

MSH Monash Land System

Gently undulating dunefields and flats in the non agricultural land north of Monash

Area: 123.7 km²

Annual rainfall: 245 – 265 mm average

Geology: The land is underlain by Tertiary sediments (limestones and clayey sands / sandy clays), generally with more clayey material at the top (possibly Blanchetown Clay or equivalent). These sediments are overlain by soft to rubbly very highly calcareous sandy clay loams of the Woorinen Formation, which have hardened in places to rubbly forms. Sheet calcrete in places may be Bakara material. Extensive deposits of Molineaux Sand overlie the calcareous layers.

Topography: The landscape is gently undulating with dunefields of parallel low to moderate east - west sandhills overlying gently undulating rises the most common feature. There are broad lower lying flats with variable proportions of sandhills, a substantial stony flat with 30-40% low rounded sandhills, and a large depression with extensive sandhills.

Elevation: 26 - 73 m

Relief: Up to 20 m

Soils: The soils vary from deep sands to moderately deep calcareous loamy sands to sandy loams with variable rubble content. There are also minor areas of shallow stony sandy loams over calcrete.

Main soils

Sandhills

H2 Deep slightly calcareous sand

Flats and rises

C1a Gradational loamy sand over clay

A4 Calcareous loamy sand

Minor soils

B2 Shallow calcareous sandy loam over sheet calcrete

C1b Gradational loamy sand

Main features: The Monash Land System is largely uncleared as the rainfall is too low for safe and economic cropping. The soils vary from deep low fertility and erosion prone sands (on low to moderate sandhills) to moderately deep calcareous loamy sands to sandy loams with variable rubble content on flats and low rises. There are also minor areas of shallow stony sandy loams over calcrete. These soils are less susceptible to erosion but have limited waterholding capacities.



Soil Landscape Unit summary: 5 Soil Landscape Units (SLUs) mapped in the Monash Land System:

SLU	% of area	Main features #
SaA	6.6	Flats with up to 10% low rounded sandhills. Main soils: <u>gradational loamy sand over clay</u> - C1a (E) with <u>calcareous loamy sand</u> - A4 (E) and <u>deep slightly calcareous sand</u> - H2 (M). These soils are moderately deep and alkaline with moderately low erosion potential.
SgA	12.7	Very gently undulating flats with 10-30% low rounded sandhills. Blanchetown Clay is generally absent from these flats. Main soils: <u>gradational loamy sand</u> - C1b (E) and <u>calcareous loamy sand</u> - A4 (E) with <u>deep slightly calcareous sand</u> - H2 (C) on sandhills. This land is similar to SaA, except for the higher proportion of sandhills which increases erosion potential.
UAJ	5.9	Depressions between the undulating dunefields of UII, with 30-60% low rounded sandhills. Blanchetown Clay is generally absent in these depressions. Main soils: <u>deep slightly calcareous sand</u> - H2 (E) on sandhills, with <u>gradational loamy sand</u> - C1b (E) and <u>calcareous loamy sand</u> - A4 (C) in swales. This land is similar to SgA, except for the higher proportion of sandhills which increases erosion potential.
UII	67.6	Undulating rises with 50-60% low to moderate parallel sandhills. Intervening swales are 100-200 m wide. Main soils: <u>deep slightly calcareous sand</u> - H2 (E) on sandhills, and <u>gradational loamy sand over clay</u> - C1a (C) with <u>calcareous loamy sand</u> - A4 (L) in swales. The sandhills are the dominant feature of this land, so wind erosion potential is a major limitation.
UMJ	7.2	Flats with 30-40% low sandhills. Swales are 100 - 200 m wide, but may be up to 400 m wide. Main soils: <u>deep slightly calcareous sand</u> - H2 (E) on sandhills, and <u>shallow calcareous sandy loam over sheet calcrete</u> - B2 (E) with <u>calcareous loamy sand</u> - A4 (C) in swales. The low sandhills are moderately susceptible to wind erosion; the soils of the swales are generally shallow and stony.

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

(D)	Dominant in extent (>90% of SLU)	(C)	Common in extent (20–30% of SLU)
(V)	Very extensive in extent (60–90% of SLU)	(L)	Limited in extent (10–20% of SLU)
(E)	Extensive in extent (30–60% of SLU)	(M)	Minor in extent (<10% of SLU)

Detailed soil profile descriptions:

- A4** Calcareous loamy sand (Supracalcic / Lithocalcic Calcarosol)
Medium thickness calcareous sand to sandy loam, grading to a highly calcareous sandy clay loam overlying rubbly Class III B or III C carbonate at depths ranging from 25 to 70 cm.
- B2** Shallow calcareous sandy loam over sheet calcrete (Petrocalcic Calcarosol)
Medium thickness calcareous loamy sand to sandy loam grading to sandy clay loam over hard calcrete at depths ranging from between 25 and 40 cm.
- C1a** Gradational loamy sand over clay (Sodic, Hypercalcic, Red Kandosol)
Medium thickness loamy sand to sandy loam grading to a friable red sandy clay loam over soft to rubbly carbonate at depths ranging from 35 to 75 cm. This grades to coarsely structured medium to heavy clay below 100 cm.
- C1b** Gradational loamy sand (Epibasic, Regolithic, Calcic / Lithocalcic Calcarosol)
Medium thickness sand to sandy loam grading to a friable red sandy clay loam over soft to rubbly carbonate at depths ranging from 45 to 75 cm. This grades to highly calcareous sandy clay loam with depth.
- H2** Deep slightly calcareous sand (Hypocalcic Calcarosol)
Very thick reddish slightly calcareous sand, with segregations of soft carbonate at variable depth depending on erosional history. Usually sandy for several metres.

Further information: [DEWNR Soil and Land Program](#)

