

MGC Mount Gullet Creek Land System

Belt of low rocky hills extending from Mambray Creek to Hancocks Lookout, south west of Wilmington

Area: 76.2 km²

Annual rainfall 300 – 500 mm average

Geology: Interbedded siltstones, fine sandstones and dolomites of the Willochra, Tapley Hill and Brighton Formations, with massive quartzites and quartzitic sandstones of the ABC Range Formation. Most of the rocks are mantled by soft carbonates. Small areas of locally derived alluvium occur in valleys between the basement rock hills.

Topography: The System includes most of the land in the upper catchments of Mt. Gullet Creek and Nectar Brook. The slopes are generally moderately steep to steep with a pronounced north - south ridge system, particularly in the western part where there are two belts of ABC Range Quartzite. Slopes are up to 80% and commonly in the range 20-50%. Slopes on the small areas of outwash sediments on lower slopes and valleys are 4-10%. There is significant rock outcrop on the quartzite formations and on steeper slopes generally. Surface stone, mainly quartzite, is abundant throughout.

Elevation: 50 m along the lower slopes of the western edge to 580 m in the north on the watershed of Beautiful Valley.

Relief: Up to 200 m in the quartzite ranges, but more commonly between 30 and 100 m.

Soils: There is a variety of moderately shallow sandy loam to loam soils, either directly overlying rock, overlying carbonates or overlying a red clayey subsoil, on hillslopes. Deeper gradational and texture contrast soils occur on lower lying land.

Main soils

Moderately shallow soils formed on rock on hillslopes and rises

- A2** Shallow calcareous loam
- L1** Shallow stony loam to sandy loam
- D1/C2** Loam over red clay on rock

Minor soils

Moderately shallow soils formed on rock on hillslopes and rises

- K3** Sandy loam over red clay (non calcareous) on rock

Deep soils formed on alluvium on outwash slopes and flats

- D2/D3** Hard loam over (dispersive) red clay
- A6** Deep calcareous loam
- C3** Gradational red loam
- M3** Stony alluvial sandy loam

Main features: The Mount Gullet Creek Land System comprises mainly moderately steep to steep hills formed on a variety of rock types, giving the land a range of topographies. Soils are generally shallow and stony, with limited moisture storage capacity. Erosion control through careful grazing is the main soil management issue. Arable land is mostly on lower slopes and drainage depressions where soils are deep although stony. Poorly structured surfaces are the main limitation on these soils. The main consequence is increased erosion potential.



Soil Landscape Unit summary: 13 Soil Landscape Units (SLUs) mapped in the Mt. Gullet Creek Land System:

SLU	% of area	Main features #
AAC AAD AAF	15.9 36.0 1.3	<p>Low rocky hills formed on mainly fine grained calcareous basement rocks.</p> <p>AAC Slopes of 20-30% with relief of 40-70 m. 5% rock outcrop and 10-20% surface stone cover.</p> <p>AAD Slopes of 20-50% with relief of 40-70 m. There is abundant rock outcrop and more than 20% surface stone.</p> <p>AAF Short very steep slopes of up to 80% and 60 m high.</p> <p>Main soils: <u>shallow calcareous loam</u> - A2 (E), with <u>shallow stony loam</u> - L1 (C) and <u>loam over red clay on rock</u> - D1/C2 (C). This land is non arable and largely inaccessible to machinery due to rockiness and steep slopes. The soils are mostly shallow and stony with limited water holding capacities and subject to moisture deficit early in spring. The slopes provide useful light grazing.</p>
ABC ABJ	2.6 7.1	<p>Ridges formed on mainly fine grained basement rocks with prominent quartzite reefs. There is extensive rocky outcrop and surface stone.</p> <p>ABC Rounded low hills to 40 m high with slopes of 20-40%.</p> <p>ABJ Very rocky razor back ridges with slopes of 30-100% and relief to 100 m. Watercourses are deeply incised.</p> <p>Main soils: <u>shallow stony loam</u> - L1 (E) and <u>shallow calcareous loam</u> - A2 (E), with <u>loam over red clay on rock</u> - D1/C2 (C). This land is extremely rugged with very steep slopes and rock faces. The shallow stony soils are easily bared off so erosion and landslip has occurred in the past. The slopes provide limited grazing.</p>
AMC AME	0.3 18.4	<p>Rises and low hills formed on coarse grained rocks. There is 10-20% surface quartzite.</p> <p>AMC Rises with slopes of 10-20%, relief to 30 m and limited rock outcrop.</p> <p>AME Rocky hills with slopes of 20-100%, relief to 200 m and up to 20% rock outcrop.</p> <p>Main soils: <u>shallow stony sandy loam</u> - L1 (V), with <u>loam over red clay (non calcareous) on rock</u> - K3 (C). These steep rocky slopes are mostly inaccessible and at severe risk of erosion if excessively bared through over-grazing. They provide light grazing.</p>
EZC EZD	5.0 1.6	<p>Complex of rises formed on calcareous basement rocks and outwash fans formed on outwash sediments. There are 5-10% rocky reefs and 10-20% surface quartzite, siltstone and calcrete.</p> <p>EZC Undulating rises with slopes of 4-10% and relief to 20 m.</p> <p>EZD Irregular short slopes of up to 20%, with gently inclined fans with slopes of 4-8%.</p> <p>Main soils: <u>shallow calcareous loam</u> - A2 (V) on rises and soils as for JFC on fans. These slopes are semi arable due to their erosion potential, rockiness, shallowness of soil (low water holding capacity) and low rainfall. The predominantly calcareous soils are moderately fertile.</p>
JFC JFH	0.8 1.3	<p>Outwash fans formed on alluvial sediments. There is 10-20% surface quartzite.</p> <p>JFC Slopes of 4-12%.</p> <p>JFH Slopes of 4-12% with eroded watercourses.</p> <p>Main soils: <u>hard loam over (dispersive) red clay</u> - D2/D3 (V), with <u>gradational red loam</u> - C3 (L) and <u>deep calcareous loam</u> - A6 (L). This land is arable (except for eroded areas), soil physical problems being the main limitations. Hard setting surfaces and poorly structured subsoils cause excessive runoff and erosion, difficulty in working and patchy emergence. Surface quartzite is abrasive on implements.</p>
JXI	8.4	<p>Complex of lower slopes on stony alluvium / colluvium, and rises on fine grained basement rock. Slopes are 8-20% and there is 20-50% surface quartzite. Watercourses on the alluvial and colluvial slopes are commonly eroded.</p> <p>Main soils: <u>hard loam over (dispersive) red clay</u> - D2/D3 (E) and <u>deep calcareous loam</u> - A6 (E) on lower slopes, with <u>shallow calcareous loam</u> - A2 (C) and <u>loam over red clay on rock</u> - D1/C2 (C) on rises. This land is uneven, very stony and subject to erosion. The gentler slopes have deeper, more fertile soils than the rises, but have very limited cropping potential.</p>
XGS	1.3	<p>Drainage depressions of major present day streams comprising red gum lined boulder bed watercourse and adjacent flood out flats up to 400 m wide with up to 20% surface quartzite stones.</p> <p>Main soils: <u>stony alluvial sandy loam</u> - M3 (V), with <u>gradational red loam</u> - C3 (L) and <u>deep calcareous loam</u> - A6 (L). The creek beds are virtually 100% stones and boulders, but the adjacent flats are less stony. Many of the soils however have sufficient stone content to limit water holding capacity and fertility. Other soils are inherently fertile, and with low stone content, but the overall limitations of difficulty of access (through creek), large trees, flooding potential and stoniness restrict use to grazing only.</p>



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** Shallow calcareous loam (Paralithic, Calcic / Lithocalcic Calcarosol)
Calcareous stony loam grading to soft or rubbly carbonate, over weathering rock at less than 50 cm.
- A6** Deep calcareous loam (Regolithic, Hypercalcic Calcarosol)
Calcareous stony loam to clay loam, becoming more clayey with a soft Class I carbonate layer at depth.
- C3** Gradational red loam (Calcic / Supracalcic, Red Dermosol)
Medium thickness stony loam to clay loam grading to a well structured stony red clay with soft to rubbly carbonate at depth.
- D1/C2** Loam over red clay on rock (Calcic, Red Chromosol / Dermosol)
Medium thickness loam to clay loam either abruptly overlying, or grading to, a well structured red clay, calcareous with depth grading to weathering rock within a metre.
- D2/D3** Hard loam over (dispersive) red clay (Calcic, Red Chromosol / Sodosol)
Medium to thick stony fine sandy loam to clay loam over a well structured (70%) to poorly structured (30%), red clay with quartzite stone layers and soft Class I carbonate at depth, over alluvium.
- K3** Sandy loam over red clay (non calcareous) on rock (Eutrophic, Red Chromosol)
Medium thickness stony sandy loam to sandy clay loam overlying a well structured red clay grading to weathering rock within 50 cm.
- L1** Shallow stony loam to sandy loam (Basic, Lithic, Leptic Rudosol OR Calcareous, Paralithic, Leptic Tenosol)
Shallow stony non calcareous loam to sandy loam, sometimes with increasing clay or carbonate with depth over rock at less than 50 cm.
- M3** Stony alluvial sandy loam (Basic, Fluvic, Clastic Rudosol OR Basic, Regolithic, Red-Orthic Tenosol)
Thick to very thick sandy loam with more than 50% quartzite stones (paler coloured with depth in 50% of profiles) overlying boulder beds.

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

