

GLG Glen Gillian Land System

Moderately steep low hills between the Warren Reservoir and Lyndoch

Area: 26.3 km²

Annual rainfall: 550 – 770 mm average

Geology: The land is formed on basement phyllites and schists of the Woolshed Flat Formation, with slates, metasilstones and minor dolomitic rocks of the Skillogalee Formation. There are small areas of locally derived outwash sediments in drainage depressions.

Topography: The system comprises a belt of moderately steep low hills to the east of the Lyndoch Valley, and extending southwards to the Warren Reservoir. Along the eastern side, the slopes are irregular, with an overall drainage pattern to the west. The western side is characterized by a series of north - south trending ridges, with watercourses cutting across the grain. The main drainage system in the south is Victoria Creek which flows into the South Para catchment. In the north, the creeks flow into the Lyndoch Valley and eventually to the North Para. In the north is a small internally draining depression containing two seasonal lagoons.

Elevation: 240 m (lagoons) in the north to 495 m in the south

Relief: Up to 100 m

Soils: The soils are mainly moderately deep to shallow over basement rock. The most common have sandy loam surfaces, usually with red clayey subsoils, but on steeper or rocky slopes, the clay may be absent. Texture contrast soils with sandy loam surfaces dominate the minor creek flats.

Main soils

K3 Acidic sandy loam over red clay on rock

L1 Shallow stony sandy loam on rock

Minor soils

Soils formed on basement rock

D1 Sandy loam over red alkaline clay

K1 Acidic gradational loam

K4 Acidic sandy loam over brown clay

Soils formed on alluvium

D2/D3 Sandy loam over red clay

F1 Sandy loam to loam over brown clay

F1/F2 Sandy loam to loam over brown sandy clay

M1 Deep sandy loam

M2 Deep black clay loam

Main features: The Glen Gillian Land System comprises a belt of mainly moderately steep low hills to the south east of the Barossa Valley. Three quarters of the land is non arable due to its slope, but most is accessible for management of pastures or perennial crops. The soils are moderately deep to shallow over basement rocks and typically consist of acidic sandy loam surfaces over red clayey subsoils. These are moderately well drained and reasonably fertile, so there is potential for both improved pastures and horticultural crops (where water is available). There are minor areas of gentler slopes with similar soils and productive potential. Deep soils occur on creek flats and outwash fans. On



narrow creek flats in the hills, these soils are prone to waterlogging and flooding, but can be productive, albeit in small areas. Broad gentle slopes in the north (an extension of the Barossa Valley) have deep sandy loam over red alkaline clay soils with high production potential.

Soil Landscape Unit summary: 9 Soil Landscape Units (SLUs) mapped in the Glen Gillian Land System:

| SLU | % of area | Main features # |
|------------|-------------|---|
| AyC AyD | 48.8 0.9 | <p>Rolling to steep hillslopes formed on phyllites and schists. Slopes range from 18% to 50%. Relief is up to 90 metres. Drainage channels are very well defined, narrow and mostly un-mappable. They are often gullied.</p> <p>AyC Rolling low hills up to 80 m high with slopes of 18-30%. AyD Steep low hill, 90 m high with slopes of 30-50%.</p> <p>The soils are predominantly loamy, usually with reddish clay subsoils, but shallow soils formed directly on weathering rocks are common.</p> <p>Main soils: <u>Sandy loam over red clay</u> - K3 (V) <u>Shallow stony sandy loam</u> - L1 (L) <u>Sandy loam over red alkaline clay</u> - D1 (M)</p> <p>The soils are mostly shallow and stony, but there is a significant proportion of deeper moderately fertile sandy loam over clay soils. Although most land is used for grazing and some forestry, it has horticultural potential where water is available. Acidity control, fertility maintenance and erosion prevention are the main management issues.</p> |
| AzC | 26.2 | <p>Series of N-S to NW-SE trending ridges with parallel crests approximately 500 metres apart, formed on schists, phyllites and interbedded quartzites. Slopes range from 10% to 50% (usually 20% to 40%). Relief is 50 to 100 metres. Most soils have loamy surfaces and clayey subsoils. Shallow stony soils occur near rocky outcrops.</p> <p>Main soils: <u>Sandy loam over red clay</u> - K3 (E) <u>Shallow stony sandy loam</u> - L1 (C) } in rocky areas <u>Acidic gradational loam</u> - K1 (L) } <u>Acidic sandy loam over brown clay</u> - K4 (L) <u>Sandy loam over brown sandy clay</u> - F1/F2 (M) } on lower slopes <u>Deep sandy loam</u> - M1 (M) }</p> <p>The land is too steep for cultivated cropping but has some potential for perennial crops. The soils are variable, but the K3 and K1 soils are reasonably fertile, well drained and moderately deep. The shallow stony soils are limited by poor waterholding capacity, while the K4 soils are infertile and imperfectly drained. All soils are highly erodible.</p> |
| BCC | 1.4 | <p>Undulating rises to 30 m high with slopes of 2-10%. Underlying rocks are phyllites and schists. Most soils are moderately deep over weathering rock.</p> <p>Main soils: <u>Sandy loam over red clay</u> - K3 (E) <u>Sandy loam over red alkaline clay</u> - D1 (E)</p> <p>These soils are potentially productive, with no significant limitations apart from hard setting surfaces. Erosion control is important where soil is disturbed or exposed.</p> |
| BfD | 7.6 | <p>Slopes of 10-18% formed on phyllites and schists. There is minor surface stone and virtually no outcrop. The soils are predominantly loamy, usually with reddish clay subsoils, but shallow soils formed on weathering rocks are common.</p> <p>Main soils: <u>Sandy loam over red clay</u> - K3 (E) <u>Acidic gradational loam</u> - K1 (E) <u>Shallow stony sandy loam</u> - L1 (C) <u>Sandy loam over red alkaline clay</u> - D1 (M)</p> <p>The soils are mostly moderately deep with adequate drainage and fertility, on slopes which are easily accessible. Although most of the land is used for grazing, it has horticultural potential where water is available. Fertility maintenance, acidity control and erosion prevention are the main management issues.</p> |



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| JBJ | 3.3 | Gently inclined outwash fans formed over micaceous clayey outwash sediments. Watercourses crossing the slopes are usually eroded. Main soil: <u>Sandy loam over red clay</u> - D2/D3 (D) These soils are deep with thick poorly structured hard setting surfaces prone to erosion. Drainage and fertility are adequate. Although difficult to manage, they are potentially productive, particularly for perennial crops where soil disturbance can be minimized. |
| LdJ | 3.8 | Flats of Victoria Creek formed on clayey alluvium. Main soils: <u>Deep black clay loam</u> - M2 (E) <u>Sandy loam over brown clay</u> - F1 (E) These soils are deep and fertile, but imperfectly drained. Productive potential is high although over-irrigation can cause waterlogging. Sporadic salinity and stream bank erosion are other management issues. |
| LtJ | 5.9 | Creek flats formed on alluvial sediments derived from the adjacent hillslopes. Watercourses are well defined and often eroded. There is minor saline seepage. The soils are deep but highly variable depending on the source of parent sediments. Main soils: <u>Deep sandy loam</u> - M1 (E) <u>Sandy loam over brown sandy clay</u> - F1/F2 (C) <u>Sandy loam over brown mottled clay</u> - F1 (C) <u>Deep black clay loam</u> - M2 (L) Most soils are waterlogged during winter and would present drainage problems under irrigation. Fertility varies from low (sandy loams) to high (black clay loams). Pasture productivity potential is high. Control of watercourse erosion is a significant issue. |
| VZ- | 2.1 | Hoffnung Lagoon and a smaller lagoon to the north east. These lagoons fill seasonally and tend to become saline as they dry out over summer. |

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:

Soils formed on basement rock

- D1** Sandy loam over red alkaline clay (Calcic, Red Chromosol)
Medium thickness loamy surface soil with a paler and stony A2 horizon, overlying a dark reddish brown well structured clay subsoil which is highly calcareous from about 50 cm. Weathering, calcified schist or phyllite occurs within 100 cm.
- K1** Acidic gradational loam (Eutrophic, Brown Dermosol)
Thick gravelly brown loam grading to dark brown and yellow micaceous coarsely prismatic clay loam to clay, over weathering schist from about 100 cm.
- K3** Acidic sandy loam over red clay (Sodic, Eutrophic, Red Chromosol)
Medium thickness sandy loam to sandy clay loam surface soil, with a pale and very gravelly A2 horizon, overlying a red or dark reddish brown, strongly structured clay subsoil grading to weathering schist or phyllite by 100 cm.
- K4** Acidic sandy loam over brown clay (Bleached-Mottled, Eutrophic, Brown Chromosol)
Thick loamy sand to fine sandy loam with a bleached and quartz gravelly A2 horizon, overlying a very firm brownish yellow heavy clay derived from the weathering of quartzitic rocks.
- L1** Shallow stony sandy loam (Paralithic, Leptic Tenosol)
Thick stony sandy loam to loam, forming in weathering schist or phyllite at 50 cm or less.



Soils formed on alluvium

- D2/D3** Sandy loam over red alkaline clay (Calcic, Red Chromosol / Sodosol)
Thick reddish brown massive hard setting loamy sand to sandy loam with a pink very hard A2 horizon, overlying a reddish brown clay with prismatic structure (may be dispersive) and variable fine carbonate segregations (Class I carbonate) from 65 cm.
- F1** Sandy loam to loam over brown clay (Bleached-Mottled, Hypocalcic, Brown Chromosol)
Thick loamy sand to clay loam with a strongly bleached A2 horizon, sharply overlying a yellowish brown, grey and red mottled clay grading to fine grained alluvium.
- F1/F2** Sandy loam over brown sandy clay (Bleached-Mottled, Eutrophic, Brown Chromosol)
Thick dark brown loamy sand to light sandy clay loam with a bleached A2 horizon, overlying a yellow brown and grey brown sandy clay with coarse prismatic structure, grading to a grey, brown and yellow mottled clayey sand.
- M1** Deep sandy loam (Regolithic, Brown-Orthic Tenosol / Eutrophic, Brown Kandosol)
Thick brown sandy loam, overlying a grey to brown silty sand to light silty clay loam with weak prismatic structure, grading to variable sandy, gritty and clayey alluvial sediments.
- M2** Deep black clay loam (Melanic, Eutrophic, Black Dermosol)
Thick black silt loam to clay loam with strong granular structure, overlying a black to dark brown clay with strong blocky structure, becoming yellow and grey mottled with depth.

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

