

HUG Hughes Gap Land System

Southern tip of the Flinders Ranges north east of Crystal Brook

- Area:** 27.9 km²
- Annual rainfall** 415 – 575 mm average
- Geology:** Siltstones and interbedded quartzites and dolomites of the Saddleworth, Undalya and Auburn Formations respectively. The rocks are at or near the surface and are generally overlain by soft to weakly indurated carbonates. There are localized deposits of outwash sediments in valleys.
- Topography:** Moderately steep to steep west facing escarpment slopes at the southern end of the Flinders Ranges, becoming a range of low hills south of Hughes Gap. The slopes are strongly dissected with most watercourses occupying very narrow gullies. Slopes range from 10% to 50% and are generally more than 20%. There is sporadic rock outcrop, particularly on steeper slopes.
- Elevation:** The elevation of the range falls substantially from north to south, the highest point in the north being 430 m and in the south, 260 m. The elevation on the western edge adjacent to the plains varies from 200 m in the north to 160 m in the south.
- Relief:** Relief is usually between 50 and 100 m, to a maximum of 120 m in the northern areas.
- Soils:** Most soils are shallow, both calcareous and non calcareous over rock, and deeper with clayey subsoils on lower slopes.

Main soils

- A2** Shallow calcareous loam - very extensive (slopes)
- L1/B3** Shallow stony loam - common (steep slopes with rocky outcrops and abundant surface stone)
- D1** Hard loam over red clay - limited (lower slopes)

Minor soils

- C2** Gradational loam - slopes
- M1/M3/M4** Alluvial soil - creek flats

- Main features:** The Hughes Gap Land System is moderately steep to steep hill country, most of which is too steep and / or rocky for cropping. Shallow stony soils on exposed slopes limit pasture productivity, and soils exposed by over grazing are highly susceptible to erosion. The gentler slopes are semi arable, with rock outcrop, shallow soils and erosion potential the main limiting factors.



Soil Landscape Unit summary: 5 Soil Landscape Units (SLUs) mapped in the Hughes Gap Land System:

SLU	% of area	Main features #
AAC AAD AAE	38.6 20.6 26.6	<p>Rocky hills formed on mainly fine grained rocks.</p> <p>AAC Low hills with slopes of 10-30%, relief of 30-80 m, up to 10% rock outcrop and 10-20% surface siltstone and quartzite.</p> <p>AAD Steep low hills with slopes of 30-50%, relief of 50-100 m, up to 10% rock outcrop and 10-20% surface siltstone and quartzite.</p> <p>AAE Steep hills with slopes of 30-50%, relief of 80-120 m, up to 10% rock outcrop and 20-50% surface siltstone and quartzite.</p> <p>Main soils: <u>shallow calcareous loam</u> - A2 (E), with <u>shallow stony loam</u> - L1 (C) and <u>hard loam over red clay</u>- D1 (C) on lower slopes. The hills are non arable due to the roughness of the terrain, moderate to steep slopes and shallow stony soils. Rocky outcrops limit accessibility in places. Runoff is rapid and exposure is high, so a significant proportion of rainfall does not infiltrate the soil. However, areas of deeper soils are potentially productive for grazing.</p>
EGD	11.9	<p>Moderately steep slopes of 10-25% and relief to 40 m formed on fine grained rock. There is sporadic rock outcrop and up to 20% surface siltstone, quartzite and calcrete.</p> <p>Main soils: <u>shallow calcareous loam</u> - A2 (V), with <u>hard loam over red clay</u>- D1 (C) on lower slopes, <u>gradational loam</u> - C2 (L) and <u>shallow stony loam</u> - L1 (M). The rises are fully arable, although moisture shortages limit crops in dry finishes. Improvement of hard setting surface soils to reduce water loss and erosion through runoff is the main management issue. "Lime - induced" nutrient deficiencies are probable on calcareous soils.</p>
XFS	2.3	<p>Miscellaneous watercourses and associated flats with mixed <u>alluvial soils</u> - M1/M3/M4. This land is a narrow strip adjacent to Crystal Brook, surrounded by steep slopes. The small size of any parcel of land and the proximity to a large watercourse limit opportunities for agricultural use, although the soils themselves (except for boulder beds) are likely to be deep and moderately fertile.</p>

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** Shallow calcareous loam (Paralithic / Petrocalcic, Calcic / Lithocalcic Calcarosol)
 Calcareous loam with abundant soft (75%) or rubbly (25%) carbonate at shallow depth over weathering siltstone at depths varying from 25 to 70 cm. Sheet calcrete overlies the siltstone in 10% of profiles.
- C2** Gradational loam (Supracalcic / Petrocalcic, Red Dermosol)
 Medium thickness loam to clay loam grading to a well structured red clay, shallow on rubbly or sheet carbonate overlying weathering siltstone at 50 to 100 cm.
- D1** Hard loam over red clay (Hypercalcic, Red Chromosol)
 Medium thickness hard setting sandy loam to loam overlying a red well structured clay with soft carbonate at depths varying from 30 to 55 cm, grading to soft siltstone within 100 cm.
- L1/B3** Shallow stony loam (Lithic / Petrocalcic, Leptic Rudosol / Tenosol)
 Shallow stony loam over hard rock or sheet calcrete shallower than 50 cm.
- M1/M3/M4** Alluvial soil
 Complex of deep sandy loam, sandy loam grading to sandy clay and boulder beds.

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

