# MAC Macdonnell Land System

**Area:** 107.5 km<sup>2</sup>

Landscape: Sub-coastal plains inland from wet, Wyrie Land System. Landscape is level to gently

undulating with mostly shallow, often stony, soils on calcrete.

**Annual rainfall:** 745 – 770 mm average

**Geology:** Eocene-Miocene Gambier Limestone with rises of calcreted Bridgewater Formation

calcarenite.

Main soils: B7 (42%) Shallow sand over clay on calcrete (sandy Petrocalcic Sodosol-Chromosol)

B3 (17%) Shallow sandy loam on calcrete (Petrocalcic Red Tenosol-Kandosol-Rudosol)

**B4** (16%) Shallow red loam on limestone (Petrocalcic Red-Brown Dermosol)

**Minor soils:** Collectively, 21% but contributing only 3 - 5% each.

**RR** Rock or exposed calcrete.

**B1** Shallow highly calcareous sandy loam on calcrete (Supravescent-Shelly Petrocalcic

Calcarosol-Rudosol)

**B6** Shallow loam over red-brown clay on calcrete (Petrocalcic Red Chromosol-Kandosol)

N3 Wet soil (non saline to moderately saline) (Sodosolic-Calcarosolic-Dermosolic Hydrosol)

**N1** Peat (Organosol)

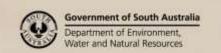
**Summary:** Marine etch-plain on Miocene Gambier limestone with very shallow soils.

Soil Landscape Unit summary: Macdonnell Land System (MAC)

SLU	% of area	Component	Main soils	Prop#	Notes
m-A	1.0	Plain	В3	D	Calcrete-capped Miocene limestone with very shallow red loam on
m-B	2.7	Rise	B3RR	D	clay loam over rock. >50% calcrete outcrop and >10% very shallow Rudosols-Tenosols-Calcarosols (sometimes shelly).
					m-A Plains.
					m-B Rises.
					Main soils:
					Plains: Shallow sandy loam on calcrete - B3.
					Rises: Shallow sandy loam on calcrete - B3 and Rock or exposed
					<u>calcrete</u> - <b>RR</b> .
mFA	1.5	Rise/Plain	F2	D	Calcrete-capped Miocene limestone plains and rises with less than
					50% bare calcrete. Soils are mainly loamy Petrocalcic, Red Kandsols,
					Tenosols and Chromosols with <10% deep sandy Tenosols-Podosols.
					Main soils: Sandy loam over poorly structured brown or dark clay - F2.
MSC	0.2	Dune	I1H3	D	Low dunes with leached siliceous sand on calcreted plain with very
		Swale	B3B2	М	shallow loamy sand soils.
					Dunes: Highly leached sand - I1 and Bleached siliceous sand - H3.
					Swales: Shallow sandy loam on calcrete - B3 and Shallow calcareous
					<u>loam on calcrete</u> - <b>B2</b> .



mUA	6.8	Plain	B3	D	Plain with very dark brown sandy loam on brown sandy clay loam over
					Miocene limestone.
					Main soils: <u>Shallow sandy loam on calcrete</u> - <b>B3</b> .
MUB	11.6	Rise	B3B1	D	Mainly shallow calcareous Rudosols, Calcarosols and Tenosols on
MUD	6.0	Rise	B3B1	D	calcreted, aeolianite with shallow calcareous Rudosols and dark brown
1,102	0.0	Nisc	5551		Tenosols. Less than 50% bare calcrete. Typically shallow, dark brown
					sandy loam over calcrete.
					MUB gently undulating rises
					MUD rolling rises (with very shallow soils).
					Main soils:
					Plains: Shallow sandy loam on calcrete - B3 and Shallow highly
					<u>calcareous sandy loam on calcrete</u> – <b>B3</b> and <u>shallow highly</u>
VaA	5.7	Plain	B4	D	Slightly elevated subcoastal plain with very shallow red clay loam on
van	5.7	Fiairi	D4		calcreted Miocene limestone. Stony.
					<u> </u>
					Main soils: <u>Shallow red loam on limestone</u> - <b>B4</b> .
VbA	2.0	Plain	B7	D	Shallow coastal plain with flinty sand over poorly structured clay or
VbW	1.2	Plain	B7	D	calcareous sandy loam on limestone.
					VbA Plains.
					VbW Complex of flats & stony rises.
					Main soils: Sand over friable brown clay on calcrete - <b>B7</b> .
VcW	3.7	Plain	B4	D	Shallow coastal plain with shallow flinty red sandy loam over calcrete.
		Rise	B3RR	М	Rock outcrop on rises.
					Main soils:
					Plains: Shallow red loam on limestone - <b>B4</b> .
					Rises: Shallow sandy loam on calcrete - B3 and Rock or exposed
					<u>calcrete</u> – <b>RR</b> .
VdA	43.7	Plain	B7	D	Shallow coastal plain with sand over poorly structured clay on
VdW	4.8	Plain	В7	D	limestone with wet, non-peaty swamps.
					VdA Plains.
					VdW Complex of flats & stony rises.
					Main soils: <u>Sand over friable brown clay on calcrete</u> - <b>B7</b> .
VfA	3.5	Plain	B7B2	V	Subcoastal plain with shallow sandy loam or sand over clay soils on
V 12 1	5.5	Dune	H2	C	Miocene limestone. 20-30%Low dunes with siliceous sand.
		Dane			
					Main soils:
					Plains: Sand over friable brown clay on calcrete - B7 and Shallow
					calcareous loam on calcrete - B2.
V+ A	2.2	Dlain	NIO	<u> </u>	Dunes: Deep brown sand - H2.
XtA XtC	3.2	Plain	N3	D D	Lagoonal deposits with alkaline peaty swamps.
	0.6	Swamp	N1 DENIS		XtA lagoonal/lake deposit
Xtf	0.1	Swamp	B5N3	V C	XtC Alkaline peaty swamps. Used for intensive cropping when
Xtn	1 /	Rise	B2B3		drained. Peat depth varies.
Aui	1.4	Swamp	N1	V	Xtf Swamps with stony rises or shallow over calcrete.
		Stony rise	B2B3 I2	L	Xtn Swamps with mixed stony and sandy rises.
		Sandy rise	12	-	Main soils:
			1		Plains: Wet clay loam - N3.
					Swamps: Peaty soil – N1, Wet clay loam - N3 and Shallow dark clay
					<u>loam on limestone</u> - <b>B5</b> .
			1		Stony Rises: Shallow calcareous loam on calcrete - B2 and Shallow
					loam on calcrete - B3.
					Sandy rises: Wet highly leached sand - I2.
XWF	0.2	Swampy flat	N3N2	D	Wet flat with loamy-clay loamy grey soils. Moderate salinity.
					Main soils: Wet clay loam - <b>N3</b> and Wet saline clay loam - <b>N2c</b> .
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# 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:**

Shallow highly calcareous sandy loam on calcrete (Supravescent-Shelly Petrocalcic Calcarosol-Rudosol)
Shallow, carbonate dominant sandy to loamy soil on calcrete. Carbonate dominates the soil profile as a whole, however, the surface soil may not be carbonate dominant, but needs to contain at least 30% carbonate.

#### **B2** <u>sandy loam on calcrete (Petrocalcic Calcarosol)</u>

Up to 40 cm calcareous loamy sand to sandy loam with variable calcrete rubble overlying calcreted calcarenite - <u>Shallow calcareous</u> rises.

# **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.

## **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 - rises.

#### **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

## **B7** Shallow sand over sandy clay on calcrete (Petrocalcic, Brown Chromosol)

Medium thickness sand overlying brown friable sandy clay to clay on limestone or calcreted sandy clay within 50 cm - flats.

## F2 Sandy loam over poorly structured brown or dark clay (Brown-Dark Sodosol-Chromosol)

Topsoil <30 cm over a poorly structured subsoil. Loamy, often sandy loam, to clay loamy texture contrast soil with a sodic/dispersive/poorly structured brown clayey subsoil. Often sandy loam, usually with a bleached horizon, and thin topsoil over a poorly structured B.

## **H2** Siliceous sand (Sandy Calcarosol-Tenosol)

Deep to moderate depth calcareous siliceous sand. Often with non-calcareous topsoil; can be non calcareous throughout. Sometimes the subsoil is a light sandy loam.

## H3 Deep bleached sand (Basic, Arenic, Bleached-Orthic Tenosol)

Grey sand over a 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)

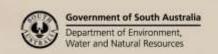
Grey sand with a thick bleached A2 horizon, overlying a thin to thick layer of coffee rock, grading to pale brown sand sharply overlying a grey, brown and yellow mottled sandy clay loam to light clay.

#### **N1** Peat (Organosol)

Peaty soil.

## N2c Wet saline clay loam (Dermosolic, Salic Hydrosol)

Medium thickness dark grey to black clay loam to clay grading to a well structured dark grey clay with minor carbonates and a water table within 100 cm.





N3 Seasonally waterlogged, non to marginally saline equivalents of soils listed above, viz.:

N3c Wet G3N3d Wet B5N3e Wet B7

**RR** Bare rock

**Further information:** <u>DEWNR Soil and Land Program</u>

