

BRP Black Rock Plain Land System

Black Rock Plain, Southern Flinders Ranges

Total Area: 119.2 km²

Annual rainfall: 300 – 410 mm average

Geology: Fine grained alluvium with remnant occurrences of Cradock Quartzite and Saddleworth Formation siltstone.

Topography: Level alluvial plain east of the Narien Range. The plain slopes gradually with a gradient of less than 1% to the north. Scalding is extensive. Watercourses from the hills rapidly dissipate and there are no defined streams on the plain with the exception of the NW flowing Yadena Creek which has cut a deep channel into the surface of the plain. Low (less than 15 m) basement rock rises project above the main land surface in places.

Elevation: 470 m in the south to 400 m in the north

Relief: 15 m (low bedrock rises). No relief on the plains, except for the narrow deeply incised channel of Yadena Creek.

Soils: Loamy soils with red clayey subsoils are predominant. Variations are due to the distinctness of the layering and the nature of the clayey subsoil. Deep calcareous loams are also common, mainly in the north, with minor shallow loams.

Main soils

- A4** Calcareous clay loam - northern plains
- C3** Gradational clay loam - plains
- D2** Loam over red clay - plains
- D3** Loam over dispersive red clay - plains

Minor soils

- A2/B2** Shallow calcareous loam - basement rock rises

Main features: The Black Rock Plain Land System is a broad flat plain on which productivity is primarily limited by low rainfall. The soils are deep, fertile and generally well structured, although quality is degraded by historic erosion, still evident in places as scalded land. Minor basement rock rises in the north have shallow stony soils and are of little agricultural value.



Soil Landscape Unit summary: 4 Soil Landscape Units (SLUs) mapped in the Black Rock Plain Land System:

SLU	% of area	Main features #
EFV	1.1	Rises of 2-5% slope formed on basement quartzite or siltstone with mainly <u>shallow calcareous loam</u> - A2/B2 . The combination of shallow stony soils and low rainfall limits land use options to grazing of perennial shrubs. Only on lower slopes where there is greater soil depth is opportunistic cropping feasible.
JNA JNU	66.0 12.2	Plains formed on alluvium with slopes of less than 1%. JNA Plains little affected by scalding. JNU Plains with 5-10% of the land affected by scalding. Main soils: <u>loam over red clay</u> - D2 (E) and <u>gradational clay loam</u> - C3 (E), with <u>loam over dispersive red clay</u> - D3 (L) and <u>calcareous clay loam</u> - A4 (L). Low rainfall is most often the main limitation. The soils are generally naturally fertile although many have unfavourable physical properties, particularly the D3 soils and to a lesser extent the D2 soils. These characteristics result in poor water infiltration, patchy emergence and sub optimal root growth. Erosion can then be a problem (as indicated by old scalding). The C3 and A4 soils are well structured and potentially the most productive, although sometimes they are shallow. Much of the land has naturally moderate levels of salinity.
KOU	20.7	Plains formed on alluvium. Main soils: <u>calcareous clay loam</u> - A4 (V) with <u>gradational clay 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)
- (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)

Detailed soil profile descriptions:

A2/B2 Shallow calcareous loam (Paralithic / Petrocalcic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous stony light sandy clay loam to loam over soft or rubbly carbonate, grading to weathering rock (Paralithic) or calcrete capped rock (Petrocalcic) within 50 cm.

A4 Calcareous clay loam (Regolithic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous clay loam grading to fine Class III A carbonate (Hypercalcic) or rubbly Class III B/C carbonate (Supracalcic / Lithocalcic) over alluvium.

C3 Gradational clay loam (Pedaric Calcic / Hypercalcic, Red Dermosol)
Medium thickness clay loam to light clay grading to a red well structured clay with soft Class I carbonate at depth, over alluvium.

D2 Loam over red clay (Calcic, Red Chromosol)
Medium thickness sandy loam to clay loam abruptly overlying a red well structured clay, with fine Class I carbonate at depth, grading to alluvium.

D3 Loam over dispersive red clay (Calcic, Red Sodosol)
Medium thickness hard setting sandy loam to clay loam sharply overlying a red coarsely structured dispersive clay, calcareous with depth, grading to alluvium.

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

