

BRM Brimbago Land System

Range of low hills extending from east of Keith to Kongal

Area: 230.7 km²

Annual rainfall: 475 – 520 mm average

Geology: The Land System is formed on ancient coastal dune sand which has become indurated at the surface to form calcarenite. The system includes several dunes, between which are associated lagoonal sediments - calcareous sandy clays and limestones of the Padthaway Formation. These are mixed with younger locally derived outwash sediments, which are generally sandy. There are intermittent sand spreads derived from reworking of the silica component of the original dune sands.

Topography: The Brimbago Land System comprises a series of parallel ridges with intervening corridors. The corridors are parallel to the ridges in the north, but in the south the pattern is less well defined, with corridors cutting across the grain of the range. The ridges usually stand 20 - 30 m above the corridors, but there are some small remnants of 10 m or less.

Elevation: 30 - 90 m

Relief: Overall maximum relief is 60 m. Local relief is 10 - 30 m

Soils: The characteristic soils are either shallow loamy sands over calcrete, or moderately deep to deep sands. There are minor heavy soils and sandy texture contrast soils.

Main soils

Soils on sand spreads

- H3** Deep bleached sand
- G2** Sand grading to sandy clay loam

Soils on stony rises

- B3** Shallow stony loamy sand over calcrete
- B6** Loamy sand over red sandy clay
- B8** Bleached sand over calcrete

Soils on sandy flats

- G4** Sand over dispersive brown clay
- B7** Sand over friable brown clay on calcrete

Minor soils

Soils on sandy flats

- G3** Thick sand over friable clay

Soils on heavy flats

- F2** Hard loam over brown dispersive clay
- E3** Hard cracking grey clay

Main features: The Brimbago Land System comprises two distinctive components: The calcarenite ridges have well drained soils which are commonly shallow and stony with moderately low fertility. Associated sand spreads have very low fertility. The inter-ridge corridors have a variety of soils including shallow sandy soils over calcrete, sand over clay soils with impeded drainage, and clayey soils with poor drainage. Overall, soils of the corridors are deeper and more fertile, but less well drained than those of the ridges.



Soil Landscape Unit summary: 3 Soil Landscape Units (SLUs) mapped in the Brimbago Land System:

| SLU | % of area | Main features # |
|-----|-----------|---|
| MHC | 67.7 | <p>Series of parallel ridges with a NNW-SSE orientation, up to 60 m high and with slopes of 3-12%. The ridges are formed on calcreted calcarenites. They are partially overlain by sand spreads which tend to be more extensive on the eastern slopes. There is variable surface stone on the non sandy slopes. Main soils are <u>shallow stony loamy sand over calcrete</u> - B3 (C), <u>bleached sand over calcrete</u> - B8 (L) and <u>loamy sand over red sandy clay</u> - B6 (M) on stony areas, and <u>deep bleached sand</u> - H3 (C) and <u>sand grading to sandy clay loam</u> - G2 (C) on sand spreads.</p> <p>Key properties:</p> <p>Drainage: Rapidly to well drained.</p> <p>Fertility: Moderately low on stony soils, to very low on deep sands.</p> <p>Physical condition: Surface soils are soft to loose and do not restrict root growth. Where subsoils occur they are friable and not restrictive to root growth.</p> <p>AWHC: Very low to low on stony soils, due to shallow depth to hard calcrete. Moderate on sandy soils.</p> <p>Salinity: Low.</p> <p>Erosion potential: Water: Low to moderate, depending on slope. Wind: Moderately low on stony ground to high on sand spreads.</p> <p>Water repellence: Low to slight on stony land. Strong on sand spreads.</p> <p>Rockiness: Variable to 50%, usually less than 20%. Nil on sand spreads.</p> <p>Other: The higher rises are exposed.</p> <p><u>Summary:</u> Shallow, stony soils of marginal fertility with deep, low fertility, water repellent and erodible sands.</p> |
| NFH | 29.7 | <p>Inter-ridge corridors, generally parallel to the ranges of MHC (above), but cutting through the ridges in places. Underlying materials are calcreted sandy clays and limestones of the Padthaway Formation or locally derived sandy outwash sediments. Adjacent to rising ground, or where the ancient dunes have been buried by lagoonal sediments, the landscape is formed on calcarenites.</p> <p>Main soils: <u>sand over friable brown clay on calcrete</u> - B7 (E), <u>thick sand over sandy clay</u> - G3 (E) and <u>sand over dispersive brown clay</u> - G4 (E).</p> <p>Key properties:</p> <p>Drainage: Well drained generally, but G4 soils are imperfectly drained due to dispersive clay subsoils.</p> <p>Fertility: Moderately low to low due to sandy surfaces.</p> <p>Physical condition: Surface soils are sandy and soft with no restrictions on root growth. Subsoils are well structured except in the case of the G4 soils where root growth is impeded.</p> <p>AWHC: Moderately low to moderately high depending on depth to calcrete.</p> <p>Salinity: Low.</p> <p>Erosion potential: Water: Low. Wind: Low to moderately low.</p> <p>Water repellence: Slight.</p> <p>Rockiness: Less than 2% surface calcrete.</p> <p><u>Summary:</u> Sandy, often shallow soils with marginal fertility are the main features.</p> |
| TTA | 2.6 | <p>Low lying corridor flats formed on heavy clay sediments with gilgai micro-relief.</p> <p>Main soils: <u>hard cracking grey clay</u> - E3 (E), <u>sand over dispersive brown clay</u> - G4 (E) and <u>hard loam over brown dispersive clay</u> - F2 (E).</p> <p>Key properties:</p> <p>Drainage: Imperfectly to poorly drained due to dispersive clays at or near the surface.</p> <p>Fertility: Moderate (clayey soils) to moderately low (sandy soils).</p> <p>Physical condition: Surface soil varies from sandy (no limitations to root growth) to hard setting (causing patchy emergence and impeded root growth). Subsoil structure is poor - all soils are dispersive, restricting root growth.</p> <p>AWHC: Moderate to high.</p> <p>Salinity: Moderate in subsoils.</p> <p>Erosion potential: Water: Low. Wind: Low.</p> <p>Water repellence: Low to moderate.</p> <p>Rockiness: Up to 2% surface calcrete stone.</p> |



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| | | Other: Land subject to extensive flooding. Gilgai hollows are especially susceptible. <u>Summary:</u> Poorly structured and imperfectly to poorly drained clay and sand over clay soils with moderate fertility. Marginal salinity. |
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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:

Soils on stony rises

- B3** Shallow stony loamy sand over calcrete (Petrocalcic, Leptic Tenosol)
Loamy sand to loam with variable rubble and slight clay increase with depth overlying calcreted calcarenite shallower than 50 cm.
- B6** Loamy sand over red sandy clay (Petrocalcic, Red Kandosol)
Medium thickness loamy sand with slight ironstone gravel grading to a weakly structured reddish brown sandy clay on calcarenite.
- B8** Bleached sand over calcrete (Petrocalcic, Bleached-Leptic Tenosol)
Thick bleached sand over calcarenite.

Soils on sandy flats

- G4** Sand over dispersive brown clay (Hypercalcic, Brown Sodosol)
Thin to medium thickness sand sharply overlying a brown and yellow or grey mottled dispersive clay with strong columnar structure, calcareous with depth.
- B7** Sand over friable brown clay on calcrete (Petrocalcic, Brown Chromosol)
Medium thickness sand overlying a yellowish brown friable clay on limestone or calcreted sandy clay within 50 cm.
- G3** Thick sand over friable clay (Eutrophic / Calcic, Brown Chromosol)
Thick to very thick bleached sand to loamy sand with an organically darkened surface abruptly overlying a friable yellowish brown and red sandy clay.

Soils on heavy flats

- F2** Hard loam over brown dispersive clay (Hypercalcic, Brown Sodosol)
Medium thickness hard setting loamy sand to loam abruptly overlying a coarsely structured grey brown, yellow and red clay grading to soft carbonate.
- E3** Hard cracking grey clay (Epipedal, Grey Vertosol)
Hard coarse blocky seasonally cracking grey clay, calcareous and prismatically structured at depth.

Soils on sand spreads

- H3** Deep bleached sand (Basic, Arenic, Bleached-Orthic Tenosol)
Thick to very thick bleached sand, organically darkened at the surface over yellow sand continuing below 100 cm.
- G2** Sand grading to sandy clay loam (Mesotrophic, Yellow Kandosol)
Thick bleached sand, organically darkened at the surface, grading to a yellow and red friable massive sandy clay loam.

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

