CRB Crystal Brook Land System

Plains and alluvial terraces of the lower reaches of Crystal Brook, Rocky River and Yackamoorundie Creek

Area: 106.6 km^2

Annual rainfall 365 – 420 mm average

Geology: Fine to medium grained alluvium deposited by floodwaters of Crystal Brook, Rocky River and Yackamoorundie Creek. The sediments are usually capped by soft fine carbonate, blown in as dust, deposited over the landscape and leached into the upper layers of the sediments by rain water. There is one small residual of Tertiary sand.

Topography: Flat alluvial plains with slopes of less than 1% and scattered very low rises. The main topographic features are the major watercourses which are commonly incised into the plain, and which are flanked by terraces at slightly lower elevations than the main plains. In one stretch of Yackamoorundie Creek, there is an area of gully erosion.

Elevation: Elevation varies from 50 m where the major watercourses leave the Land System, to 120 m along the eastern edge where the plains give way to low hills.

Relief: The only significant relief is along the river channels where the beds are up to 5 m below the level of the adjacent plains. Low rises scattered across the plains have relief of only a few metres at most.

Soils: The soils are deep and loamy. There is a mixture of calcareous and non calcareous gradational loams, and loamy texture contrast soils.

Main soils

A6	Calcareous clay loam
D2	Hard loam over red clay
C3	Gradational clay loam

Minor soils

M1/A3	Gradational sandy loam
A4	Rubbly calcareous loam
E2/E3	Red / brown cracking clay

Main features: The Crystal Brook Land System is almost all flat alluvial plains country, with limited areas of gentle slopes and watercourses. The soils are deep, inherently fertile and mostly well structured. High subsoil alkalinity which may restrict potential root depth is the only significant limitation.

Soil Landscape Unit summary: 5 Soil Landscape Units (SLUs) mapped in the Crystal Brook Land System:

SLU	% of area	Main features #
IWB	1.2	Low rise with slopes of 2-5% formed on Tertiary sands to sandy clays. Main soils: rubbly calcareous loam - **A4** (E) and calcareous clay loam - **A6** (E). Land has only minor limitations, due mainly to the shallowness and alkalinity of the dominant soil.
KNA	83.5	Plains and minor low rises with slopes of less than 1% formed on fine to medium grained alluvium. Main soils: calcareous clay loam - **A6** (V), with hard loam over red clay - **D2** (C) and gradational clay loam - **C3** (L). This land has few limitations. It is flat with soils which are deep and generally well structured, although alkalinity has an adverse effect on soil fertility. Rooting depth and therefore water holding capacity may be limited by high carbonate levels in places.
KRE KRJ	3.8 0.5	Alluvial flats and terraces. **KRE** Flats with stable water courses. **KRJ** Flats with eroded watercourses. Main soils: calcareous clay loam - **A6** (V), with gradational clay loam - **C3** (C) and cracking clay - **E2/E3** (L). This narrow strip of land has a number of slight limitations due to its predominantly heavy alkaline slightly saline soils and proximity to a major watercourse. An eroded section of the terrace has limited grazing value only.
XKJ	11.0	Alluvial terraces and flats with mixed calcareous clay loam - **A6** (E), hard loam over red clay - **D2** (E) and gradational sandy loam - **M1/A3** (E). This land is limited in extent, but is productive, although its use is restricted by the proximity of the river.

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:

M1/A3 Gradational sandy loam (Regolithic, Calcic Calcarosol)
Thick slightly calcareous sandy loam with slight clay and carbonate increase at depth. River flats.

A4 Rubbly calcareous loam (Regolithic, Supracalcic Calcarosol)
Calcareous sandy loam grading to a highly calcareous sandy clay loam over Class III B carbonate rubble at about 50 cm. Tertiary sediments.

A6 Calcareous clay loam (Regolithic / Pedal, Calcic / Hypercalcic Calcarosol)
Calcareous loam to clay loam with increasing clay and carbonate content at depth over soft Class I carbonate at about 60 cm, grading to alluvium. Throughout.

C3 Gradational clay loam (Hypercalcic, Red Dermosol)
Friable clay loam to clay, grading to a well structured red clay with abundant soft Class I carbonate at about 65 cm, over alluvium deeper than 100 cm. Plains and terraces.

D2 Hard loam over red clay (Hypocalcic / Calcic Red Chromosol)
Hard setting sandy loam to loam abruptly overlying a red well structured clay with minor to moderate soft Class I carbonate at about 65 cm, grading to alluvium deeper than 100 cm. Plains and terraces.

E2/E3 Red / brown cracking clay (Self-mulching, Red / Brown Vertosol)
Self-mulching, seasonally cracking clay grading to red or brown coarsely structured heavy clay with increasing soft Class I carbonate at depth. Alluvial plains.

Further information: DEWNR Soil and Land Program