

BLK The Black Range Land System

Low stony ridges west of the Keith - Willalooka plains

Area: 59.6 km²

Annual rainfall: 490 – 540 mm average

Geology: Calcreted calcarenites of the Bridgewater Formation. These are ancient coastal dunes of shelly and siliceous sands which have hardened to rock. Reworking of the silica fraction of the sand by the wind has resulted in sand spreads and dunes being deposited over the calcarenite.

Topography: The Black Range Land System is a group of isolated ancient coastal dunes which do not fit comfortably into other Land Systems. The Black Range itself is by far the largest of the ridges mapped in the system. It extends 40 km from Mt. Charles in a SSE direction to Willalooka Road. It rarely exceeds one km in width. Maximum height above the surrounding plains is 30 m. The other occurrences are disconnected extensions of the Black Range, or are the last remnants of a parallel range five km to the east, most of which has presumably eroded away. They are similar in shape and orientation, but are lower and narrower.

Elevation: 20 m on lower slopes in the north to 62 m near the southern end of The Black Range.

Relief: Maximum relief is 30 m

Soils: Most soils are either shallow to moderately deep loamy sands to sandy loams over calcreted calcarenite, or deep sands, often with more clayey subsoils.

Main soils

Soils on stony ridges

- B3** Shallow stony loamy sand over calcrete
- B7/B3** Loamy sand over red sandy clay on calcrete
- B8** Bleached sand over calcrete

Soils on sand spreads and dunes

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

Minor soils

Soils in corridors

- B7** Sand over friable brown clay over calcrete
- G3** Thick sand over friable clay
- G4** Sand over dispersive brown clay
- B7/N2** Sand over saline clay on calcrete

Main features: The Black Range group of ridges is characterized by well drained sandy to sandy loam soils which are commonly shallow and stony over calcrete. Fertility is moderately low on the stony soils to very low on the sand spreads, which are prone to water repellence and wind erosion.



Soil Landscape Unit summary: 3 Soil Landscape Units (SLUs) mapped in The Black Range Land System:

| SLU | % of area | Main features # |
|-----|-----------|---|
| MJB | 98.6 | <p>Low ridges (relict coastal dunes) with a NNW-SSE orientation. The ridges are up 30 m high, with slopes of 3-10%. They are partially overlain by low parallel east - west sand dunes, which tend to be more common in the north, and on the eastern sides of the ridges. There is variable surface stone on the non sandy slopes.</p> <p>Main soils: <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 on calcrete</u> - B7/B3 (L) on stony areas, and <u>deep bleached sand</u> - H3 (C) and <u>sand grading to sandy clay loam</u> - G2 (L) on sand dunes.</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 | 0.9 | <p>Narrow very gently undulating corridor between two calcarenite ridges, formed on calcreted calcarenite and calcified sandy to sandy clay outwash sediments. There are 10-20% depressions.</p> <p>Main soils: <u>sand over friable brown clay over calcrete</u> - B7 (E), <u>thick sand over friable clay</u> - G3 (E) and <u>sand over dispersive brown clay</u> - G4 (E). <u>Sand over saline clay on calcrete</u> - N2/B7 occurs in depressions.</p> <p>Key properties:</p> <p>Drainage: Well drained generally, but G4 soils are imperfectly drained due to dispersive clay subsoils. Drainage in depressions is poor.</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: Moderate on flats, high in depressions.</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 increasingly affected by saline water tables.</p> |
| O-B | 0.5 | <p>Isolated steep sand ridge draped across the northern end of the Black Range.</p> <p>Main soils: <u>deep bleached sand</u> - H3 (E), <u>thick sand over friable clay</u> - G3 (E) and <u>sand grading to sandy clay loam</u> - G2 (E).</p> <p>Key properties:</p> <p>Drainage: Rapid.</p> <p>Fertility: Very low.</p> <p>Physical condition: No limitations (soft to loose sand). Clayey subsoils, where present, are friable.</p> <p>AWHC: Moderately low to moderate.</p> <p>Salinity: Low.</p> <p>Erosion potential: Water: Low. Wind: High to very high.</p> <p>Water repellence: High.</p> <p>Rockiness: Nil.</p> <p><u>Summary:</u> The land is dominated by high sandhills with very low fertility, and prone to water repellence and wind erosion.</p> |



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:

Soils on stony ridges

- 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.
- B7/B3** Loamy sand over red sandy clay on calcrete (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 sand spreads and dunes

- 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 surface, grading to a yellow and red friable massive sandy clay loam.

Soils in corridors

- B7** Sand over friable brown clay over 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, with or without soft carbonate accumulations.
- 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/N2** Sand over saline clay on calcrete (Petrocalcic, Sodosolic, Salic Hydrosol)
Bleached sand overlying a coarsely structured mottled grey sandy clay loam to clay, with a calcrete pan within 50 cm and a saline water table at depth.

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

