

HAN Hanson Land System

Flats and gentle slopes of the Hanson valley

Area: 37.8 km²

Annual rainfall: 460 – 510 mm average

Geology: The predominant geological material is fine grained alluvial valley fill. However, around the margins of the valley, mainly on the western side, basement rock rises protrude through the sedimentary cover. The rocks are fine sandstones and siltstones of the Tapley Hill Formation, which are commonly highly weathered, so that modern soils are forming on clayey weathering products. All materials are mantled by fine aeolian carbonates.

Topography: The Hanson Land System is an alluvial valley, with north - south trending basement rock ridges bordering it to the east and the west. The area comprises a flat valley floor, grading to gently inclined outwash fans to the west and the east. On the western side, and the northern part of the eastern side, basement rock rises protrude through the alluvium of the fans, producing a gently undulating landscape. Slopes range from 0-4%. The valley floor is marginally saline, and includes an old salt lake. Despite the flatness of the valley floor, there is a watershed across its centre, such that the northern half drains into Gum Creek, and the southern half drains into Porter Lagoon.

Elevation: 500 m on the upper margin of the eastern outwash fan, to 420 m at the northern end and 450 m at the southern end.

Relief: Maximum relief is 10 m

Soils: Loamy texture contrast soils, with cracking clays and gradational loams occur over most of the area.

Main soils

- D3** Hard loam over dispersive red - common on lower slopes and fans
- E2** Red cracking clay - common on flats, fans and rises
- C3** Gradational red loam - common on rises and flats
- D2** Hard sandy loam over red clay - limited on rising ground
- E3** Brown cracking clay - limited on flats and fans

Main features: The Hanson Land System comprises two main facets - flats and rises/fans. The clayey flats are affected to some degree by salinity and waterlogging and the usual problems of intractability associated with clayey soils. However, they have the advantage of very high natural fertility. The rises and fans are characterized by mosaics of hard red loamy soils and dark clayey soils, having quite different properties. Management of these areas is difficult for this reason. The use of gypsum (and lime if necessary) to ameliorate poor surface structure (and possible acidity) in the red loams will help to reduce the need for substantially different management approaches. The productive potential of the rising ground is high if management techniques take account of the soil variability.



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

SLU	% of area	Main features #
HXB	27.0	Complex of low rises with slopes of 2-4% formed on highly weathered siltstones, and outwash fans with slopes of 1-3% formed on outwash clays. Main soils: <u>hard sandy loam over red clay - D2 (E)</u> , with <u>gradational clay loam - C3 (C)</u> , <u>red cracking clay - E2 (C)</u> , and <u>hard loam over dispersive red clay - D3 (L)</u> on lower slopes. These soils are moderately fertile, with high water holding capacities. Poor surface structure in the D2 and D3 soils is the main limitation, causing excessive runoff and poor working and establishment conditions. The heavier E2 and C3 soils are better structured, but can become intractable when wet. Erosion potential is moderately low to low.
JAB JAK	15.5 56.0	Fans and flats formed on clayey alluvium. JAB Gently inclined fans of 1-3% JAK Flats and very gently inclined fans with slopes of less than 1%. There are minor saline patches. Main soils: <u>hard loam over dispersive red clay - D3 (E)</u> and <u>red cracking clay - E2 (E)</u> with <u>gradational clay loam - C3 (L)</u> and <u>brown cracking clay - E3 (L)</u> . A mosaic of hard red loams and dark clays characterizes this land. These soils are deep and inherently fertile, but have quite different properties, making management difficult. The D3 soils set down hard, shed water and erode, and tend to be acidic. The clays are the most fertile soils, do not hard set, but become very sticky and intractable when wet, do not erode, and tend to be alkaline. They are also subject to waterlogging in wet years. Water course erosion is a hazard in these soils, even on gentle slopes. Overall, productive potential is high, although this is diminished to some extent by marginal salinity in places. Salt levels in the soil should be monitored.
VZ-	1.5	Old lake bed, inundated in wet seasons.

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

(D) Dominant in extent (>90% of SLU)	(C) Common in extent (20–30% of SLU)
(V) Very extensive in extent (60–90% of SLU)	(L) Limited in extent (10–20% of SLU)
(E) Extensive in extent (30–60% of SLU)	(M) Minor in extent (<10% of SLU)

Detailed soil profile descriptions:

- C3** Gradational red loam (Calcic, Red Dermosol)
Medium thickness crumbly loam to clay loam grading to a well structured red clay, calcareous with depth.
- D2** Hard sandy loam over red clay (Calcic, Red Chromosol)
Medium thickness hard sandy loam over a well structured red clay, calcareous with depth grading to weathering rock, occasionally within a metre of the surface.
- D3** Hard loam over dispersive red clay (Calcic, Red Sodosol)
Thick hard loam often with a bleached A2 layer, abruptly overlying a coarsely structured dispersive red clay, calcareous with depth.
- E2** Red cracking clay (Self-mulching / Epipedal, Red Vertosol)
Granular dark reddish brown clay, becoming coarse blocky and red with depth. Variable soft carbonate occurs within the profile.
- E3** Brown cracking clay (Epipedal / Massive, Brown Vertosol)
Blocky dark brown clay, becoming coarse blocky and dark brown with depth. Variable soft carbonate occurs within the profile.

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

