

NEW Newikie Land System

Strongly dissected steep low hills and rises flanking the western side of the Carooona Plain

Area: 101.1 km²

Annual rainfall: 255 – 385 mm average

Geology: Fine grained sedimentary rocks of the Tapley Hill and Ulupa Formations, with interbedded quartzites. Lower slope and valley floor alluvium is minor.

Topography: The landscape is dominated by moderately steep to steep low hills and hills, strongly dissected by watercourses with a general eastward flow. Outwash fans and creek flats account for less than 20% of the land area. Hillslope gradients are up to 50%. Rocky outcrop is significant in places, especially on razor back quartzite ridges which run north – south across the landscape. Elsewhere, surface rock and stone are extensive. Watercourses are commonly eroded, and there are occasional areas of severe scalding, but overall, this is minor. Newikie Creek flows across the southern end of the System

Elevation: 300 m in the southeast to 605 m in the north west

Relief: 20 - 120 m

Soils: Most soils are shallow to moderately shallow loams to sandy loams over basement rock. Apart from depth, variations are due to degree of clay and carbonate accumulation. A variety of deeper soils occurs on fans and lower slopes. As for hillslope soils, variations are due to clay and carbonate content of subsoil.

Main soils

Shallow to moderately shallow soils formed over basement rock on hillslopes

L1 Shallow stony loam to sandy loam

A2 Shallow calcareous loam

Minor soils

Shallow to moderately shallow soils formed over basement rock on hillslopes

D1 Loam over red clay on rock

C2 Shallow red loam on rock

D7 Sandy loam over dispersive red clay on rock

Deep soils formed over alluvium on fans

A4 Calcareous sandy loam

M4 Gradational stony sandy loam

M3 Gravelly sandy loam

C3 Gradational red loam

D3 Hard sandy loam over dispersive red clay

M1 Deep sandy loam

A3 Deep calcareous loam

Main features: The Newikie Land System is dominated by moderately steep to steep hillslopes with shallow soils and extensive stone and sporadic rocky outcrop. The combination of rough terrain, shallow soils and low rainfall restricts land use to low intensity grazing. Although relatively un-degraded, in part due to extensive vegetative cover, control of grazing pressure is essential to prevent future erosion. Watercourses which have been eroded in the past are particularly susceptible to further damage.



Soil Landscape Unit summary: 11 Soil Landscape Units (SLUs) mapped in the Newikie Land System:

SLU	% of area	Main features #
AAH AAI AAJ	19.8 21.0 5.5	<p>Rolling to steep non-arable low hills formed on siltstones and fine sandstones, with some interbedded quartzites. There is sporadic rocky outcrop, particularly associated with quartzite reefs, and extensive surface stone.</p> <p>AAH Dissected low hills to 90 m high with slopes of 5-25%. Watercourses are extensively eroded.</p> <p>AAI Moderately steep rocky spurs and hillslopes, 50-100 m high, with gradients of 15-40%, except for minor gently inclined alluvial flats. Watercourses are usually eroded.</p> <p>AAJ Steep razor back ridges, up to 80 m high, of interbedded quartzites and siltstones with extensive rocky outcrop. Slopes are 30-50%. Watercourses in narrow gullies are eroded.</p> <p>Main soils: <u>shallow stony loam</u> - L1 (V), with <u>shallow calcareous loam</u> - A2 (L) and <u>loam over red clay on rock</u> - D1 (L). <u>Hard sandy loam over dispersive red clay</u> - D3 (M) occurs on lower slopes. Except for the drainage valleys, this land is largely inaccessible, due to steep slopes or rockiness. Steep and/or rocky slopes, shallow soils and low rainfall combine to restrict land use to rough grazing. Erosion potential is high, so control of grazing pressure is crucial.</p>
ABj	1.9	<p>Steep razor back ridge with a quartzite spine. Relief is 60 m, slopes are 30-50%. Rock outcrop is extensive.</p> <p>Main soils: <u>shallow stony sandy loam</u> - L1 (V) with <u>sandy loam over dispersive red clay on rock</u> - D7 (L). This ridge is too steep and rocky for any uses other than rough grazing.</p>
ADg	3.9	<p>Complex of rises formed on calcareous fine grained rocks, and fans formed on alluvium derived from them. Slopes are 3-5%, and up to 10% on some rises. There is extensive scalding, particularly on the lower slopes and fans. Watercourses are severely eroded.</p> <p>Main soils: <u>shallow calcareous loam</u> - A2 (E) and <u>shallow red loam on rock</u> - C2 (C) with <u>shallow stony loam</u> - L1 (L) on rises, and <u>deep gradational loam</u> - C3 (L) and <u>hard sandy loam over dispersive red clay</u> - D3 (M) with <u>deep calcareous loam</u> - A3 (M) on fans. This land has been extensively degraded in the past and is at risk of further erosion if over-grazed.</p>
AEJ	35.0	<p>Strongly dissected steep rocky hills on fine grained rocks, with slopes of 20-50% and relief to 120 m. There is extensive surface stone and areas of rocky outcrop. Watercourses, occupying sharp V-shaped gullies are commonly eroded.</p> <p>Main soils: <u>shallow stony loam</u> - L1 (V), with <u>shallow calcareous loam</u> - A2 (C). This land is largely inaccessible to vehicles other than motor cycles, due to steep slopes. It is generally covered by low scrub and apart from watercourses, is little affected by erosion.</p>
AZG	1.0	<p>Lower slopes comprising low spurs formed on basement rock, and intervening alluvial fans. Watercourses crossing the fans from the steeper slopes to the west are severely eroded. Slopes 5-10%.</p> <p>Main soils: <u>shallow stony loam</u> - L1 (E) with <u>shallow calcareous loam</u> - A2 (L) and <u>loam over red clay on rock</u> - D1 (L) on rises, and <u>calcareous sandy loam</u> - A4 (L) and <u>deep gradational sandy loam</u> - M4 (L) on fans. Protection from further erosion is the main issue on this land.</p>
EHC	1.7	<p>Undulating rises formed on siltstones. Slopes are 6-15%, and relief is up to 20 m. There is sporadic rock outcrop, moderate surface stone and minor gully erosion.</p> <p>Main soils: <u>shallow calcareous loam</u> - A2 (E) and <u>shallow stony sandy loam to loam</u> - L1 (E). This land is extensively tree covered, with good grazing potential on open areas.</p>
KVG	2.9	<p>Gently inclined outwash fan (2-6% slopes) formed on alluvium. Watercourses crossing the fans from the hillslopes to the west are deeply eroded.</p> <p>Main soil: <u>calcareous sandy loam</u> - A4 (D). Soils are deep and moderately fertile, although strongly alkaline at depth. Erosion control is a key management issue.</p>
KYJ	6.4	<p>Creek flats and adjacent outwash fans formed on locally derived alluvium. Slopes are 2-4%. The landscapes are characterized by a main central watercourse, with tributary streams entering from adjacent hillslopes. Sections of watercourse are eroded.</p> <p>Main soils: <u>deep gradational sandy loam</u> - M4 (E) and <u>calcareous sandy loam</u> - A4 (E). These flats are generally well covered by trees which have contributed to the relative stability of the landscape.</p>
XFT	0.9	<p>Stream channel and eroded banks of Newikie Creek.</p> <p>Main soils: <u>gravelly sandy loam</u> - M3 (E) and <u>deep sandy loam</u> - M1 (E). This landscape is dominated by the creek. Protection of its highly erodible banks is the main management issue.</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, Hypercalcic / Supracalcic 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.
- A3** Deep calcareous loam (Regolithic, Calcic Calcarosol)
Calcareous stony (quartzite) loam becoming more clayey, calcareous and stony with depth.
- A4** Calcareous sandy loam (Regolithic, Hypercalcic / Supracalcic Calcarosol)
Calcareous sandy loam becoming very highly calcareous (often rubbly) and more clayey with depth and grading to medium textured alluvium.
- C2** Shallow red loam on rock (Calcic, Red Dermosol / Kandosol)
Stony loam grading to a red clay loam to clay, calcareous from shallow depth over weathering basement rock within 100 cm, commonly less than 50 cm.
- C3** Gradational red loam (Calcic / Supracalcic, Red Dermosol)
Loam to clay loam grading to a well structured clay with soft to rubbly carbonate at depth.
- D1** Loam over red clay on rock (Calcic, Red Chromosol)
Hard red loam to clay loam overlying a well structured red clay with soft to rubbly (or sheet) carbonate at depth, over weathering rock within 100 cm.
- 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.
- D7** Sandy loam over dispersive red clay on rock (Calcic, Red Sodosol)
Hard quartz gravelly sandy loam over a coarsely structured dispersive red clay, calcareous at depth, grading to weathering quartzitic rock within 100 cm.
- L1** Shallow stony loam to sandy loam (Lithic, Leptic Tenosol / Rudosol)
Shallow stony loam to sandy loam, sometimes calcareous with depth, overlying basement rock within 50 cm.
- M1** Deep sandy loam (Calcareous, Regolithic, Red-Orthic Tenosol OR Eutrophic / Calcic, Red Kandosol)
Thick sandy loam, continuing below 100 cm, or gradually becoming more clayey, with minor fine carbonate at depth, and variable stone content.
- M3** Gravelly sandy loam (Clastic Rudosol)
Deep sandy loam with abundant stones and gravels.
- M4** Gradational stony sandy loam (Red 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](#)

