

# LIG Little Gorge Land System

Moderately steep to precipitous hillslopes between Normanville and Second Valley

**Area:** 12.0 km<sup>2</sup>

**Annual rainfall:** 535 – 685 mm average

**Geology:** The area is underlain for the most part by schists of the Barossa Complex. There are minor areas of Kanmantoo Group siltstones with interbedded calc-siltstones. The rocks are calcified in places by windblown carbonates. These have accumulated in soils over time and have not been completely leached in this area because the rainfall is insufficient. There are minor outcrops of siltstones of the Kanmantoo Group. Much of the land would have been covered by glacial valley deposits at one time, but most have been eroded away, re-exposing the underlying basement. However, two deposits of glacial valley clay persist. There are minor coarse grained stony deposits on creek flats.

**Topography:** The landscape is dominated by moderately steep to precipitous rocky hillslopes. The slopes facing the sea are striking features, with extensive rocky outcrops and short vertical cliffs. The strong dissection of the landscape is attributable to several watercourses flowing through it. These include the Yankalilla, Anacotilla and Congeratinga Rivers, and Little Gorge Creek.

**Elevation:** 0 m on the beach to 195 m

**Relief:** Up to 130 m

**Soils:** The soils are dominated by shallow stony types, but deeper gradational and texture contrast profiles also occur. Soils on minor glacial valley sandy clays are as described for the Wirrina Land System.

## Main soils

*Soils formed on basement rock*

- L1** Shallow stony sandy loam
- K4** Acidic sandy loam over red clay
- C2** Gradational loam over semi hard carbonate

## Minor soils

*Soils formed on alluvium*

- M3** Deep stony sandy loam

**Main features:** The Little Gorge Land System is characterized by moderately steep to precipitous slopes rising abruptly from the coast and extending inland. The landscape is heavily dissected by a series of major watercourses. The soils are predominantly shallow stony sandy loams, but deeper texture contrast and gradational loams (over calcareous materials) also occur. Moderate to very steep slopes, shallow stony soils and coastal exposure limit the potential of the land.



**Soil Landscape Unit summary:** 10 Soil Landscape Units (SLUs) mapped in the Little Gorge Land System:

SLU	% of area	Main features #
AEC	4.2	<p>Moderately steep to steep hills formed on metasiltstones, metasandstones and marbles, weakly calcified, of the Strangway Hill, Wangkonda and Sellick's Hill Formations. The hills are characterized by narrow sinuous ridges which fall away sharply to strongly dissected hillslopes. Surface stone is common, and rocky outcrops occur sporadically on gentler slopes and extensively on steep slopes. Watercourses are very well defined and often eroded, particularly on steeper slopes.</p> <p><b>AEC</b> Strongly dissected slopes formed on basement siltstone. Rolling low hills with relief of 50-150 m and slopes of 20-30%.</p> <p>Most soils have loamy surfaces. About half are non calcareous, some with red or brown clayey subsoils, and some shallow over rock. The calcareous soils usually have red clayey subsoils.</p> <p>Main soils: <u>Loam over red calcareous clay</u> - <b>D1</b> (E)  <u>Loam over brown or red clay</u> - <b>K2a / K2b</b> (E)  <u>Shallow stony loam</u> - <b>L1a</b> (L)  <u>Clay loam over soft carbonate</u> - <b>C2</b> (L)</p> <p>The soils are generally moderately deep, but the land is too steep for cropping. Exposure limits horticultural potential, so grazing is the predominant land use.</p>
ANC AND ANF	38.6 36.2 8.0	<p>Rolling low hills to precipitous slopes formed on partially calcified schists of the Barossa Complex. There is variable surface stone, up to 50% on steeper slopes.</p> <p><b>ANC</b> Rolling low hills with relief to 80 m and slopes of 18-30%. Drainage depressions are well defined.</p> <p><b>AND</b> Steep to very steep rocky to very rocky hillslopes with relief to 130 m and slopes of 30-80%. Drainage depressions are very narrow.</p> <p><b>ANF</b> Precipitous, extremely rocky hillslopes with relief to 120 m and slopes of 80-200%. Scree deposits occur at the base of these slopes.</p> <p>These landscapes are characterized by shallow soils over weathering rock, which is variably calcified, resulting in a range of soils including loam over clay profiles, shallow loams over thick carbonate accumulations and shallow stony profiles.</p> <p>Main soils: <u>Shallow stony sandy loam</u> - <b>L1</b> (V)  <u>Acidic sandy loam over red clay</u> - <b>K4</b> (C)  <u>Gradational loam over semi hard carbonate</u> - <b>C2</b> (L)</p> <p>The combination of shallow stony soils, moderate to steep slopes and coastal exposure limits the potential of this land. The precipitous slopes of ANF are highly susceptible to erosion including landslip, requiring that grazing pressure be minimized.</p>
DCC	1.8	<p>Gentle slopes and crests formed on metasiltstones, metasandstones and marbles, weakly calcified, of the Strangway Hill, Wangkonda and Sellicks Hill Formations.</p> <p><b>DCC</b> Rounded rise formed on basement siltstone. Gentle slopes of 5-12%.</p> <p>Most soils have loamy surfaces. About half are non calcareous, some with red or brown clayey subsoils, and some shallow over rock. The calcareous soils usually have red clayey subsoils.</p> <p>Main soils: <u>Loam over red calcareous clay</u> - <b>D1</b> (E)  <u>Loam over brown or red clay</u> - <b>K2a / K2b</b> (E)  <u>Shallow stony loam</u> - <b>L1a</b> (L)  <u>Clay loam over soft carbonate</u> - <b>C2</b> (L)</p> <p>The soils are generally moderately deep, but except for the broader slopes of DCC, the land occurs as narrow strips with steep rocky margins, which are not practicable to farm. Exposure limits horticultural potential.</p>
DwZ	2.4	<p>Rounded, gently sloping crests with slopes of 5-10% underlain by partially calcified schists of the Barossa Complex. Soils are as for ANC (above). This land is potentially arable, with gentle slopes, moderately deep soils and good drainage, but it is highly exposed and difficult to access.</p>



HYII	4.0	<p>Undulating rises to rolling low hills formed on glacial valley clays, calcified by the input of windblown carbonate (lime). Watercourses on the steeper slopes are severely eroded and there are sporadic landslips.</p> <p><b>HYII</b> Moderately steep eroded hillslopes formed on clayey glacial valley sediments. Gently rolling low hills up to 80 m high with slopes of 12-20%.</p> <p>The soils fall into two main categories - sandy loam to clay loam over heavy mottled clay, and deep cracking clay.</p> <p>Main soils: <u>Sandy loam over poorly structured brown clay</u> - <b>F2a</b> (E)  <u>Grey-brown cracking clay</u> - <b>E3</b> (C)  <u>Sandy loamy over brown clay</u> - <b>F1</b> (L)</p> <p>These soils are inherently fertile and deep, although prone to waterlogging. The fragility of the landscapes restricts land use options. Even once stabilized, the severely damaged areas are always vulnerable to renewed erosion.</p>
LBJ	3.1	<p>Isolated valley flats lying between steep slopes of basement rock (AND, above). There is 20-50% surface schist and quartzite. Watercourses are often eroded.</p> <p>Main soil: <u>Deep stony sandy loam</u> - <b>M3</b> (D)</p> <p>These small areas are flat, but are dominated by watercourses and are not easily accessible. They are best suited to grazing.</p>
WEb	1.3	Beaches with rocky near shore reefs.
XJJ	0.4	Small coastal flat at the mouth of the Anacotilla River. Deep multi-layered medium grained alluvial soils are typical of three quarters of the land. The rest comprises the river channel and Beach. The alluvial soils are potentially productive, but the area is very small.

# 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:

*Soils formed on basement rock*

**C2** Gradational loam over semi hard carbonate (Hypercalcic, Red / Black Dermosol)

Thick dark crumbly loam grading to a red or black clay loam to clay over soft to semi hard carbonate within 40 cm, grading to weathering schist within 100 cm.

**K4** Acidic sandy loam over red clay (Calcic / Eutrophic, Red Chromosol)

Medium thickness gravelly brown loamy sand to light sandy clay loam, overlying a yellowish red to strong brown finely structured clay subsoil grading to weathering rock with sporadic soft carbonate accumulations within 100 cm.

**L1** Shallow stony sandy loam (Lithic, Leptic Tenosol)

20 - 50 cm sandy loam to loam with a paler coloured or bleached A2 layer and up to 50% rock fragments throughout, over hard schist.

*Soils formed on alluvium*

**M3** Deep stony sandy loam (Regolithic, Brown-Orthic Tenosol)

More than 100 cm dark brown sandy loam, paler with depth, and with more than 50% quartzite and schist gravel and stones. Pockets of red more clayey material occur at depth.

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

