KOO Koolunga Land System

Alluvial plains of the Broughton River from where the river emerges from the ranges east of Koolunga to the point where it meets the Rocky River near Merriton.

Area: 149.7 km^2

Annual rainfall 365 – 410 mm average

Geology: Mostly fine grained alluvium with limited deposits of silty and sandy alluvium. There is a small Tertiary sand residual in the north.

Topography: Flat alluvial plains with slopes of less than 1%, broken only by the channel of the River Broughton (up to 5 m deep), and smaller ephemeral channels feeding the river. The main river channel is flanked along much of its length by terraces up to several metres lower than the main alluvial plain. There are some very shallow saline depressions scattered across the plains. Basement rock residuals protruding through the alluvium (eg Redhill) are mapped separately as the Redhill land system. There is a minor low rise on Tertiary sand near Merriton.

Elevation: 60 m at the junction with Rocky River to 140 m where the Broughton emerges from the ranges.

Relief: There is negligible relief except for the alluvial channels (up to 5 m) and the single Tertiary residual (10 m).

Soils: Loamy soils with either well developed red or calcareous clayey subsoils are predominant, with deep gradational medium to coarse textured soils near the river.

Main soils

D2 Loam over red clay - extensive (flats)
C3 Gradational loam - common (flats), with saline variants on salt affected land
A6 Calcareous clay loam - limited (flats)

Minor soils

D3 Loam over dispersive red clay - flats
A3 Calcareous loam - near river
M1 Deep sandy loam - near river
F2 Clay loam over brown clay - saline areas
A4 Rubbly calcareous sandy loam - low rises
N2 Wet saline soil - salt affected land

Main features: The Koolunga Land System is a flat alluvial plain characterized by deep fertile soils (loam over red clay). Poorly structured surfaces are their main limitation. These restrict infiltration, reduce waterholding capacity and adversely affect emergence and root growth. Saline and marginally saline depressions are scattered throughout. There are minor rises with moderately low fertility calcareous soils.

Soil Landscape Unit summary: 6 Soil Landscape Units (SLUs) mapped in the Koolunga Land System:

SLU	% of area	Main features #
JFA JFP	92.4 2.3	Alluvial plains formed on fine grained alluvium. **JFA** Alluvial flats. **JFP** Marginally saline flats and depressions. Main soils: loam over red clay - **D2** (E), with gradational loam - **C3** (L), calcareous clay loam - **A6** (L) and loam over dispersive red clay - **D3** (L). Clay loam over brown clay - **F2** is typical of more saline flats. The land is largely productive cropping country with minor limitations due to soil structure, causing reduced infiltration, restricted workability and patchy emergence. The saline areas are used mainly for grazing - there is evidence that these areas are expanding.
SaB	0.3	Low rises to 10 m high and with slopes of 2-5% formed on Tertiary sands to sandy clays, capped by rubbly carbonates. Main soil: rubbly calcareous sandy loam - **A4** (D). The land has only minor limitations of restricted water holding and marginal fertility attributable to the dominant moderately shallow and calcareous soil.
XKJ	2.9	Alluvial terraces and flats. Main soils: calcareous loam - **A3** (E), loam over red clay - **D2** (E) and deep sandy loam - **M1** (E). This land is limited in extent, and is productive, although its use is restricted by the proximity of the river.
ZA- ZB-	1.6 0.5	**ZA-** Highly saline flats. **ZB-** Very highly saline flats. Main soils: saline gradational loam - **C3** (E), with clay loam over brown clay - **F2** (E) and wet saline soil - **N2** (E). Salinity and wetness are the over-riding limitations of this land, restricting its use to light grazing, although there is potential for establishment of salt tolerant pastures on **ZA**-.

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:

A3 Calcareous loam (Regolithic, Calcic Calcarosol)
Calcareous sandy loam to loam grading to a weakly structured sandy clay loam to light clay with minor soft carbonate from about 70 cm.

A4 Rubbly calcareous sandy loam (Regolithic, Supracalcic Calcarosol)
Calcareous sandy loam to loam grading to a highly calcareous sandy clay loam over rubbly carbonate at about 50 cm, overlying soft sandstone or sandy to sandy clay Tertiary sediments.

A6 Calcareous clay loam (Regolithic / Pedal, Hypercalcic Calcarosol)
Calcareous clay loam becoming more clayey and calcareous with depth over soft carbonate at about 70 cm., grading to alluvium.

C3 Gradational loam (Calcic / Hypercalcic, Red Dermosol)
Medium to thick firm loam to clay loam grading to a well to coarsely structured red clay with moderate soft carbonate from about 55 cm, over alluvium. Saline variants occur on salt affected land.

D2 Loam over red clay (Hypocalcic / Calcic, Red Chromosol)
Medium to thick hard setting sandy loam to loam over a well structured red clay with minor to moderate soft carbonate from about 60 cm over alluvium.

D3 Loam over dispersive red clay (Calcic, Red Sodosol)
Medium thickness hard setting sandy loam to clay loam with a bleached A2 horizon, sharply overlying a dispersive coarsely structured red clay with minor soft carbonate from about 60 cm over alluvium.

F2 Clay loam over brown clay (Calcic, Brown Sodosol)
Medium thickness clay loam over a brown heavy clay with minor soft carbonate at depth over alluvium, usually saline.

M1 Deep sandy loam (Hypocalcic Calcarosol)
Deep slightly calcareous sandy loam over coarse textured alluvium.

N2 Wet saline soil (Dermosolic / Sodosolic, Salic Hydrosol)
C3, D3 and F2 soils (as above) with watertable within 100 cm.

Further information: DEWNR Soil and Land Program