

RAZ Razorback Land System

Steep range of hills east of the Hallett - Mt. Bryan Road including the Razorback and Mt. Bryan

Area: 80.3 km²

Annual rainfall: 350 – 425 mm average

Geology: Appila Tillite dominates the Land System. Differential weathering and erosion of the various strata have resulted in a highly dissected landscape. The rocks are at or near the surface over much of the area. Locally derived medium to fine grained gritty alluvium has accumulated in valleys and on outwash fans adjacent to the basement rock hills. The rocks and sediments are generally mantled by a veneer of aeolian carbonate as soft or rubbly segregations at the base of the soil profile.

Topography: Moderately steep to steep irregular low hills and hills dominated by the Razorback - Mt. Bryan Range forming the eastern edge of the Land System. West of this range water courses flowing south west, west and north west have cut down through the hills forming narrow valleys opening on to broader outwash fans. Slopes in the hills range from 10% to 75%. On the fans, 2 - 10% is the usual range.

Elevation: 936 m (Mt. Bryan) to 570 m around the western and southern edges

Relief: Relief is commonly 60 m, and up to 250 m on the eastern edge of the main range

Soils: Most soils are relatively shallow over basement rock. They include loamy soils with red clayey subsoils, shallow stony loams and calcareous loams. Deeper soils, mainly texture contrast types occur on lower slopes.

Main soils: *Soils formed over basement rock on rises and hills*

L1 Shallow stony loam

C2 Gradational loam on rock

D1 Loam over red clay on rock

Deep soils formed over alluvium on fans

D3 Hard sandy loam over dispersive red clay

Minor soils: *Soils formed over basement rock on rises and hills*

A2 Shallow calcareous loam

Deep soils formed over alluvium on fans

D2 Hard sandy loam over red clay

C3/M2 Gradational red loam

M4 Deep gradational stony sandy loam

Main features: The steepness and rockiness of much of the land system limits use to rough grazing only. Because of the extreme susceptibility of the slopes to erosion, grazing management is critical to ensure sufficient protective ground cover. Water course erosion is severe in places and this can only be controlled through upslope run off reduction. Some moderate slopes are semi arable, but are characterized by rocky reefs, shallow stony soils and eroded watercourses. Cropping these areas requires skilful management. The more gently sloping outwash fans are mostly arable, the soils are deep and moderately fertile, but the erosion potential is still significant. Poor soil structure is a major limitation of soils in these areas.



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

SLU	% of area	Main features #
AAC AAI AAJ AAK AAi AAk	2.7 14.8 0.5 18.5 14.1 7.8	<p>Moderately steep to steep rocky low hills and hills formed on basement rock.</p> <p>AAC Ridges with slopes of 10-30% and relief to 60 m.</p> <p>AAI Slopes of 10-30% with relief to 60 m and eroded watercourses.</p> <p>AAJ Steep hillslopes of 30-40% with eroded water courses.</p> <p>AAK Steep hills with slopes of 30-50%, relief to 140 m and eroded water courses.</p> <p>AAi Slopes of 10-30% with relief to 60 m, eroded watercourses and scalded patches.</p> <p>AAk Steep ridges and slopes of the Razorback - Mt. Bryan Range, up to 250 m high and with slopes of 30-75%. Water courses are commonly eroded and there are scalded patches.</p> <p>Main soils: <u>shallow stony loam</u> - L1 (E) with <u>gradational loam on rock</u> - C2 (C), <u>loam over red clay on rock</u> - D1 (L) and <u>shallow calcareous loam</u> - A2 (L). <u>Hard sandy loam over (dispersive) red clay</u> - D3/D2 (M) occurs on lower slopes. This land is non arable due to the roughness and steepness of the terrain, and large areas are so steep as to be inaccessible to vehicles. Runoff is rapid and exposure is high, so a proportion of rainfall does not infiltrate the soil. There are significant areas of moderately deep fertile soils on the slopes and these are potentially productive for grazing. Erosion potential is a major management issue. Watercourses are particularly susceptible to erosion. The steep eastern slopes are exposed and drier, and at greatest risk.</p>
EOI	2.6	<p>Complex of moderately steep slopes (10-20%) on basement rock and outwash fans on alluvium, with eroded water courses.</p> <p>Main soils: <u>shallow stony loam</u> - L1 (E), with <u>loam over red clay on rock</u> - D1 (L), <u>gradational loam on rock</u> - C2 (L) and <u>shallow calcareous loam</u> - A2 (M) on rises, and <u>hard sandy loam over dispersive red clay</u> - D3 (L), with <u>gradational red loam</u> - C3 (M) and <u>gradational stony sandy loam</u> - M4 (M) on fans. This land has limited agricultural potential as the rises are only semi arable due to slope and rocky outcrops, and eroded water courses dominate the fans.</p>
ESD	4.2	<p>Moderately steep ridges, rises and low hills with slopes of 10-20% and relief of between 20 - 50 m. Rocky reefs cover about 20% of the land area.</p> <p>Main soils: <u>shallow stony loam</u> - L1 (V), with <u>gradational loam on rock</u> - C2 (L) and <u>shallow calcareous loam</u> - A2 (L). Apart from the low rainfall, rocky reefs, shallow stony soils and sometimes moderate slopes limit cropping of these areas. The arable land is generally confined to strips between the reefs of rock. Water erosion is a potential problem because of the high runoff from the shallow soils and rocky areas.</p>
JBC JBE JBG JBH JBJ JBo	2.1 2.0 3.1 9.9 0.5 2.7	<p>Outwash fans formed on locally derived medium grained and gritty alluvium.</p> <p>JBC Fans with slopes of 3-8%.</p> <p>JBE Narrow valley flat with slopes of 2-4%.</p> <p>JBG Fans with slopes of 2-3% and eroded water courses.</p> <p>JBH Fans with slopes of 3-8% and eroded water courses.</p> <p>JBJ Narrow drainage depression with slopes of 4-8% and eroded water courses.</p> <p>JBo Drainage depression with slopes of 5-10%, severely eroded water courses and 5-10% scalding.</p> <p>Main soils: <u>hard sandy loam over dispersive red clay</u> - D3 (E) and <u>hard sandy loam over red clay</u> - D2 (E), with <u>gradational stony sandy loam</u> - M4 (L) and <u>gradational red loam</u> - C3/M2 (L). The soils are deep and moderately fertile, but are generally poorly structured in the surface and often dispersive in the subsoil. This leads to excessive runoff and erosion, difficulty in working and patchy emergence. All of this land lies below high steep ranges which can generate substantial runoff, increasing the erosion risk on the lower ground. Erosion of even moderate slopes is a major threat.</p>
JXC JXH	7.3 7.1	<p>Complex of outwash fans (75% of area) and intervening basement rock rises (25% of area) with slopes of 3-10%. Water courses are generally stable in JXC, but eroded in JXH.</p> <p>Main soils: <u>hard sandy loam over dispersive red clay</u> - D3 (C) and <u>hard sandy loam over red clay</u> - D2 (C), with <u>gradational red loam</u> - M2 (L) and <u>gradational stony sandy loam</u> - M4 (L) on fans, and <u>loam over red clay on rock</u> - D1 (L), <u>gradational loam on rock</u> - C2 (M) and <u>shallow calcareous loam</u> - A2 (M) on rises. The soils on the fans are deep and naturally moderately fertile, but are generally poorly structured in the surface and often dispersive in the subsoil. This leads to excessive runoff and erosion, difficulty in working and patchy emergence. Soils on the rises are better structured, but all land is prone to water erosion.</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 Calcarosol)
Calcareous loam grading to a very highly calcareous clay loam or rubble layer merging with calcareous weathering rock within 100 cm, usually 50 cm.
- C2** Gradational loam on rock (Calcic, Red Dermosol)
Hard red loam to clay loam grading a well structured red clayey subsoil with soft to rumbly (or sheet) carbonate at depth, over weathering rock within 100 cm.
- C3/M2** Gradational red loam (Calcic / Supracalcic, Red Dermosol)
Loam to clay loam grading to a friable red clay with soft to rumbly carbonate at depth (abundant carbonate in C3, minor carbonate in M2).
- D1** Loam over red clay on rock (Calcic, Red Chromosol)
Hard red loam to clay loam abruptly overlying a well structured red clayey subsoil with soft to rumbly (or sheet) carbonate at depth, over weathering rock within 100 cm.
- D2** Hard sandy loam over red clay (Calcic, Red Chromosol)
Medium thickness hard setting sandy loam to sandy clay loam abruptly overlying a well structured red clay with soft carbonate accumulations at depth, over alluvium.
- D3** Hard sandy loam over dispersive red clay (Calcic, Red Sodosol)
Medium thickness hard setting sandy loam to sandy clay loam abruptly overlying a poorly structured dispersive red clay with soft carbonate accumulations at depth, over alluvium.
- L1** Shallow stony loam (Lithic, Leptic Tenosol / Rudosol)
Shallow stony loam, sometimes calcareous with depth, overlying basement rock within 50 cm.
- M4** Deep gradational stony sandy loam (Eutrophic, Red / Brown Kandosol)
Stony sandy loam to sandy clay loam grading to a stony poorly structured sandy clay with depth.

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

