BGP Barunga Gap Land System

Strongly dissected slopes adjacent to the eastern edge of the Hummock Range south west of Snowtown.

Area: 17.4 km^2

Annual rainfall: 405 – 485 mm average

Geology: The Land System comprises a sequence of clayey sedimentary layers of Tertiary and Pleistocene age, with characteristic outcrops of remnant Tertiary sandstones and boulder beds. They are variably exposed as a result of dissection by watercourses. Basement siltstones protrude through the sediments in places. The system has been mantled by windblown carbonates which occur in subsoils as fine segregations, rubble or occasionally sheet calcrete.

Topography: Gently inclined slopes of 3 - 10% abutting the eastern edge of the Hummock Range near Barunga Gap. Closely spaced eastward flowing watercourses have dissected the slopes to depths of up to 20 m; these dissection slopes have gradients of up to 20%. The strong dissection is a striking feature of the land system. Although severely eroded in the past, most of the watercourses are relatively stable at present. There is a variable surface cover of quartzite stones - 20% or more in places.

Elevation: 250 m along the upper (western edge) to 140 m on the lower margin

Relief: Overall east-west relief from the upper to lower margins of the Land System is 110 m. Typical north-south relief (perpendicular to watercourses) is 30 m.

Soils: There is a range of sandy to clayey soils in this complex landscape

Main soils

D5 Hard loamy sand over dispersive clay
C4 Hard gradational red clay loam
D3 Hard sandy clay loam over dispersive red clay
B6/B4 Shallow loam over clay on calcrete

Minor soils

C3 Friable gradational clay loam
E2 Red cracking clay

Main features: The Barunga Gap Land System is a moderately sloping landscape characterized by deeply incised watercourses indicating extensive erosion in the past. There are two main soil classes. Poorly structured dispersive soils have moderate fertility, high erosion potential and adversely affect plant establishment and root growth. They are difficult to work. The other soil class is more clayey, better structured and more fertile.

Soil Landscape Unit summary: 1 Soil Landscape Unit (SLU) mapped in the Barunga Gap Land System:

SLU	% of area	Main features #
HXH	100.0	Long gently inclined (3-10%) slopes formed on unconsolidated clayey sediments, Tertiary sandstones or deeply weathered basement rock. The slopes are strongly dissected by watercourses which have created valleys up to 30 m deep with side slopes of up to 20%. There is a variable surface quartzite stone cover of up to 20%. Main soils: hard loamy sand over dispersive clay - **D5** (E), hard gradational red clay loam - **C4** (L) and hard sandy clay loam over dispersive red clay - **D3** (L), with friable gradational clay loam - **C3** (M), red cracking clay - **E2** (M) and shallow loam over clay on calcrete - **B6/B4** (M). The soils with sodic subsoils (**C4**, **D5** and **D3**, about 70% of the soils on the slopes) are poorly structured and dispersive, and therefore susceptible to poor infiltration, water erosion, surface sealing and emergence problems. Fertility is moderate. The heavier soils (gradational clay loams and cracking clays) are more fertile and stable. All soils have high boron levels at moderately shallow depths and are highly sodic in the deep subsoil. There are slight limitations due to salinity and waterlogging throughout. Watercourses are deeply incised into erodible sediments so there is a high potential for damage in floods.

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:

B6/B4 Shallow loam over clay on calcrete (Petrocalcic, Red Chromosol / Dermosol)
Medium thickness sandy loam to clay loam grading to a well structured red clay over calcrete within 50 cm capping weathering rock or unconsolidated sediment.

C3 Friable gradational clay loam (Hypercalcic, Red Dermosol)
Friable clay loam grading to a well structured red clay with abundant fine Class I carbonate at moderately shallow depth, formed over reddish coarsely structured heavy clay or weathering siltstone.

C4 Hard gradational red clay loam (Sodic, Hypercalcic, Red Dermosol)
Medium thickness hard setting clay loam grading to a hard red heavy clay with coarse prismatic structure and fine Class I carbonate from about 50 cm, overlying a coarsely structured heavy clay from about 100 cm.

D3 Hard sandy clay loam over dispersive red clay (Calcic, Red Sodosol)
Hard sandy clay loam abruptly overlying a coarsely structured red heavy clay grading to fine Class I carbonate over coarsely structured heavy clay.

D5 Hard loamy sand over dispersive clay (Calcic / Lithocalcic, Red Sodosol)
Hard loamy sand to sandy loam abruptly overlying a red coarsely structured dispersive clay, grading to fine or rubbly Class III A, B or C carbonate, over sandstone or massive sandy clay sediments.

E2 Red cracking clay (Epipedal, Red Vertosol)
Seasonally cracking red clay becoming more clayey, coarser structured and calcareous with depth.

Further information: DEWNR Soil and Land Program