

CRL Caroline Land System

Area: 203.7 km²

Landscape: Dunefield either side of Gambier land system with linear to irregular low dunes and sand plains with deep leached sands and patches of rises with shallow soils over calcarenite.

Annual rainfall: 745 – 780 mm average

Geology: Holocene Molineaux Sand overlies calcarenite rises of the Bridgewater Formation and flats, which are underlain by Pleistocene lacustrine deposits of the Padthaway and Coomandook Formations.

Main soils:

- I1** (39%) Highly leached sand (Aeric Podsol)
- H3** (20%) Bleached siliceous sand (sandy Bleached Tenosol)
- I2** (20%) Wet highly leached sand (Aquic or Semi-Aquic Podsol)

Minor soils: *The following comprise 20% but contribute only 2 - 6% each*

- G2** Bleached sand over sandy clay loam (sandy Brown-Red Chromosol)
- B7** Shallow sand over clay on calcrete (sandy Petrocalcic Sodosol-Chromosol)
- B3** Shallow sandy loam on calcrete (Petrocalcic Red Tenosol-Kandosol-Rudosol)
- G5** Sand over acidic clay (sandy Brown Kurosol)
- N3** Wet soil (Sodosolic-Calcarosolic-Dermosolic Hydrosol)

Summary: Sand plains and dunes with soils of generally low fertility and tendency to acidity, with mostly low buffering capacity (will change pH easily). Wet conditions result from high rainfall and impermeable subsoil conditions. Volcanic ash influence is seen in dark brown surface horizons especially close to the boundary with the Gambier land system.

Soil Landscape Unit summary: Caroline Land System (CRL)

SLU	% of area	Component	Main soils	Prop#	Notes
MOB	0.2	Rise	B6	D	Gently undulating rises with shallow sandy loam (sometimes ironstone gravelly) grading to red-brown sandy clay loam or clay over calcreted calcarenite. <10% deep, leached sands. Main soils: Rises: <u>Shallow sandy loam over red-brown clay on calcrete - B6.</u> Dunes: <u>Highly leached sand - I1 and Bleached siliceous sand - H3.</u>
		Dune	I1H3	M	
MRB	0.4	Rise	G3	D	Gently undulating rises with deep sand over clay rises. Main soils: <u>Thick sand over clay - G3.</u>
OFB	12.2	Dune	H3I1	V	OFB Deep moderately to highly leached siliceous sands on high dunes, 10-20% shallow loamy sand, often over red-brown sandy clay loam/clay on calcreted calcarenite. OFC As above, dunes, highly leached siliceous sands OFD As above, low dunes. Main soils: Dunes: <u>Bleached siliceous sand - H3 and Highly leached sand - I1.</u>
		Stony range	B3B6	L	
OFC	20.4	Dune	I1	D	
OFD	21.6	Low dune	I1	D	



					Stony ranges: <u>Shallow sandy loam on calcrete - B3</u> and <u>Shallow sandy loam over red-brown clay on calcrete - B6.</u>
OLD	0.4	Dune	H3I1	D	OLD Low dunes with moderately deep to shallow, bleached acid to neutral sand over calcarenite. OLJ As above, 60-90% dunes with swales, which have sand over poorly structured clay soils. Main soils: Dunes: <u>Bleached siliceous sand - H3</u> and <u>Highly leached sand - I1.</u> Swales: <u>Thick sand over clay - G3</u> and <u>Shallow sandy loam over red-brown clay on calcrete - B6.</u>
OLJ	0.2	Swale	G3B6	E	
OMD	1.0	Dune	I1G3	D	Low dunes as above but also with shallow bleached sands over calcarenite and sand over poorly structured clay in swales. OMD >90% Low dunes OMJ 60-90% low dunes. Main soils: Dunes: <u>Highly leached sand - I1</u> and <u>Thick sand over clay - G3.</u> Swales: <u>Thick sand over clay - G3.</u>
OMJ	1.6	Swale	G3	E	
OND	1.6	Dune	H3	V	Low dunes with deep neutral to acid sands on dunes with 20-30% shallow sandy loam over red-brown clay loam/clay on calcarenite. Main soils: Dunes: <u>Bleached siliceous sand - H3.</u> Rises: <u>Shallow sandy loam over red-brown clay on calcrete - B6</u> and <u>Bleached siliceous sand - H3.</u>
		Rise	B6H3	C	
PBA	13.3	Plain	I1	D	PBA Sand plain with well-drained, deep leached siliceous sands. PBB As above, but with 20-30% poorly drained, deep sands which are underlain by impervious clays or coffee rock. Main soils: Plains: <u>Highly leached sand - I1.</u> Rises: <u>Bleached sand over sandy clay loam - G2</u> and <u>Highly leached sand - I1.</u>
PBB	2.5	Rise	G2I1	C	
PEA	22.7	Flat	I2H3	V	Sand plains. PEA Poorly drained plain with deep siliceous acid sands with coffee rock or slowly permeable clays in the subsoils. 10-20% non-peaty swamps. PEB as above, <10% swamps, some peaty. Some loam over poorly structured clay in some flats.
		Swamp	N3I2	L	
PEB	0.8	Plain	I2	D	PEE Depression with poorly drained acid siliceous sand soils as above. PEi As for PEA above, with 20-30% non-peaty swamps. Main soils: Flats and depressions: <u>Wet highly leached sand - I2</u> and <u>Bleached siliceous sand - H3.</u> Swamps: <u>Peaty soil - N1</u> , <u>Wet clay loam - N3</u> and <u>Wet highly leached sand - I2.</u>
		Swamp	N1N3 I2	M	
PEE	0.3	Depression	I2H3	D	
PEi	0.3	Flat	I2H3	V	
		Swamp	N3I2	L	
PPA	0.5	Plain	G2G5 I2	D	Plain with acid sand over acid yellow-brown clay soils and deep acid poorly drained sands with coffee rock on subsoils. Main soils: <u>Bleached sand over sandy clay loam - G2</u> , <u>Sand over acidic clay - G5</u> and <u>Wet highly leached sand - I2.</u>

PROPORTION codes assigned to Soil Landscape Unit (SLU) components:

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:

- B3** Shallow sandy loam on calcrete (Petrocalcic Rudosol)
Medium thickness non calcareous sandy loam, often having a slight clay increase with depth, over calcreted calcarenite shallower than 50 cm - rises.
- 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.
- G2** Bleached sand over sandy clay loam (sandy Brown-Red Chromosol)
Sandy texture contrast soil with a bleached A2 and a friable brown-red sandy clay loam to sandy loam subsoil.
- G3** Thick sand over clay (Hypercalcic, Brown Sodosol/ Chromosol)
Thick bleached sand with an organically darkened surface abruptly overlying a massive to coarsely structured brown to reddish yellow sandy clay to clay, calcareous with depth - rises.
- G5** Sand over acidic clay (Sandy Brown Kurosol)
Sandy texture contrast soil with a friable brown strongly acidic clayey to clay loamy subsoil. Very acidic soil; incipient Bh horizons; moderate depth topsoils. Some with ironstone.
- H3** Deep bleached sand (Basic, Arenic, Bleached-Orthic Tenosol)
Grey sand over very thick bleached sand grading to yellow sand continuing below 100 cm.
- I1** Highly leached sand (Fragic, Pipey, Aeric Podosol)
Grey sand with a very thick bleached A2 layer, over dark brown and yellow massive soft to semi-hard clayey sand (coffee rock), grading to softer yellow and brown sand to sandy clay loam from about 80 cm.
- I2** Wet highly leached sand (Fragic, Humic, Aquic Podosol)
Grey sand with a thick bleached A2 horizon, overlying a thin to thick layer of coffee rock, grading to pale brown sand sharply overlying a grey, brown and yellow mottled sandy clay loam to light clay.
- N1** Peat (Organosol)
Peaty soil
- N3** Seasonally waterlogged, non to marginally saline equivalents of soils listed above, viz.:
N3c Wet **G3**
N3d Wet **B5**
N3e Wet **B7**

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

