

EME East Meningie Land System

(Based on the description by A. K. McCord in "A Description of Land in the Southern Mallee of South Australia")

Gently undulating dunefield north east of Meningie

Area: 32.5 km²

Annual rainfall: 430 – 445 mm average

Geology: The System is underlain by sandy limestones of the Coomandook Formation. These sediments are almost entirely covered by sandy calcareous sediments of the Padthaway Formation, with some calcreted calcarenites (Bridgewater Formation) of ancient coastal dunes. Subsequent deposition of Molineaux sand has resulted in substantial areas being blanketed by sand reworked into low to moderate dunes.

Topography: The East Meningie Land System is an undulating dunefield with about 40% low to high jumbled sand dunes. There are occasional stony rises on calcarenites.

Elevation: 4 - 20 m

Relief: Less than 8 m

Soils: The soils are characteristically sandy, either deep, or with a clayey subsoil at moderate depth. Shallow stony soils are minor.

Main soils

G3 Thick sand over sandy clay (flats)

H3 Deep siliceous sand (rises and sand dunes)

Minor soils

B3 Shallow loamy sand over calcrete (stony rises)

Main features: The flats are dominated by thick sandy surface soils which are marginally fertile and subject to water repellence and wind erosion. The dunes have very low fertility, are highly susceptible to water repellence and wind erosion and are not suited to cropping. Capability of the flats for cropping is low. Grazing of perennial pastures is the most extensive land use. Pasture productivity relies on fertility maintenance including acidity control, as well as careful grazing management to avoid barring off, particularly of the sand dunes.

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

SLU	% of area	Main features #
NGA NGD	8.0 49.5	Flat to very gently undulating plains formed on a sandy phase of the Padthaway Formation. NGA Very gently undulating flats with less than 10% sandy rises. NGD Very gently undulating flats with 10-30% sandy rises and up to 10% stony rises. Main soils: <u>thick sand over sandy clay</u> - G3 (V) on flats with <u>deep siliceous sand</u> - H3 (L) and <u>shallow stony loamy sand over calcrete</u> - B3 (M) on rises.



		<p>Key properties:</p> <p>Drainage: Well drained.</p> <p>Fertility: Low (to very low on sand rises).</p> <p>Physical condition: No surface limitations. Subsoil clay in shallower G3 soils impedes root growth to a minor extent.</p> <p>AWHC: Moderate to moderately low.</p> <p>Salinity: Low, although rising ground water tables pose a threat.</p> <p>Erosion potential: Water: Low. Wind: Moderate to moderately low.</p> <p>Water repellence: Repellent to strongly repellent.</p> <p>Rockiness: Nil (minor calcrete on stony rises)</p> <p><u>Summary:</u> The land is dominated by sandy soils which are marginally fertile and subject to water repellence and wind erosion. Capability for cropping is low. Grazing of perennial pastures is the most extensive land use.</p>
OAE OAF OAG	23.8 13.2 5.5	<p>Dunefields with more than 60% jumbled sand dunes and rises.</p> <p>OAE High sand dunes OAF Moderate sand rises OAG Low sand rises</p> <p>Main soils: <u>deep siliceous sand</u> - H3 (V) on rises, and <u>thick sand over sandy clay</u> - G3 (C) in swales and flats.</p> <p>Key properties:</p> <p>Drainage: Rapidly to well drained.</p> <p>Fertility: Very low to low.</p> <p>Physical condition: No restrictions other than subsoil clay in shallower soils in some swales.</p> <p>AWHC: Low to moderate.</p> <p>Salinity: Low.</p> <p>Erosion potential: Water: Low. Wind: Moderately high to high.</p> <p>Water repellence: Strongly repellent on deep sands.</p> <p>Rockiness: Nil</p> <p><u>Summary:</u> The predominant sand dunes are highly susceptible to water repellence and wind erosion and are not suited to cropping. Pasture productivity relies on fertility maintenance including acidity control.</p>

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

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|----------------------------------------------|---------------------------------------|
| (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:

- G3** Thick sand over sandy clay (Bleached, Hypocalcic, Brown Chromosol)
Very thick soft to loose sand with a bleached A2 layer, abruptly overlying a brown mottled sandy clay, weakly calcareous below 100 cm. Very extensive on flats.
- H3** Deep siliceous sand (Basic, Arenic, Brown-Orthic / Bleached-Orthic Tenosol)
Grey loose sand becoming paler coloured with depth and grading to a yellow to brown sand below 50 cm. Continues below 200 cm. Very extensive on sand rises and dunes.
- B3** Shallow loamy sand over calcrete (Petrocalcic, Leptic Tenosol)
Medium thickness loamy sand to light sandy clay loam with variable rubble, overlying hard calcreted limestone. Minor (on stony rises).

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

