NOH North Hills Land System

Strongly dissected low hills and outwash fans south of Brownlow

Area: 37.6 km^2

Annual rainfall: 275 – 360 mm average

Geology: The land system is formed on mixed rocks including phyllites and metasiltstones of the Tapley Hill and Wilyerpa Formations and metamorphosed Appila Tillites. On the eastern side the rocks are covered by extensive beds of Quaternary colluvial and alluvial sediments. These are mainly quartz gravelly clays or clay loams. All rocks and sediments are mantled by soft carbonates.

Topography: The North Hills Land System is a section of the eastern slopes of the Northern Mt. Lofty Ranges. Whereas most of the eastern slopes in the district are gently inclined and weakly dissected (Sutherlands Land System), the North Hills area is moderately steep to steep and strongly dissected. A remarkable feature of the system is the sharpness of the boundary which separates it from adjacent land to the north, west and south. The System consists of rocky low hills with slopes of 10 - 40% in the west, and dissected outwash fans with slopes of 3 - 10% in the east. Deeply incised and eroded water courses about one kilometre apart, and converging towards the east are the outstanding feature of the land. These water courses arise in the hills and flow eastwards across the fans in two major and two minor creek systems.

Elevation: 310 m on the western edge to 130 m on the eastern edge.

Relief: Maximum relief is 50 m.

Soils: Calcareous loams dominate the landscape. They are mostly shallow, but are deep on lower slopes.

Main soils

A2	Shallow calcareous loam over rock - extensive (hillslopes)
A6	Deep non-rubbly calcareous loam - common (fans)
A5	Deep calcareous loam over - common (fans)
B3/L1	Shallow stony loam - limited (hillslopes)

Main features: The North Hills Land System consists of two distinctive components. In the west the land is moderately steep and rocky with shallow, stony and mostly calcareous soils. It is all rough grazing country. The eastern half is a strongly dissected outwash fan with moderately deep calcareous soils on gentle slopes, interrupted by gullies with steep rocky sides and containing eroded watercourses. This land is only semi arable due a combination of moderate erosion potential, marginal rainfall and stony soils (limiting moistureholding capacity). Erosion control is the main management issue.

Soil Landscape Unit summary: 4 Soil Landscape Units (SLUs) mapped in the North Hills Land System:

SLU	% of area	Main features #
AYI	42.5	Moderately steep rocky low hills with relief of up to 50 m and slopes of 10-30%. Watercourses are well defined and usually eroded. There is variable surface stone (mostly phyllite and quartzite) ranging from 10-50%. Main soils: shallow calcareous loam over rock - **A2** (V) with shallow stony loam - **B3/L1** (C). This land is entirely rough hill country with shallow stony soils having very limited waterholding capacity and low fertility. Moderate slopes and extensive surface stone generate significant run off, so erosion is a major hazard. Extensive watercourse erosion has occurred in the past as a result of inadequate levels of surface cover.
AZp	14.9	Gullies eroded into the slopes of **KVH** down to the basement rock. The gullies are up to 15 m deep with variable slopes up to 20%. Watercourses are invariably eroded, severely in places. There is extensive surface stone. Soils are as for **AYI** and **KVH**. This land is of little agricultural value, having generally shallow soils and a high erosion potential. Most of the land has a cover of trees, but over-grazing has resulted in erosion of the fragile slopes. Grazing management is critical.
EEI	2.7	Moderate slopes of 10-15% with eroded watercourses, formed on phyllites and metasiltstones. There are 10-20% surface calcrete and basement rock fragments. Main soil: shallow calcareous loam over rock - **A2** (D). This soil has restricted waterholding capacity due to moderately shallow depth over bedrock. Fertility is generally low to moderate due to low clay content and high pH, but structure, drainage and aeration are good. Very high subsoil pH levels may restrict root growth and water use.
KVH	39.9	Gently inclined fans with slopes of 3-10% and weakly incised eroded watercourses. There is a 10-20% cover of surface quartzite and calcrete stones. Main soils: deep non-rubbly calcareous loam - **A6** (E) and deep calcareous loam over alluvium - **A5** (E). These soils are moderately deep and have open structure, but may have nutrient supply problems due to their high pH. However the land is only semi arable due to a combination of moderate erosion potential, marginal rainfall and stony soils (limiting moisture holding capacity).

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:

A2 Shallow calcareous loam over rock (Paralithic, Calcic Calcarosol)
10 - 15 cm calcareous sandy loam to loam grading to a highly calcareous brown clay loam with abundant soft carbonate from 25 cm, and weathering rock at 55 cm.

A5 Deep calcareous loam over alluvium (Regolithic, Hypercalcic / Lithocalcic Calcarosol)
10 - 30 cm stony calcareous loam grading to abundant soft to rubbly carbonate overlying a reddish stony clay from 50 cm, continuing below 100 cm.

A6 Deep non rubbly calcareous loam (Regolithic, Calcic Calcarosol)
10 - 20 cm calcareous loam to clay loam grading to a very highly calcareous brown clay loam to clay merging with clayey alluvium from about 100 cm.

B3/L1 Shallow stony loam (Petrocalcic / Lithic, Leptic Tenosol / Rudosol)
15 - 30 cm stony sandy loam to loam directly overlying calcrete or basement rock.

Further information: DEWNR Soil and Land Program