HUM Hummocks Land System

Barunga and Hummocks Ranges - a well defined range of quartzite hills extending from South Hummocks to Wandearah

Area: 186.0 km^2

Annual rainfall 370 – 580 mm average

Geology: Quartzites and quartzitic sandstones of the ABC Range Formation, generally capped by soft to hard secondary carbonates. Remnant Tertiary clays, sandstones and silcretes occur in places.

Topography: Undulating to steep range of low hills to hills extending in a long, narrow band with a north - south orientation. The western edge is sharply defined by a moderately steep to steep escarpment which rises abruptly from low relief outwash fans and plains. At the top of the escarpment is a discontinuous flat summit surface which gives way to strongly dissected slopes on the eastern side. These slopes grade to the gently inclined fans of the Snowtown and Port Clinton Land Systems to the east.

Elevation: The elevation of the foot of the western escarpment varies from 70 m in the north to 300 m near Bumbunga Hill and back to 200 m at the southern end. The eastern edge is lower, ranging from 70 m in the north, as high as 250 m near Barunga Gap, and back to 130 m at the southern end. The highest points are 213 m (Dennis Hill in the north), 434 m (Illawarra Hill - central) and 330 m (South Hummocks in the south).

Relief: Relief is highly variable but reaches 200 m in places

Soils: The soils are generally shallow to moderately deep over basement rocks. Calcareous profiles with variable rubble are most common, but there are significant areas of loams with red clayey subsoils, and shallow stony loams associated with outcropping rock.

Main soils

Soils formed on basement rock on slopes

C2 Shallow gradational red loam on rock - extensive
A2a Shallow rubbly calcareous loam - common
D1 Loam over red clay on rock - limited (lower slopes)

Minor soils

Soils formed on basement rock on slopes

L1 Shallow stony loam - steeper, rocky slopes
A2b Shallow calcareous loam

Soils formed on alluvium on lower slopes or formed on Tertiary sediments

D3b Hard clay loam over dispersive red clay - Tertiary remnants
D2/D3a Hard loam over thick red clay - alluvium
C3 Gradational red loam - alluvium

Main features: The Hummocks Land System is a prominent range characterized by mainly non arable slopes and shallow soils which are usually stony and loamy with mixed calcareous and non calcareous profiles. The non arable slopes are often highly exposed and eroded. Landslips have occurred in the past on the steep west facing escarpment. Pasture productivity is restricted by spring moisture shortages and exposure. The arable slopes have productive potential, particularly where the soils are deeper, but erosion potential in moderate to high.

Soil Landscape Unit summary: 13 Soil Landscape Units (SLUs) mapped in the Hummocks Land System:

SLU	% of area	Main features #
ATC ATD ATE ATI ATc ATe	31.5 2.1 14.8 3.5 2.1 5.7	Non arable rocky slopes formed on quartzites. **ATC** Low hills with slopes of 10-30%, relief to 100 m, up to 20% surface quartzite, sandstone and calcrete and minor rock outcrop. **ATD** Low hills with slopes of 30-50%, relief to 100 m, more than 20% surface quartzite, sandstone and calcrete, and up to 10% rock outcrop. **ATE** Hills with slopes of 30-50%, relief of 100-200 m, more than 20% surface quartzite, sandstone and calcrete, and up to 10% rock outcrop. **ATI** Low hills as for **ATC**, but with eroded watercourses. **ATc** Escarpment slopes of 20-30% subject to landslips and with more than 20% surface quartzite and sandstone. **ATe** Escarpment slopes of 30-50% subject to landslips and with more than 20% surface quartzite and sandstone. Main soils: shallow rubbly calcareous loam - **A2a** (E) and shallow gradational red loam on rock - **C2** (E), with loam over red clay on rock - **D1** (L) and shallow stony loam - **L1** (L). The land is all non arable due to steep slopes, erosion potential and rockiness. The soils are generally shallow and stony and much of the land is subject to severe wind exposure, reducing potential pasture productivity. Significant areas of the western escarpment are affected by (or susceptible to) landslip.
EBC EBD EBH EBI EBZ	6.5 16.9 0.4 4.7 5.8	Rises and low hills formed on quartzites with variable surface quartzite, sandstone and calcrete. Remnant Tertiary clays and ironstone gravels occur in patches. **EBC** Gently sloping rises and low hills with slopes of 4-12%, relief of up to 70 m and up to 10% surface stone and no rock outcrop. **EBD** Moderate rocky slopes of 10-20%, with relief of up to 100 m, 10-20% surface stone and minor rock outcrop. **EBH** Low hills with slopes of 4-12% and eroded watercourses. There is 10-20% surface stone and minor outcrop. **EBI** Moderate slopes of 10-20% with relief to 100 m and eroded watercourses. There is 10-20% surface stone and minor outcrop. **EBZ** Gently undulating to flat crests with slopes of up to 10% and up to 10% surface stone. Main soils: shallow gradational red loam on rock - **C2** (E), with shallow rubbly calcareous loam - **A2a** (C), loam over red clay on rock - **D1** (C) and shallow calcareous loam - **A2b** (L). Hard clay loam over dispersive red clay - **D3b** (L) occurs on remnant Tertiary sediments. Although the soils are stony and often shallow this land is fully arable. All areas are sloping and therefore susceptible to erosion, but because much land lies below long steep slopes (AT*), the potential is greater than usual.
EXH EXI	4.5 1.5	Lower slope complex of soils formed on quartzite highs, and associated alluvium. **EXH** Slopes of 4-12%. **EXI** Slopes of 10-20%. Main soils: hard loam over thick red clay - **D2/D3a** (E) and gradational red loam - **C3** (L) on outwash slopes, and soils as for **EBH/EBI** (E) on bedrock highs. Poorly structured soils with infiltration, workability and emergence problems are the main feature. The land is particularly susceptible to erosion because of adverse soil properties, slopes and potential for significant run-on from upslope.

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:

A2a Shallow rubbly calcareous loam (Lithic, Lithocalcic / Supracalcic Calcarosol)
Calcareous quartzite gravelly loam to clay loam overlying rubbly carbonate within 50 cm and grading to weathering quartzite within 100 cm.

A2b Shallow calcareous loam (Paralithic, Calcic / Hypercalcic Calcarosol)
Calcareous, quartzite gravelly, loam to clay loam overlying soft carbonate within 50 cm and grading to weathering quartzite within 100 cm.

C2 Shallow gradational red loam on rock (Supracalcic / Lithocalcic, Red Dermosol)
Medium thickness loam to clay loam grading to a red well structured stony clay over rubbly carbonate at shallow depth with weathering rock within 100 cm, and often with 50 cm.

C3 Gradational red loam (Supracalcic / Lithocalcic, Red Dermosol)
Medium thickness loam to clay loam grading to a red well structured stony clay over rubbly carbonate at shallow depth over alluvium within 100 cm.

D1 Loam over red clay on rock (Calcic / Hypercalcic, Red Chromosol)
Medium thickness loam to clay loam over a red well structured stony clay grading to soft carbonate within 50 cm and overlying weathering rock within 100 cm.

D2/D3a Hard loam over thick red clay (Calcic, Red Chromosol / Sodosol)
Medium thickness hard loam to clay loam over a red clay with soft carbonate at depth, grading to alluvium.

D3b Hard clay loam over dispersive red clay (Hypercalcic, Red Sodosol)
Medium thickness hard clay loam to sandy loam over a coarsely structured dispersive red clay, calcareous at depth over Tertiary clay or sandstone within 100 cm.

L1 Shallow stony loam (Lithic, Leptic Rudosol)
Stony sandy loam to clay loam over quartzite at shallow depth.

Further information: DEWNR Soil and Land Program