareous and grading to weathering rock or calcrete capped rock within 50 cm.

A4 Calcareous sandy loam (Regolithic, Hypercalcic Calcarosol)

Calcareous sandy loam to sandy clay loam grading to soft or rubbly carbonate within 50 cm.

C3 Gradational loam (Calcic / Hypercalcic, Red Dermosol)

Medium thickness loam to clay loam, with up to 20% quartzite stones, overlying a red well structured clay, calcareous with depth.

D2 Loam over red clay (Hypocalcic / Hypercalcic, Red Chromosol)

Medium thickness hard setting sandy loam to clay loam, with up to 20% quartzite stones, overlying a red well structured clay, calcareous with depth.

D3 Sandy loam over dispersive red clay (Calcic, Red Sodosol)

Medium thickness hard setting sandy loam to clay loam, with up to 50% quartzite stones, overlying a red coarsely structured dispersive clay, calcareous with depth.

Further information: [DEWNR Soil and Land Program](#)

