MGO Mangalo Land System

Area: 945.2 km²

Landscape: Undulating to rolling low hills formed over basement schists, gneisses and quartzites. There are

extensive deposits of locally derived alluvium on lower slopes and valley flats. The rocks and sediments are mantled by soft carbonates of aeolian origin, which have been leached into the soil. Overlying the land surface are limited deposits of Molineaux sand, usually as sand spreads, but occasionally as low sandhills. Watercourse erosion is common, and there are sporadic saline

seepages, usually on lower slopes and in drainage depressions.

Annual rainfall: 280 – 425 mm average

Main soils: <u>Cleve (shallow)</u> - **D1/D7** (three variations)

<u>Calcareous subsoil</u> - **D1a** (<u>Hypercalcic, Red Chromosol</u>)

Thin to medium thickness gravelly sandy loam to clay loam over a red well structured clay, highly

calcareous with depth, grading to weathering metamorphic rock within 100 cm. Non calcareous subsoil - **D1b** (Eutrophic, Red Chromosol)

Thin to medium thickness gravelly sandy loam to clay loam over a red well structured clay,

grading to weathering metamorphic rock within 100 cm. Sodic subsoil - **D7** (Calcic, Red Sodosol)

Thin to medium thickness hard sandy loam over blocky structured, sodic red clay, calcareous with

depth, forming in weathering basement rock within 100 cm.

<u>Mangalo</u> - **D3** (<u>Calcic, Red Sodosol)</u>

Medium thickness sandy loam to sandy clay loam over a coarsely structured red clay, moderately calcareous with depth grading to alluvial sediments (**D3a**) or older clayey sand / sandy clay (**D3b**).

<u>Heggaton</u> - **G3** (Calcic, Brown Chromosol)

Thick sand to loamy sand with a bleached A2 layer, abruptly overlying a weakly structured brown

sandy clay to clay, calcareous with depth, grading to Tertiary sediments.

Skeletal soil - L1 (Lithic / Petroferric, Leptic Tenosol / Rudosol)

Variable gravelly loamy sand to sandy clay loam over basement rock or massive ironstone at

depths usually less than 50 cm.

Minor soils: Calcareous loam (shallow) - A2 (Paralithic, Hypercalcic / Lithocalcic Calcarosol)

Calcareous loam grading to a highly calcareous clay loam over Class III A, B or C carbonate

merging with weathering rock.

<u>Wiabuna</u> - **A6** <u>(Regolithic, Hypercalcic Calcarosol)</u>

Calcareous sandy clay loam becoming more clayey and calcareous with depth over a red coarsely structured non calcareous clay from about 60 cm, grading to weathering rock below 100 cm on classes or allowing on flats.

slopes, or alluvium on flats.

Red brown earth (clayey) - C3 (Hypercalcic, Red / Brown Chromosol / Dermosol)

Medium thickness friable clay loam to light clay, over a well structured red or brown clay, highly calcareous from about 30 cm grading to clayey alluvium (**C3a**) or highly weathered rock (**C3b**).

<u>Wharminda</u> - **G4** <u>(Hypercalcic, Brown Sodosol)</u>

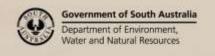
Medium to thick sand with a bleached A2 layer abruptly overlying a hard columnar dispersive brown mottled clay, highly calcareous with depth, grading to alluvial or Tertiary sediments.

<u>Lowan</u> - **H3** <u>(Basic, Arenic, Bleached-Orthic Tenosol)</u>

Thick bleached sand with a thin organically darkened surface layer, grading to a yellowish sand (often with darker lamellae), continuing below 150 cm.

<u>Uniform alluvial soil</u> - **M1** <u>(Calcareous, Regolithic, Red-Orthic Tenosol)</u>

Very thick brown loamy sand to sandy loam, continuing below 100 cm. <u>Gradational alluvial soil</u> - **M4** (<u>Calcic, Red Kandosol / Dermosol</u>)





Medium to thick sandy loam grading to a red sandy clay loam to clay, calcareous with depth.

Saline alluvial soil - M4/N2 (Calcic, Red Dermosol / Kandosol)

Thick sandy loam over a red clay, calcareous with depth. Saline throughout.

Wet saline alluvial soil - N2 (Salic / Hypersalic Hydrosol)

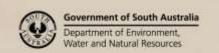
Miscellaneous wet saline soil influenced by rising saline groundwater tables.

Summary:

Most of the land is very gently to gently sloping (gradients usually less than 10%), but there are some steeper rocky slopes. These have shallow stony soils and are either semi or non arable. On the arable slopes, the most common soils are sandy loams with red clayey subsoils. These are moderately deep and reasonably fertile, although commonly prone to acidification. They are highly erodible. As a result of the combination of erodible soils and moderate slopes, erosion control is a key management issue. Sub dominant sand over clay soils are also erodible, and have the added disadvantages of lower fertility and susceptibility to wind erosion as well. These, and minor deeper sands are susceptible to water repellence. Saline seepages are widespread, although they do not account for a large area overall.

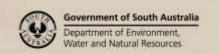
Soil Landscape Unit summary: 45 Soil Landscape Units (SLUs) mapped in the Mangalo Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
AKB	3.4	Rocky slopes	Skeletal	E	Shallow stony soils - semi to non arable.
		-	Shallow Cleve	E	
AKBs	0.2	Rocky slopes	Skeletal / shallow Cleve	E	Shallow stony soils as for AKB , with low fertility, wind erosion prone sand.
		Sand spreads	Lowan	E	
AKC	5.2	Rocky slopes	Skeletal	E	Shallow stony soils and moderately steep slopes - non
			Shallow Cleve	E	arable.
ALC	0.9	Rocky slopes	Skeletal	V	Shallow stony soils and moderately steep slopes - non
			Shallow Cleve	С	arable.
ALD	1.3	Steep rocky slopes	Skeletal	D	Shallow stony soils and steep slopes - non arable.
DHB	0.4	Very gentle	Shallow Cleve	D	Poor surface structure and slight erosion potential are
		slopes			the only significant limitations. Sporadic saline seepage.
DHC	6.0	Gentle slopes	Shallow Cleve	D	As for DHB , but steeper slopes increase erosion potential.
DKH	0.9	Gentle slopes (eroded)	Mangalo	D	Sandy, poorly structured surface soil (moderate fertility, prone to acidification). Highly erodible. Watercourse erosion and sporadic saline seepage.
DKM	3.5	Gentle slopes	Mangalo	D	As for DKH , less watercourse erosion, but more saline seepage.
DNC	1.4	Gentle slopes	RBE (clayey)	D	Deep, fertile soils - potentially productive. Erosion potential the only limitation.
DTB	0.5	Very gentle	Shallow Cleve	Е	Slopes with significant rocky outcrop associated with
		slopes	Clayey RBE	С	poorly structured sandy loam to sandy clay loam soils
		Rocky reefs	Skeletal	L	with moderate fertility, prone to acidification and highly
DTC	2.2	Gentle slopes	Shallow Cleve	Е	erodible. There are minor sand over clay soils. Rocky
			Clayey RBE	С	reefs with skeletal soils restrict arable area. Up to 2%
		Rocky reefs	Skeletal	L	saline seepages throughout.
DTCs	0.5	Gentle slopes	Shallow Cleve	V	DTB Slight erosion potential.
		Sandy slopes	Heggaton	L	DTC Steeper slopes and higher erosion potential.
		Rocky reefs	Skeletal	L	DTCs As for DTC , but with 10-20% sand over clay
DTD	3.4	Moderate	Shallow Cleve	Е	soils of low fertility and high erodibility (wind
		slopes	Clayey RBE	С	and water).
		Rocky reefs	Skeletal	L	DTD Steeper slopes and high erosion potential -
DTH	7.0	Gentle slopes	Shallow Cleve	E	mostly semi arable.





		(eroded)	Clayey RBE	С	DTH As for DTC , with eroded watercourses.
		Rocky reefs	Skeletal	L	DTc As for DTH , but with 2-10% saline seepages.
DTc	4.1	Gentle slopes	Shallow Cleve	E	
		(eroded)	Clayey RBE	С	1
		Rocky reefs	Skeletal	L	1
		Saline seeps	Saline alluvial	М	1
DWB	5.2	Very gentle	Shallow Cleve	E	Slopes with mixed sandy loam to sandy clay loam over
		slopes	Mangalo	Е	clay soils, and sand over clay soils, with some deep
			Heggaton	L	sands. Sandy loams are poorly structured with
DWBn	1.3	Very gentle slopes	Shallow Cleve	E	moderate fertility. They are prone to acidification and
			Mangalo	E	are highly erodible. Sand over clay soils are infertile and
					prone to wind erosion, water repellence and
			Heggaton	E	acidification. Deep sandy soils have similar but more
DWC	4.7	Gentle slopes	Heggaton	E	severe limitations. Up to 2% saline seepages
			Shallow Cleve	E	throughout.
DWCs	1.6	Gentle slopes	Heggaton	E	DWB Slight erosion potential. DWBn Slight to moderate erosion potential with more
			Shallow Cleve	E	sandy soils than DWB
DWW		Low sandhills	Lowan	L	DWC Moderate erosion potential, with significant
DWH	3.1	Gentle slopes	Mangalo	V	sand over clay soils of low fertility and high
DWA		(eroded)	Heggaton	L	erodibility (wind and water).
DWM	1.1	Gentle slopes	Mangalo	V	DWCs As for DWC with 10-20% low to moderate
		(eroded)	Heggaton	L	sandhills (highly erodible and infertile).
		Saline seeps	Saline alluvial	М	DWH Moderate erosion potential, with eroded watercourses.DWM Moderate erosion potential, with 2-10% saline seepages.
DZB	1.1	Very gentle slopes	Mangalo	Е	Mixture of poorly structured and erodible sandy loam over clay soils, and calcareous loams (less erodible and better structured).
			Shallow Cleve	С	
			Calc loam	С	
			Wiabuna	L]
DZC	0.1	Gentle slopes	Mangalo	E	As for DZB , but steeper and more susceptible to
			Shallow Cleve	С	erosion.
			Calc loam	С	
			Wiabuna	L	
DsC	0.2	Gentle slopes	Shallow Cleve	V	Fertile and moderately deep sandy clay loam over clay
		Sandhills	Lowan	С	soils (moderate erosion potential), with 20-30% sandhills (low fertility, and prone to wind erosion and water repellence).
DuB	6.3	Very gentle	Shallow Cleve	E	Fertile and moderately deep sandy clay loam over clay soils, with 20-30% sand over clay soils and 10-20%
		slopes			
		Sandy slopes	Heggaton	С	sandhills (low fertility, and prone to wind erosion and
		Low sandhills	Lowan	L	water repellence).
		Lower slopes	Mangalo	L	
DuC	7.5	Gentle slopes	Shallow Cleve	V	As for DuB , but steeper and more prone to water
		Low sandhills	Lowan	L	erosion.
		Lower slopes	Mangalo	L	
ETB	8.0	Very gentle	Skeletal / calc	D	Slopes with shallow stony or calcareous sandy loams,
		stony slopes	loam / Shallow		and shallow texture contrast soils. Extensive rocky
ETC	2 A	Contlo stony	Cleve	D	outcrop reduces arable area. ETB Slight erosion potential.
ETC	3.4	Gentle stony slopes	Skeletal / calc	D	ETC Moderate erosion potential.
		210hg2	Ioam / Shallow		
		'	Cleve		
	0.6		Cleve	D	ETD Moderately high erosion potential (semi arable) ETI As for ETD with eroded watercourses
ETD	0.6	Moderate stony slopes	Cleve Skeletal / calc loam / Shallow	D	ETD Moderately high erosion potential (semi arable) ETI As for ETD with eroded watercourses.





ETI	4.0	Moderate	Skeletal / calc	D	
		stony slopes	loam / Shallow		
		(eroded)	Cleve		
GXB	4.0	Very gentle	Heggaton	E	Slopes with mainly sand over clay soils of low fertility
		slopes	Mangalo	E	and prone to wind erosion and water repellence. Water
GXC	3.1	Gentle slopes	Heggaton	E	erosion potential is slight to moderate. There is
			Mangalo	E	significant saline seepage.
		Saline seeps	Saline alluvial	М	GXB Slight water erosion potential and up to 2%
GXL	2.0	Very gentle	Heggaton	E	saline seepage.
		slopes	Mangalo	E	GXC Moderate water erosion potential and 2-10%
		Saline seeps	Saline alluvial	М	saline seepage. GXL As for GXB , with 2-10% saline seepage.
JWB	1.3	Very gentle	Mangalo	D	Deep fertile soils with slight erosion potential, but 2-
		slopes	J		10% saline seepage.
KNE	1.4	Drainage	Wiabuna	E	Deep fertile soils, slight salinity.
		depression	Mangalo	E	
O-C	0.1	Moderate sandhills	Lowan	D	Wind erosion potential, water repellence, low fertility.
OCb	0.2	Moderate sandhills	Lowan	V	Sandhills (60-90% coverage) as for O-C , with sandy loam, poorly structured surface soil (moderate fertility,
		Gentle slopes	Mangalo	E	prone to acidification). Highly erodible.
0.0	0.0	_			
OCe	0.2	Gentle slopes	Mangalo	V	As for OCb , but with 30-60% sandhill coverage.
		Moderate sandhills	Lowan	E	
OGJ	0.1	Sandy flats	Wharminda	V	Sand over clay and deep sand - low fertility, wind
003	0.1	Low sandhills	Lowan	E	erosion potential and water repellence.
XEK	0.1	Creek flats	Gradational /	D	Alluvial soils deep and fertile with high productive
ALK	0.1	Creek nats	uniform		potential. Salinity risk throughout, but variable
			alluvial		distribution as indicated. Salt affected areas suitable for
XEN	2.3	Creek flats	Gradational /	D	revegetation with salt tolerant species.
		with 2-10%	uniform		Most watercourses eroded or at risk.
		saline seepage	alluvial		Flats subject to flooding.
		patches	Saline alluvial	М	
XEp	0.1	Gentle slopes	Gradational /	V	
•		with 10-50%	uniform	1	
		saline seepage	alluvial		
			Saline alluvial	С	
XEs	1.5	Creek flats	Gradational /	V	
		with 10-50%	uniform	1	
		saline seepage	alluvial		
		patches	Saline alluvial	E	
ZA-	1.7	Saline creek	Wet saline soil	E	Mostly too saline for cropping, but suitable for
		flats	Saline alluvial	С	revegetation with salt tolerant species for grazing,
			Alluvial	L	fodder or amenity.

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)

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

