

DUT Dutton Land System

Gently inclined outwash fan in the Dutton area

Area: 18.8 km²

Annual rainfall: 425 – 480 mm average

Geology: The majority of the Land System is underlain by clayey outwash sediments derived from the low range to the west. In places (especially adjacent to the range), are residuals of either older clay sediments or deeply weathered basement rock. All materials are mantled by soft or occasionally rubbly secondary carbonates.

Topography: The Land System is a gently inclined outwash fan with slopes of 1 - 4% and an easterly aspect. Surface features include low residual rises adjacent to the western and northern margins, and the channels of eastward flowing water courses. These are commonly eroded. In the south east, the flats adjacent to Stony Creek are salinized.

Elevation: 380 m in the north-west to 310 m in the south east

Relief: Less than 10 m

Soils: The soils are deep and loamy. Texture contrast soils are most common. Subsoils are red clays, but vary from well structured and friable to coarsely structured and dispersive. Other soils have gradational texture profiles which are sometimes calcareous.

Main soils

D2 Hard loam over red clay - extensive (fans), limited (rises)

D3 Hard loam over poorly structured red clay - common (fans), limited (rises)

C3 Gradational red loam - limited (fans)

Minor soils

C5 Gradational dark clay loam - rises

A4 Calcareous loam - rises

Main features: The Dutton Land System is a gently sloping east facing outwash fan between two ranges, forming the Dutton Valley. The land (with the exception of some eroded and salinized water courses) is fully arable. The soils are mostly deep, moderately fertile and usually well structured, although hard setting surfaces are common. Although hard setting can create problems of excessive run off, working difficulties and patchy crop growth, it is generally manageable through modifications to surface management techniques and the use of gypsum. There is evidence that, on the rises at least, boron toxicity may limit root zone depth. Saline seepage on at least the Stony Creek Flat suggests that there is salt stored in the catchment - water tables and subsoil should be monitored.



Soil Landscape Unit summary: 4 Soil Landscape Units (SLUs) mapped in the Dutton Land System:

SLU	% of area	Main features #
JEB JEG JEK	42.8 22.2 6.6	<p>Outwash fans formed on clayey outwash sediments.</p> <p>JEB Fans with slopes of 1-4% and minor water course erosion.</p> <p>JEG Fans with slopes of 1-4% and moderate water course erosion.</p> <p>JEK Flats with slopes of 1-2%, sporadic saline seepage and minor water course erosion.</p> <p>Main soils: <u>hard loam over red clay - D2</u> (E), <u>hard loam over poorly structured red clay - D3</u> (E) with <u>gradational red loam - C3</u> (C). These soils are deep and inherently fertile, but are commonly poorly structured. Hard setting surfaces are most common. These shed water (increasing erosion hazard), may be difficult to work (are either too wet or too dry), and prevent even emergence and early crop growth. D3 soils with dispersive subsoil clays are also prone to waterlogging. Gypsum and modified surface management practices can help overcome these problems. Saline seepage in JEK (in the lowest part of the Land System) should be monitored, and is an indication that there is potential for salinity elsewhere.</p>
TPB	28.4	<p>Low rises and footslopes formed on clayey sediments (possibly deeply weathered basement rock in places). Slopes are 2-4%. There is up to 10% surface quartzite or sandstone.</p> <p>Main soils: <u>gradational dark clay loam - C5</u> (E) and <u>calcareous loam - A4</u> (E) with <u>hard loam over red clay - D2</u> (C) and <u>hard loam over poorly structured red clay - D3</u> (L). These soils are generally deep, fertile and moderately well structured, although some (particularly the D2 and D3 soils) set hard. This causes poor water infiltration and uneven crop growth. There is some evidence to indicate that subsoil boron levels are high - this limits root growth and water availability in dry seasons.</p>

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:

A4 Calcareous loam (Regolithic, Calcic / Supracalcic Calcarosol)

10 - 30 cm calcareous loam to clay loam becoming highly calcareous (sometimes rubbly) and more clayey with depth. Continuing as a very highly calcareous clay loam below 100 cm. Extensive on rises.

C3 Gradational red loam (Calcic, Red Dermosol)

15 - 20 cm loam to clay loam grading to a well structured red clay, calcareous from 65 cm, continuing below 100 cm. Common on fans.

C5 Gradational dark clay loam (Calcic, Brown / Black Dermosol)

10 - 30 cm dark clay loam grading to a well structured brown or dark coloured clay, calcareous from 60 cm, continuing below 100 cm. Extensive on rises.

D2 Hard loam over red clay (Calcic / Hypercalcic, Red Chromosol)

10 - 60 cm hard fine sandy loam to clay loam abruptly overlying a well structured red clay, calcareous from 65 cm, continuing below 100 cm. Very extensive on fans and limited on rises.

D3 Hard loam over poorly structured red clay (Calcic / Hypercalcic, Red Sodosol)

10 - 60 cm hard fine sandy loam to clay loam abruptly overlying a coarsely structured and dispersive red clay, calcareous from 65 cm, continuing below 100 cm. Very extensive on fans and limited on rises.

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

