SLH Sugar Loaf Hill Land System

Series of rises and outwash fans east of the Barrier Highway between Terowie and Oodlawirra.

Area: 128.4 km^2

Annual rainfall: 250 – 350 mm average

Geology: Fine grained rocks of the Tapley Hill and Mintaro Shale Formations, with beds of Appila Tillite. Extensive aprons of outwash sediment are associated with the basement rock highs. Both rocks and sediments are capped by aeolian carbonates which vary from soft fine grained material, often occurring in weathering rock fissures, through to dense rubbly calcrete at shallow depths in the soil.

Topography: The land system is a series of north - south oriented basement rock rises and occasional low hills, flanked by very gently inclined aprons (outwash fans) of alluvium. Slopes on the rises are usually less than 10%, but there are occasional slopes to 20%. The fans are always less than 8% slope. Sporadic scalding occurs on both rises and fans, evidence of severe erosion in the past.

Elevation: 610 m, two km east of Sugar Loaf Station, to 480 m near Hiles Lagoon

Relief: Maximum relief is 50 m, but commonly 10 - 25 m

Soils: Most soils are deep over alluvium and include calcareous and gradational loams, and loam over clay soils. Shallow loamy soils predominate on rises.

Main soils

Soils formed on alluvium (flats and fans)

C3 Gradational loam
A4 Calcareous loam
D4 Loam over friable red clay

Soils formed on basement rocks (rises)

L1 Shallow stony sandy loam to loam
A2 Shallow calcareous loam

Minor soils

A3 Deep calcareous loam - flats and fans
C2 Shallow gradational loam - rises

Main features: The Sugar Loaf Hill Land System is characterized by mostly shallow calcareous soils on gentle slopes. However it is low rainfall which is the main determinant of land use and productivity. Although cropped in the past, the rainfall is too low and unreliable, and crop failures inevitably led to erosion, the scars of which are still evident in places. Adequate cover must be kept on these soils. Being calcareous, they tend to powder when dry and disturbed, thereby creating a wind and water erosion hazard. Low intensity grazing of shrub-based pasture is probably the most sustainable form of primary production.

Soil Landscape Unit summary: 14 Soil Landscape Units (SLUs) mapped in the Sugar Loaf Hill Land System

SLU	% of area	Main features #
AAC	4.5	Rocky low hills, 50 m high, with slopes of 8-20%. Main soils: shallow calcareous loam - **A2** (E) and shallow stony sandy loam to loam - **L1** (E). Low rainfall and shallow stony soils limit the productivity of this land to sparse grazing. It is mostly uncleared.
AHB AHC	2.3 2.0	Rocky ridges formed on Appila Tillite. **AHB** Ridges to 50 m high, with slopes to 20%. **AHC** Ridges to 40 m high with slopes of 10-20%. Main soils: shallow stony sandy loam - **L1** (E) and shallow calcareous loam - **A2** (E). Shallow soils, moderate slopes and extensive surface stone and rock outcrop restrict use of these landscapes to rough grazing.
ESB ESC ESD ESV ESW	2.5 11.5 0.4 0.5 5.6	Rises formed on basement rocks, with rocky reefs occupying about 20% of the land surface. Some slopes are affected by sporadic scalding. **ESB** Low rises with slopes of less than 4%. **ESC** Rises 10-25 m high with slopes of 4-12%. **ESD** Stony crests with slopes of 10-18%. **ESV** Slight rises with slopes of 2-3% and sporadic scalding. **ESW** Rises 10-20 m high with slopes of 3-8% and sporadic scalding. Main soils: shallow stony sandy loam to loam - **L1** (E) and shallow calcareous loam - **A2** (E). This land is very marginal for cropping due to the combination of low rainfall, shallow stony soils and rocky reefs, restricting the area of land which can be worked. The rocky areas generate moderate runoff which increases erosion potential. Wind erosion is also a hazard when cover is low. Scalded areas are particularly vulnerable.
KQB KQC KQV KQo	39.6 2.8 7.8 0.8	Outwash fans formed on calcreted alluvium. The land is variably scalded with minor very low basement rock rises. **KQB** Fans with slopes of 1-3%, minor scalding and minor water course erosion. **KQC** Fans with slopes of 3-8%. **KQV** Fans with slopes of 1-3%, moderate scalding and minor water course erosion. **KQo** Drainage depression with slopes of 2-4%, moderate scalding and water course erosion. Main soils: calcareous loam - **A4** (E), loam over friable red clay - **D4** (C) and gradational loam - **C3** (C), with shallow calcareous loam - **A2** (M) on low rises. The soils are commonly shallow, although deeper profiles occur, with good water holding capacities and fertility. However, low rainfall sets a permanent limit on productivity. Erosion by both wind and water is a constant threat - adequate ground cover must be maintained.
KXA KXB	5.5 14.2	Complex of outwash fans formed on alluvium, and basement rock rises formed on interbedded tillites and siltstones. **KXA** Very gentle slopes of less than 1%. **KXB** Very gently sloping fans and low rises with slopes of less than 3%. Main soils: gradational loam - **C3** (E) and deep calcareous loam - **A3** (E) on fans, with shallow calcareous loam - **A2** (M) and shallow gradational loam - **C2** (M) on rises. Soil depth varies according to landscape position, so the higher ground has lower water holding capacity then the flats. However, all of the land has good grazing potential.

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 (Paralithic, Hypercalcic / Supracalcic Calcarosol)
Calcareous loam grading to soft or nodular carbonate in weathering basement rock within 50 cm.

A3 Deep calcareous loam (Regolithic, Calcic Calcarosol)
Calcareous loam grading to a moderately calcareous clay loam to light clay with occasional rubble and stone.

A4 Calcareous loam (Regolithic, Lithocalcic / Hypercalcic Calcarosol)
Calcareous loam overlying dense rubbly calcrete or softer finely divided carbonate, becoming less rubbly with depth and grading to alluvium.

C2 Shallow gradational loam (Calcic, Red Dermosol)
Loam to clay loam grading to a well structured red clay with soft carbonate at depth, over weathering siltstone within 100 cm.

C3 Gradational loam (Pedaric, Red Dermosol)
Medium thickness loam grading to a well structured red clay, calcareous with depth over alluvium.

D4 Loam over friable red clay (Calcic, Pedaric, Red Sodosol)
Medium thickness sandy loam to sandy clay loam abruptly overlying a very friable well structured red clay, moderately calcareous with depth over alluvium.

L1 Shallow stony sandy loam to loam (Paralithic, Leptic Tenosol / Rudosol)
Shallow stony sandy loam to loam over basement rock, usually with soft or nodular carbonate in fissures.

Further information: DEWNR Soil and Land Program