

NOB North Boundary Land System

Undulating rises between Punthari and Sanderston

Area: 60.5 km²

Annual rainfall: 315 – 390 mm average

Geology: The land is underlain by Tertiary sediments, mainly Blanchetown Clay. These sediments are overlain by a veneer of highly calcareous windblown material (Woorinen Formation) which is variably soft or rubbly, depending on post depositional wetting and drying. Extensive deposits of windblown Molineaux Sand overlie the landscape.

Topography: The landscape is a series of undulating rises. The more strongly undulating (with slopes up to 6% and relief to 30 m) are sandier, and there is some tendency to east - west sand hill formation on the slopes. The less sandy rises are more subdued, and are usually underlain by calcareous layers at shallow depth. Linear depressions between the rises have weakly defined watercourses which appear to run water occasionally.

Elevation: 80 m to 160 m

Relief: Up to 30 m

Soils: Sandy soils are most common. Some are deep, but most have clayey subsoils. Calcareous sandy loams, gradational loamy sands, and sandy loam texture contrast soils are sub-dominant.

Main soils

Sandy rises

G3/G4 Thick sand over sandy clay

H2/G1 Deep sand / sand over sandy clay loam

Non-sandy rises

A4a Calcareous sandy loam

C1 Gradational loamy sand

A4b Rubbly calcareous sandy loam

Depressions and flats

D5 Sandy loam over red sandy clay loam

A4a Calcareous sandy loam

Main features: The North Boundary Land System is a series of undulating rises characterized by a mixture of sandy surfaced soils and calcareous sandy loams. The sandy soils usually have more clayey subsoils, but their productive potential is nevertheless limited by low fertility, water repellence and wind erosion potential. The calcareous soils are more fertile, but are often moderately shallow over rubble or soft carbonate which restricts water availability. Depressions between the rises have sandy loam texture contrast soils which are moderately deep and fertile.



Soil Landscape Unit summary: 3 Soil Landscape Units (SLUs) mapped in the North Boundary Land System:

SLU	% of area	Main features #
GCB	46.3	Undulating rises up to 30 m high formed over Tertiary sediments. Slopes are 3-6% There has been some reworking of surface sand into low dunes. Main soils: <u>thick sand over sandy clay - G3/G4</u> (V), with <u>deep sand / sand over sandy clay loam - H2/G1</u> (L) on low dunes, and <u>sandy loam over red sandy clay loam - D5</u> (L) and <u>calcareous sandy loam - A4a</u> (L) as for HEE in depressions. The predominant sandy soils are infertile and prone to water repellence and wind erosion. The dispersive subsoils will perch water after prolonged rain, so those profiles with relatively thin surfaces may be affected by waterlogging.
HEE	15.2	Depressions underlain by Tertiary sediments. Weakly defined watercourses run water after heavy rains. Main soils: <u>sandy loam over red sandy clay loam - D5</u> (V) with <u>calcareous sandy loam - A4a</u> (C). These soils are moderately deep, but sandy textures limit nutrient retention capacity. They are susceptible to both wind and water erosion.
SYB	38.5	Undulating rises up to 20 m high with limited areas of sand spreads. Slopes are 2-3%. There is sporadic surface calcrete, up to 20% coverage in places. Main soils: <u>gradational loamy sand - C1</u> (E) and <u>rubbly calcareous sandy loam - A4b</u> (E), with <u>calcareous sandy loam - A4a</u> (L) in lower lying areas and <u>deep sand / sand over sandy clay loam - H2/G1</u> (L) on sand spreads. There is significant soil variation with respect to depth, texture and alkalinity. The most extensive soils are moderately deep but quite sandy, and hence have moderately low fertility. The calcareous soils are heavier but some are shallow over rubble and have restricted moisture holding capacities. The deep sands are infertile and prone to water repellence and wind erosion.

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:

Sandy rises

G3/G4 Thick sand over sandy clay (Hypercalcic, Brown Sodosol)

Thick to very thick grey brown loose sand with a bleached A2 layer, sharply overlying a brown or red mottled dispersive sandy clay loam to sandy clay becoming more clayey with depth and with abundant soft carbonate from about 60 cm. Tertiary clay underlies the soil below 100 cm.

H2/G1 Deep sand / sand over sandy clay loam (Arenic, Red-Orthic Tenosol / Red Chromosol)

Thick to very thick loose sand, with a red sandy clay loam subsoil at depths ranging from 50 cm to more than 100 cm.

Non-sandy rises

A4a Calcareous sandy loam (Regolithic, Hypercalcic Calcarosol)

Calcareous sandy loam to sandy clay loam becoming more clayey and calcareous with depth over Class III A or Class I carbonate from about 30 cm, grading to Tertiary clay below 100 cm.

C1 Gradational loamy sand (Hypercalcic, Brown Kandosol / Chromosol)

Medium thickness loamy sand over a massive brown or red sandy clay loam, highly calcareous from about 40 cm, continuing below 100 cm.



A4b Rubbly calcareous sandy loam (Regolithic, Lithocalcic Calcarosol)

Calcareous sandy loam over Class III C carbonate rubble from about 20 cm, grading to a very highly calcareous sandy clay loam with decreasing rubble content, continuing below 100 cm.

*Depressions and flats***D5** Sandy loam over red sandy clay loam (Hypercalcic, Red Chromosol)

Medium thickness sandy loam to loamy sand abruptly overlying a massive red sandy clay loam with abundant soft carbonate from about 40 cm. Clay content increases with depth, as carbonate decreases and grades to Tertiary clay below 100 cm.

A4a Calcareous sandy loam (Regolithic, Hypercalcic Calcarosol)

As for non-sandy rises.

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

