

TRW Terowie Land System

Flat to gently inclined plains south and north of Terowie

Area: 194.9 km²

Annual rainfall: 275 – 375 mm average

Geology: The majority of the land system is formed on fine to medium grained alluvium derived from adjacent basement rock rises and low hills. There are sporadic basement rock outcrops in the alluvium. These are Mintaro Formation siltstones and more quartzitic Gumbowie Arkose. The sediments and rocks are mantled by a veneer of fine carbonate. This generally occurs as minor subsoil segregations in the alluvium, although hard nodules and minor sheets of calcrete occur in places. There is more carbonate in soils on rises. Fine grained lake floor sediments and associated reworked gypsum deposits occur in several scattered depressions.

Topography: Flat to gently undulating outwash fans with slopes of 0-4%. Most of the land drains internally into Hiles Lagoon, an ephemeral salt lake five km south east of Terowie. Low gypseous lunettes and hummocks enclose the lagoon on all but the western side. At the southern end of the System, water drains into a slight depression south west of Whyte Yarcowie. In the north, a low divide one km north west of Sugar Loaf Station directs water northwards to a drainage depression which flows out of the land system to the west. There are two small lake beds in the north. Sporadic basement rock outcrops protrude through the sedimentary cover as rises up to 15 m high and with slopes of up to 10%.

Elevation: 480 m (Hiles Lagoon) to 520 m

Relief: Maximum relief is 15 m (basement rock rises)

Soils: Red loamy soils with friable red clayey subsoils are predominant, with deep calcareous loams also common. Shallow loams, usually calcareous, are characteristic of rising ground.

Main soils

Soils on flats and outwash fans

D4 Crusting loam over friable red clay

C3 Red gradational clay loam

A6/A4 Calcareous loam

Minor soils

Soils on flats and outwash fans

A3 Deep calcareous clay loam

Soils on basement rock rises

A2 Shallow calcareous loam

L1 Shallow stony loam

Soils associated with salt lakes

A8 Gypseous silty loam

N2 Salt lake soil



Main features: Gently inclined to level plains with scalds from former erosion are the characteristic features of the Terowie Land System. The predominant soils have poorly structured surfaces which tend to crust over, thereby shedding water. When bare and disturbed (by livestock or cultivation), most soil types are prone to erosion by wind. There is also potential for water erosion on sloping land. Land use is permanently limited by low rainfall, although in the southern parts where rainfall is higher, cereal cropping is common practice. Most soils have moderate levels of salt at least in the subsoil; there are also some saline depressions. Small rocky rises are minor features of the land system.

Soil Landscape Unit summary: 23 Soil Landscape Units (SLUs) mapped in the Terowie Land System

SLU	% of area	Main features #
AYB	0.3	Low ridges to 20 m high with slopes of 10-20% formed on Tarcowie Siltstone. There is extensive rock outcrop and surface stone. Main soils: <u>shallow stony loam</u> - L1 (E) and <u>shallow calcareous loam</u> - A2 (E). These rocky slopes have shallow stony soils with limited waterholding capacity and can only be used for light grazing.
EFC EFV	0.4 0.6	Rises formed on fine grained basement rock with minor rock outcrop. EFC Rise with slopes of 3-7% and up to 15 m relief. EFV Very low rises with slopes of less than 2% and 5-10% scalding. Main soils: <u>shallow calcareous loam</u> - A2 (E) and <u>shallow stony loam</u> - L1 (E). The soils are shallow, stony and alkaline, but have open structure and moderate waterholding capacity. Cropping potential is limited due to the low rainfall.
ESW	0.2	Low stony rise, 10 m high, formed on Gumbowie Arkose. Slopes are up to 10%, with 10-20% rock outcrop. The land has been sheet eroded in the past. Main soils: <u>shallow stony loam</u> - L1 (E) and <u>shallow calcareous loam</u> - A2 (E). This land has limited production potential due to low rainfall, shallow soils and rock.
JKB	1.8	Gently sloping outwash fans formed over alluvium with slopes of 1-2%. There is moderate watercourse erosion and minor scalding. Main soils: <u>crusting loam over friable red clay</u> - D4 (V) with <u>calcareous loam</u> - A6/A4 (L). These soils are deep and moderately fertile, but are alkaline and moderately saline at depth. Low rainfall is the main limitation to cropping. Protection of watercourses and overall control of grazing pressure is necessary to limit further erosion.
JLA JLB JLE JLG JLU JLm	14.4 3.7 0.3 6.8 34.2 3.6	Flat to gently inclined plains and outwash fans formed on fine to medium grained alluvium and characterized by sporadic scalding. JLA Flat plains with slopes of less than 1% and minor scalding (less than 5%). JLB Fans with slopes of 1-3% and less than 5% scalding. JLE Drainage depression with minor scalding. JLG Fans with slopes of 1-2% and eroded watercourses. JLU Flat plains with slopes of less than 1% and 10-20% scalded land. JLm Fans with slopes of 2-6%, 10-20% scalding and eroded watercourses. Main soils: <u>crusting loam over friable red clay</u> - D4 (E) with <u>red gradational clay loam</u> - C3 (C) and <u>calcareous loam</u> - A6/A4 (C). The land has been cropped in the past, but severe erosion resulted, as indicated by the scalded patches which still persist. Due to the low rainfall, wind erosion potential is moderate to high, with low to moderate potential for water erosion, depending on slope. Surfaces, especially in the D4 soils, tend to crust, increasing erosion potential. The soils are alkaline, strongly so at depth, with moderate salinity and high sodicity. Eroded watercourses fed by runoff from adjacent steeper rises are an additional limitation in JLm .
KBA KBB KBC	1.9 11.2 0.3	Flats and outwash fans formed on fine to medium grained alluvium. KBA Flats with slopes of less than 2%. KBB Fans with slopes of 2-3%, up to 5% scalding and well defined, sporadically eroded watercourses. KBC Fans with slopes of 3-4% up to 5% scalding and well defined, sporadically eroded watercourses. Main soils: <u>calcareous loam</u> - A6/A4 (V), <u>crusting loam over friable red clay</u> - D4 (L) and <u>red gradational clay loam</u> - C3 (L). This land is at the higher rainfall end of the Land System, with deep



		soils. The surfaces of the D4 and C3 soils tend to crust and shed water, leading to potential erosion in KBB and KBC . All soils are prone to wind erosion when disturbed. Cereal cropping is common on these soils.
KDA KDP	3.0 0.8	Flats and depressions formed on fine to medium grained alluvium. KDA Flats with slopes of less than 1%. KDP Marginally saline depressions. Main soils: <u>red gradational clay loam</u> - C3 (E), with <u>calcareous loam</u> - A6/A4 (E) and <u>crusting loam over friable red clay</u> - D4 (L). The soils are deep and moderately fertile. The flats, except for the saline depressions, are cropped regularly. Wind erosion is a hazard when surfaces are bare and disturbed.
KLB	0.4	Complex of outwash fans and low rises formed on Ulupa Siltstone. Slopes are 2-3%. Main soils and features are as for KcB on fans, and EFC on rises.
KXB	6.3	Outwash fans formed on fine to medium grained alluvium. Slopes are 1-2%. There is significant watercourse erosion in places and 5-10% of the land has been scalded in the past. Main soils: <u>red gradational clay loam</u> - C3 (E) and <u>deep calcareous clay loam</u> - A3 (E), with <u>calcareous loam</u> - A6/A4 (L). These soil are deep and inherently fertile although alkaline. Low and unreliable rainfall prevents cropping, but grazing potential is high provided that cover levels are maintained to prevent further erosion.
KcB	5.8	Outwash fans of 1-2% slope formed on fine to medium grained alluvial sediments. There is minor watercourse erosion and scalding. Main soils: <u>calcareous loam</u> - A6/A4 (E) and <u>crusting loam over friable red clay</u> - D4 (C) with <u>red gradational clay loam</u> - C3 (L). These soils are deep and moderately fertile, although alkaline throughout. Rainfall is too low and unreliable for cropping, but the land is suitable for grazing of perennial shrubs provided that stocking rates are controlled to minimize erosion.
XQC Xe-	1.0 0.7	XQC Old lake beds (usually dry) Xe- Gypseous lunettes flanking the eastern sides of old lake beds. Main soils in lake beds: <u>red gradational clay loam</u> - C3 (E) with <u>calcareous loam</u> - A6/A4 (E) and <u>crusting loam over friable red clay</u> - D4 (L). These soils are deep and moderately fertile but marginally saline. As the depressions tend to accumulate water, they are used for opportunistic cropping. Main soils on lunettes: <u>gypseous silty loam</u> - A8 (D) with low fertility and high susceptibility to wind erosion.
ZD- ZM-	1.1 1.2	Internally draining depressions comprising salt lakes (sometimes inundated), and gypseous lunettes, hummocks and flats. ZD- Seasonally inundated salt lake (Hiles Lagoon). ZM- Complex of gypseous lunettes, hummocks and flats on the eastern side of Hiles Lagoon. Main soils: <u>gypseous silty loam</u> - A8 (lunettes) and <u>salt lake soil</u> - N2 (lake floors). Saline variants of KDP are most likely in old lake beds (no inspections). The gypseous deposits have very low fertility, and are susceptible to wind erosion.

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

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| (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:

- A2** Shallow calcareous loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous loam grading to soft or rubbly carbonate with weathering rock fragments in a silty clay loam matrix, grading to weathering siltstone within 100 cm, and commonly within 50 cm.
- A3** Deep calcareous clay loam (Pedal, Calcic Calcarosol)
Reddish brown calcareous clay loam becoming more clayey and slightly more calcareous with depth over alluvium
- A6/A4** Calcareous loam (Regolithic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous loam to clay loam with increasing clay and carbonate content with depth. A very highly calcareous layer of soft to rubbly carbonate occurs at depths as shallow as 20 cm, and soft or slightly rubbly carbonate in a clay loam to clay matrix continues below 100 cm.



- A8** Gypseous silty loam (Gypsic Calcarosol)
Soft highly calcareous silty loam becoming more clayey with depth and with increasing soft and crystalline gypsum.
- C3** Red gradational clay loam (Calcic / Supracalcic, Red Dermosol)
Medium thickness clay loam grading to a well structured red clayey subsoil with variable soft to rubbly carbonate from 60 cm. The soil grades to alluvium with depth.
- D4** Crusting loam over friable red clay (Calcic, Pedaric, Red Sodosol)
Thin to medium thickness crusting sandy loam to loam, commonly with a bleached subsurface (A2) layer, sharply overlying a friable well structured red clayey subsoil, with minor soft carbonate below 60 cm. The soil grades to alluvium with depth.
- L1** Shallow stony loam (Calcareous, Paralithic, Leptic Tenosol)
Medium thickness non calcareous stony loam overlying weathering rock with soft carbonate at the soil - rock interface. Rock is usually shallower than 50 cm.
- N2** Salt lake soil (Hypersalic Hydrosol)
Clay loam grading to red or grey clay, slightly calcareous throughout and with variable soft and crystalline gypsum. Soil is wet for most of the time.

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

