NAH Nagel Hill Land System

Undulating stony rises west of Walker Flat

Area: 138.1 km^2

Annual rainfall: 280 – 325 mm average

Geology: The land is formed on sheet and rubbly calcrete, overlain in places by softer or less rubbly carbonates of the Woorinen Formation. The calcretes overlie Blanchetown Clay which may occur within a metre or two of the surface where the calcrete has been removed. There are limited areas of Molineaux Sand overlying the main land surface.

Topography: The landscape is gently undulating, and comprises mainly gently inclined rises and broad depressions. There are limited areas of stony flats and depressions where sheet calcrete is near the surface. Overlying the undulating rises are limited areas of moderate irregular sandhills. Adjacent to the Murray River valley are some moderately inclined slopes where the normal Nagel Hill land surface has been dissected by streams flowing into the river.

Elevation: 60 - 105 m

Relief: 20 - 40 m

Soils: Calcareous loamy sands to sandy loams are predominant. Some are shallow over calcrete, others are deep. Moderately deep to deep sandy soils are also common.

Main soils

Stony land

B2 Shallow calcareous sandy loam

Rises and flats

A4a Rubbly calcareous loamy sand

A4b Calcareous sandy loam

Sand hills and spreads

H2a Deep sand

H2b Moderately deep sand

Minor soils

G1 Loamy sand over red sandy clay loam

Main features: The Nagel Hill Land System is characterized by gently undulating rises and depressions with mixed shallow stony calcareous loamy sands and deeper calcareous sandy loams. These soils are mostly arable, although some patches are too stony. Fertility is moderately low but the soils are relatively erosion resistant. Overlying the rises are limited areas of irregular sandhills. Soils are infertile, often water repellent and highly susceptible to wind erosion.

Soil Landscape Unit summary: 6 Soil Landscape Units (SLUs) mapped in the Nagel Hill Land System:

SLU	% of area	Main features #
QHA QHE	5.0 1.0	Stony flats and depressions formed on calcrete. **QHA** Gently undulating flats. **QHE** Depressions. Main soil: shallow calcareous sandy loam - **B2** (D). This land is non-arable due to the predominant shallow stony soils with calcrete at or near the surface.
SMH	2.1	Gentle to steep slopes created by the down cutting of the River Marne. Up to 30% of the gentle and moderate slopes are mantled by sand spreads. **SMH** Moderate slopes with eroded watercourses. Underlain by variably dissected Tertiary sediments. Main soils: deep calcareous sandy loam - **A4a** (E), rubbly calcareous sandy loam - **A4b** (E), and shallow rubbly calcareous sandy loam - **B2** (C), with deep calcareous sand - **H2a** (L) and non calcareous sand - **H2b** (L) on sand spreads. No soils data for the river flats. The soils are generally moderately deep and moderately fertile, but landscape conditions determine agricultural potential. The gently inclined upper slopes are fully arable, with few limitations to productivity. The moderate and moderately steep slopes are marginal for cropping due to the risk of erosion, but are suitable for appropriately managed perennial crops.
SUB	74.6	Gently undulating rises formed on rubbly or soft carbonate overlain by irregular sandhills and spreads. Main soils: rubbly calcareous loamy sand - **A4a** (C) and shallow calcareous sandy loam - **B2** (C) on rises with variable calcrete stone, with deep sand - **H2a** (L) and moderately deep sand - **H2b** (L) on sandy areas. Calcareous sandy loam - **A4b** and loamy sand over red sandy clay loam - **G1** are minor soils. This land is mostly arable, although restricted water holding capacity, rockiness, low fertility and wind erosion potential are moderate to high limitations to productivity depending on the soil type.
SWE	16.4	Depressions underlain by either sheet calcrete or highly calcareous medium textured materials. Main soils: loamy sand over red sandy clay loam - **G1** (E), calcareous sandy loam - **A4b** (E) and shallow calcareous sandy loam - **B2** (E). The G1 soils and A4b soils are moderately deep and relatively fertile. Limitations to productivity are slight. The B2 soils however are shallow and have restricted water holding capacity and marginal fertility.
U-B	0.9	Moderate irregular sandhills. Main soils: deep sand - **H2a** (E) and moderately deep sand - **H2b** (E). These soils are infertile, prone to water repellence and highly erodible. They have been severely eroded in the past. They have limited value for cropping or grazing and without suitable conservation management are liable to drift.

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:

A4a Rubbly calcareous loamy sand (Regolithic, Supracalcic / Lithocalcic Calcarosol)
Calcareous loamy sand to sandy loam, slightly more clayey with depth over rubbly Class III B or III C carbonate from about 20 cm. Rubble content decreases with depth.

A4b Calcareous sandy loam (Regolithic, Hypercalcic Calcarosol)
Calcareous sandy loam grading to a highly calcareous sandy clay loam to light clay continuing below 100 cm.

B2 Shallow calcareous sandy loam (Petrocalcic Calcarosol)
Medium thickness calcareous loamy sand to sandy loam with variable rubble over sheet calcrete within 30 cm.

G1 Loamy sand over red sandy clay loam (Calcic, Red Chromosol)
Thick to very thick loamy sand to sandy loam over a red massive sandy clay loam, highly calcareous from about 80 cm and continuing below 100 cm.

H2a Deep sand (Arenic Rudosol / Basic, Arenic, Brown-Orthic Tenosol)
Very thick loose red or brown sand continuing below 100 cm.

H2b Moderately deep sand (Calcareous, Arenic, Red-Orthic Tenosol)
Thick loose sand over carbonate rubble or calcrete at between 50 and 100 cm.

Further information: DEWNR Soil and Land Program