KEP Keppoch Land System

Area: 13.8 km^2

Annual rainfall: 550 – 560 mm average

Geology: The land system straddles three different formations, those being the Bridgewater Formation of West Naracoorte Range, the Gambier Limestone of the Naracoorte Range and the Padthaway Formation of the plains to the West of the Ranges. The land system is bound by the plains surrounding the Morambro Creek throughout the break in the range and extends out onto the plain to the west of the range.

Topography: The Keppoch Land System is an old floor bed between two ancient coastal dune systems and the area where the break occurs is known as 'The Gap'. At its narrowest point the land system is only 50 m but expands to 4km wide out on the plains. Generally the land system is flat and the floor is up to 100 m below the tops of the surrounding ranges.

Elevation: 40 - 50 m

Relief: Maximum relief: less than 5 m

Soils:

Sandy soils (rises and plains)
G3 Thick sand over clay
G4 Sand over poorly structured clay
H3 Bleached siliceous sand
Stony soils (rises and plains)
B2 Shallow calcareous loam on calcrete
B4 Shallow red loam on limestone
B5 Shallow dark clay loam on limestone
B6 Shallow loam over red-brown clay on calcrete
Heavy soils
F1 Loam over brown or dark clay
F2 Sandy loam over poorly structured brown or dark clay
M2 Deep friable gradational clay loam
N3 Wet soil (non to moderately saline)

Main features: The Keppoch Land System is a flat to very gently undulating plain between linear calcarenite ranges. The flats within the ranges are characterised by sandy loam surfaces with clayey subsoils, which are sometimes dispersive. The soils have moderate to high fertility and impeded drainage. The soils out on the plains are sandy loam to clay loam surfaces with clayey subsoils that may be dispersive at depth. The soils are fertile with impeded drainage and limestone can be found at depth. The shallow stony soils and deep sands are minor and are isolated to a single rise near the West Naracoorte Range. The sandy soils have lower fertility, moderate waterholding capacity, are water repellent and prone to wind erosion while the stony soils have limited water holding capacity and moderate fertility.

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

SLU	% of area	Main features #
MYB	0.9	Isolated rise with less than 2% slope and maximum relief of less than 5 m, which is formed on calcreted calcarenites of ancient coastal dunes. Main soils: thick sand over clay - **G3** (C), bleached siliceous sand - **H3** (C), shallow loam over red clay on calcrete - **B6** (C), shallow calcareous loam on calcrete **- B2** (L) and shallow red loam on limestone - **B4** (L). The sandy soils are moderately deep to deep with low fertility, moderate to high waterholding capacity and rapid drainage. Water repellence and the potential for wind erosion are limitations for the deeper soils and the stony soils are semi arable. The stony and/or shallow soils are very shallow to shallow, have moderately low to high fertility and very low to low water holding capacity.
NFA	25.7	Level plain without swamps. Main soils: loam over brown or dark clay - **F1** (D). These soils are moderately deep to deep with high fertility, high waterholding capacity and are imperfectly drained. Variations in the depth to calcrete occur in this soil landscape unit but generally deeper than 50 cm.
NJA	32.2	Level plain with less than 10% swamps. Main soils: gradational dark clay loam - **M2** (E), loam over brown or dark clay - **F1** (C), shallow dark clay loam on limestone - **B5** (E) and wet soil - **N3** (M). These soils are moderate to deep with high fertility, have moderately low to high waterholding capacity and are imperfect to poorly drained. There is significant variability in the soils within this landscape unit.
NvA	23.4	Plain aligned with the Morambro Creek, surrounded by the West Naracoorte and Naracoorte Ranges. There are less than 10% swamps. Main soils: sandy loam over poorly structured brown or dark clay - **F2** (E), sand over poorly structured brown or dark clay - **G4** (E), gradational dark clay loam - **M2** (C) and wet soil - **N3** (M). These soils are moderately deep to deep with moderate fertility, have high waterholding capacity and are imperfectly to poorly drained. There is a moderate to high limitation for root growth due to the dispersive subsoil clays.
XaK	17.8	Morambro Creek. Soils within creek system vary however the main soils are sandy loam over poorly structured brown or dark clay - **F2** (E), gradational dark clay loam - **M2** (C) and wet soil - **N3** (M). These soils are moderately deep to deep with moderate fertility, have high waterholding capacity and are imperfectly to poorly drained. There is a moderate to high limitation for root growth due to the dispersive subsoil clays. This landscape unit is not for agricultural production.

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:

B4 Red sandy loam over calcrete (Petrocalcic, Red Dermosol)
Medium thickness red sandy loam grading to friable red clay loam over calcreted calcarenite within 50 cm.

B5 Shallow dark clay loam on limestone (Petrocalcic, Black Dermosol)
Black clay loam to light clay over calcreted limestone at shallow depth, grading to highly calcareous clay - flats.

B6 Shallow sandy loam over red-brown clay on calcrete (Petrocalcic, Red Kandosol)
Medium thickness sandy loam with slight ironstone gravel overlying a weakly structured reddish brown sandy clay on calcarenite within 50 cm - rises.

F1 Loam over brown or dark clay (Melanic, Hypercalcic, Black/Brown Chromosol)
Medium thickness dark brown sandy loam over a thin to medium sand layer over a structured brown to black clay grading to a brown mottled clay with limestone segregations at depth.

F2 Sandy loam over brown or dark poorly structured clay (Mottled, Mesonatric, Grey/Black Sodosol)
Medium thickness brown sandy loam over a thin to medium thickness pale sand layer over a columnar structured dispersive grey to black clay grading to brown mottled clay with depth.

G3 Thick sand over 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.

G4 Sand over dispersive brown clay (Hypercalcic, Brown Sodosol)
Thin to medium thickness sand sharply overlying brown and yellow or grey mottled dispersive clay with strong columnar structure, calcareous with depth.

H3 Bleached siliceous sand (Bleached-Orthic, Argic Tenosol)
Medium thickness organically darkened sandy surface over thick bleached sand over yellow sand continuing below 100 cm

M2 Deep friable gradational clay loam (Red-Brown-Grey- Black Dermosol)
Deep well structured red clay loamy soil.

N3 Wet soil - non to moderately saline (Dermosolic, Oxyaquic Hydrosol)
Medium thickness clay overlying dispersive grey clay with increasing pH at depth.

(Grouped on landscape position)

Sandy soils (rises and plains)

G3 Thick sand over clay (Eutrophic, Mottled, Brown Chromosol/Sodosol)
Thick to very thick sand with a pale sand layer directly overlying brownish clay

G4 Sand over poorly structured clay (Mesonatric, Brown/Grey Sodosol)
Thick organically stained sandy surface overlying a pale sand layer overlying a brown poorly structured clay with limestone segregations usually within 100 cm.

H3 Bleached siliceous sand (Arenic, Bleached-Orthic Tenosol)
Thick to very thick bleached sand, organically darkened at the surface over yellow sand continuing below 100 cm.

Stony soils (rises and plains)

B2 Shallow calcareous loam on calcrete (Petrocalcic, Hpyocalcic Calcarosol)
Thin calcareous loam to clay loam directly overlying calcarenite within 30 cm

B4 Shallow red loam on limestone

B5 Shallow dark clay loam on limestone

B6 Shallow loam over red-brown clay on calcrete (Hypocalcic, Petrocalcic, Red Dermosol)
Medium thickness loam to clay loam over a red to red-brown clay directly overlying calcarenite within 50 cm

Heavy soils

F1 Loam over brown or dark clay (Hypercalcic, Mottled, Grey/Brown Chromosol)
Medium thickness organically darkened sandy loam to loam overlying a brwon to grey structured clay with limestone segregations at depth.

F2 Sandy loam over poorly structured brown or dark clay (Calcic, Mesonatric, Brown Sodosol)
Thin organically darkened sandy loam surface over a thin light coloured loamy sand overlying a brown poorly structured clay with limestone segregations at depth.

M2 Deep friable gradational clay loam (Calcic, Mottled-Sodic, Grey Dermosol)
Thin to medium thickness clay loam over a poor to structured grey clay grading to brown mottled clay with depth. Limestone segregations are encountered within 100 cm overlying calcarenite within 100

N3 Wet soil (non to moderately saline) (Sodosolic, Eutrophic Hydrosol)
Organically stained sandy surface over a pale brown sand overlying a brown clay on calcrete.

Further information: DEWNR Soil and Land Program