PNR Pine Ridge Land System

Sandy rises and low hills between Hamley Bridge and Fords

Area: 35.5 km^2

Annual rainfall: 435 – 515 mm average

Geology: Tertiary sands, sandy clays and clays, the sandier forms sometimes indurated to form massive sandstones. Loose sands which have developed as a result of clay leaching have commonly been reworked into low dunes. Exposure of the sediments on dissection slopes has occasionally resulted in alteration to form silcretes which outcrop sporadically. There are small areas of localized clayey outwash sediments. Most materials are mantled by a veneer of soft aeolian carbonate.

Topography: The Land System consists of undulating rises and low hills, 20 to 60 m high with slopes of 3 - 8%. In places, dunes derived from the reworking of sand are draped over the undulating landscape. There is one mapped area of alluvial flats.

Elevation: 250 m (Meaney Hill) in the east to 110 m adjacent to the Light River.

Relief: Maximum relief is 60 m, but 20 - 30 m is more typical.

Soils: The characteristic soils are sandy, usually with clayey subsoils. There are also loamy texture contrast and gradational soils, and cracking clays.

Main soils

G4	Sand over dispersive clay
G1	Sand over red sandy clay
D3	Sandy loam over dispersive red clay
D2a	Loam over well structured red clay

Minor soils

D5	Hard loamy sand over red clay
H3	Deep sand
E3	Brown cracking clay
C3	Gradational clay loam
D2b	Sandy loam over red sandy clay

Main features: The Pine Ridge Land System is an undulating landscape dominated by sand over clay soils. Their significant features include low fertility, waterlogging, water repellence, and high potential for both wind and water erosion. Sub dominant loam over red clay soils are more fertile and less prone to wind erosion, but are poorly structured throughout. Overall production potential is low to moderate.

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

SLU	% of area	Main features #
GCC	11.9	Undulating low hills to 60 m high and ridges to 20 m high with slopes of 4-8%, formed on Tertiary sands, often reworked into low dunes draped over the underlying topography. Main soils: sand over dispersive clay - **G4** (V), sand over red sandy clay - **G1** (C), hard loamy sand over red clay- **D5** (L) and deep sand - **H3** (L). This land is highly infertile with a high wind erosion potential and moderate to severe water repellence.
GEC	78.1	Undulating rises to 30 m high with slopes of 3-8% formed on Tertiary sands, sandy clays and clays. Main soils: sand over dispersive clay - **G4** (E) and sand over red sandy clay - **G1** (E) with hard loamy sand over red clay - **D5** (L), sandy loam over dispersive red clay - **D3** (L), loam over well structured red clay - **D2a** (L) and sandy loam over red sandy clay - **D2b** (M). This land is dominated by sandy texture contrast soils with moderate to low fertility that are susceptible to waterlogging and wind and water erosion. The loamier soils usually have poorly structured hard setting surfaces which tend to shed water and are difficult to work, but they are more fertile. Gypsum will generally help to alleviate this problem. All soils are susceptible to water erosion.
JBE	8.1	Drainage depressions with well defined watercourses, eroded in places. Main soils: sandy loam over dispersive red clay - **D3** (E) and loam over well structured red clay - **D2a** (E). These soils are deep, fertile and moderately well drained, but half have poor subsoil structure which restricts infiltration, affects workability and plant establishment. They are potentially productive with appropriate surface management practices.
TBB	1.9	Gentle slopes of 2-5% formed on clayey sediments. Main soils: brown cracking clay - **E3** (E) and gradational clay loam - **C3** (C) with sandy loam over dispersive red clay - **D3** (L). These soils are predominantly deep, fertile and well structured. Exceptions are the D3 soils which set down hard, shed water and cause patchy emergence. The clayey soils are difficult to manage when wet, but are inherently highly productive. High subsoil boron levels are likely in these soils, so tolerant varieties are needed where symptoms occur.

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:

C3 Gradational clay loam (Calcic, Red Dermosol)
10 - 40 cm clay loam to light clay grading to a well structured red clay, calcareous from about 60 cm, over Tertiary clay.

D2a Loam over well structured red clay (Hypercalcic, Red Chromosol)
25 - 30 cm hard sandy loam to loam over a well structured red clay, highly calcareous from about 55 cm, grading to alluvium or Tertiary clay.

D2b Sandy loam over red sandy clay (Calcic, Red Chromosol / Kandosol)
Thick sandy loam over red sandy clay, calcareous with depth, grading to Tertiary clayey sand to sandy clay at about 100 cm.

D3 Sandy loam over dispersive red clay (Hypercalcic, Red Sodosol)
15 - 40 cm hard sandy loam to sandy clay loam abruptly overlying a red or brown mottled coarsely structured dispersive heavy clay with soft carbonate at about 45 cm grading to Tertiary clay below 100 cm.

D5 Hard loamy sand over red clay (Hypercalcic, Red Sodosol)
10 - 30 cm firm to hard loamy sand to light sandy loam sharply overlying a coarsely structured red sandy clay to clay, calcareous within 50 cm, grading to Tertiary clayey sand to sandy clay within 100 cm.

E3 Brown cracking clay (Brown Vertosol)
Dark coarsely structured seasonally cracking clay becoming browner, more clayey, and more strongly structured and calcareous with depth.

G1 Sand over red sandy clay (Hypercalcic, Red Chromosol / Sodosol)
15 - 55 cm soft sand to loamy sand over a red massive to coarsely prismatic sandy clay loam to light clay, with abundant fine carbonate from about 60 cm, grading to Tertiary clayey sand, sandy clay or sandstone.

G4 Sand over dispersive clay (Hypercalcic, Red / Brown Sodosol)
15 - 40 cm loose loamy sand to sand with a bleached A2 layer, abruptly overlying a red and sometimes brown mottled coarsely columnar sandy clay loam to clay with soft carbonate from about 60 cm (absent in 10% of soils), grading to sandstone or massive sandy clay at about 100 cm.

H3 Deep sand (Arenic, Bleached-Orthic Tenosol)
Very thick bleached sand, organically darkened at the surface, grading to a yellow clayey sand.

Further information: DEWNR Soil and Land Program