

# LAU Laura Land System

Flats of the Rocky River in the Stone Hut - Laura - Gladstone area, Southern Flinders Ranges

**Area:** 83.9 km<sup>2</sup>

**Annual rainfall** 435 – 520 mm average

**Geology:** Medium to fine grained sediments deposited on old and modern flood plains of the Rocky River, Pine Creek and Pisant Creek.

**Topography:** The land system includes extensive flats associated with the Rocky River in the Laura - Gladstone district, and adjacent gently inclined outwash fans. The flats comprise older alluvial plains and the modern flood plain, terraces and channel of the Rocky River. Except for some short slopes between different level terraces near the river, and the riverbanks themselves, the plains have slopes of less than 1%. The fans flanking the plains and grading to the adjacent rising ground on the western side have slopes to 3%. There are areas of salinity caused by rising ground water on the flats. There is little erosion except in the river channel where sections of bank are flood damaged and unstable.

**Elevation:** 190 m in the south to 290 m in the north. This difference occurs over a distance of about 25 km down the length of the Rocky River (a gradient of 0.4%).

**Relief:** There is little relief on the flats (apart from the incised river channel). The fans on the western side rise up to 40 m above the river flat level.

**Soils:** The soils are deep and medium to fine textured. Gradational loams to clay loams, loam over clay soils and cracking clays are the most common.

#### Main soils

**M2** Gradational clay loam - extensive (loamy flats)

**D2** Hard loam over red clay - common (loamy flats)

**E1/E3** Black / brown cracking clay - limited (clayey flats and fans)

**F2** Hard sandy loam over dispersive brown clay - limited (flats)

#### Minor soils

**M4** Gradational massive sandy loam - near watercourses

**N2/A3** Saline calcareous clay loam - near watercourses

**Main features:** The Laura Land System is all flat to very gently inclined, with mainly deep loam over clay soils or cracking clays. These soils are inherently fertile and generally well structured; although the texture contrast soils have hard setting surfaces and many have dispersive subsoils. There is sporadic saline seepage.



**Soil Landscape Unit summary:** 7 Soil Landscape Units (SLUs) mapped in the Laura Land System:

SLU	% of area	Main features #
JCA JCB	2.2 16.1	Flats and outwash fans formed on fine grained alluvium. <b>JCA</b> Flats with slopes of less than 2%. <b>JCB</b> Fans with slopes of 2-4%. Main soils: <u>hard loam over red clay</u> - <b>D2</b> (V), with <u>hard sandy loam over dispersive brown clay</u> - <b>F2</b> (C) and <u>black / brown cracking clay</u> - <b>E1/E3</b> (L). These soils are deep and fertile; their main limitations are physical. Hard setting surfaces in most soils result in restricted workability, poor infiltration and patchy emergence. Dispersive subsoils in the F2 soils cause waterlogging and sub-optimal root growth, and reduce waterholding capacity. The clay soils are both fertile and well structured.
KEA	30.9	Flats formed on fine to medium grained sediments. Main soils: <u>gradational clay loam</u> - <b>M2</b> (V) and <u>hard loam over red clay</u> - <b>D2</b> (E). This land is flat, fertile and well drained with no significant limitations.
KSB	10.9	Outwash fans with slopes of 2-5% formed on clayey sediments. Main soils: <u>black / brown cracking clay</u> - <b>E1/E3</b> (V) and <u>gradational clay loam</u> - <b>M2</b> (E). This land is highly fertile with deep clay soils which are prone to mild waterlogging. Some soils are shallow over high boron clay. Despite the inherent stability of the soils, there is a slight erosion potential, due to the long slopes.
XJJ XJM	36.0 3.1	Alluvial flats formed on modern alluvium. <b>XJJ</b> Flats, flood plains and terraces. <b>XJM</b> Moderately saline flats. Main soils: <u>gradational clay loam</u> - <b>M2</b> (E), with <u>hard sandy loam over dispersive brown clay</u> - <b>F2</b> (C), <u>gradational massive sandy loam</u> - <b>M4</b> (C) and <u>calcareous clay loam</u> - <b>A3</b> (M). The main feature of the flats is their uneven topography and variable soils. There is a range of soil physical problems caused by poor soil structure. These include waterlogging, difficulty in working, patchy emergence and restricted waterholding capacity. Additional management issues include periodic flooding, salinity and stream bank erosion.
ZA-	0.8	Saline flats formed on fine grained sediments. Main soil: wet <u>saline calcareous clay loam</u> - <b>N2/A3</b> . These flats have been salinized by rising watertables and are too salty for cropping.

## # 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:**

- D2** Hard loam over red clay (Hypocalcic / Calcic, Red Chromosol)  
Medium to thick hard sandy loam to clay loam abruptly overlying a well structured red clay, with minor to moderate soft Class I carbonate from about 50 cm.
- E1/E3** Black / brown cracking clay (Epipedal, Black / Brown Vertosol)  
Dark brown to black well structured cracking clay, calcareous throughout and becoming more clayey with depth.
- F2** Hard sandy loam over dispersive brown clay (Hypocalcic, Brown Sodosol)  
Thick hard sandy loam to sandy clay loam with a bleached A2 horizon over a brown, red or black mottled poorly structured clay with minor soft carbonate below 80 cm.
- M2** Gradational clay loam (Hypocalcic / Calcic, Red Dermosol)  
Thick to very thick loam to clay loam grading to a well structured red clay with minor soft carbonate from 70 cm.
- M4** Gradational massive sandy loam (Eutrophic, Red / Brown Kandosol)  
Thick massive loam grading to a reddish fine sandy clay loam continuing below 100 cm.
- N2/A3** Saline calcareous clay loam (Calcarosolic, Salic, Hydrosol / Pedal, Calcic Calcarosol)  
Calcareous loam to clay loam grading to a highly calcareous well structured clay with variable soft Class I carbonate at depth.

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

