## CAO Caora Land System

Gently undulating flats and low rises in the central part of the Hundred of Wells

**Area**: 48.9 km<sup>2</sup>

**Annual rainfall**: 550 – 570 mm average

**Geology:** The System is formed on sandy clays and limestones of the Padthaway Formation,

lying between isolated outcrops of Bridgewater Formation calcarenites. Limited areas

of Molineaux Sand overlie these formations.

**Topography:** The Land System is a complex of calcarenite rises and very gently undulating corridors

and depressions. The rises are up to 30 m high, with variable sheet rock outcrops of calcrete, and associated surface stone, and sand spreads. The corridors vary from relatively well drained higher level flats, to closed depressions with variable swamps, formed as saline groundwater rises to the surface. All flats are affected to some

degree by salinization, and are at risk of increased problems.

**Elevation**: 20 - 50 m

**Relief**: Up to 30 m

**Soils:** Soils on rising ground are either moderately shallow and stony, or deep and sandy.

On flats, sand over clay and calcareous loams dominate the better drained areas,

with wet saline soils on poorly drained land.

Main soils

Soils on rises

**B3** Shallow stony loamy sand over calcrete

B7a Sand over brown clay on calcreteG2 Loamy sand over sandy clay loam

**H3** Deep bleached sand

Soils on moderately well to imperfectly drained flats

**B7/N2** Sand over saline clay on calcrete

**N2/G4** Sand over saline clay

Minor soils

Soils on moderately well to imperfectly drained flats

A5 Calcareous sandy loam

**B7b** Sand over brown clay on calcrete

G3/G4 Sand over dispersive clay

Soils on wet saline flats

N2a Saline clay over sand

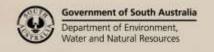
**N2b** Wet highly saline calcareous loam

Main features: The Caora Land System is a complex landscape of well drained and non saline rises

with low fertility sandy and shallow stony soils, and variable soils on flats and

depressions subject to salinization by rising ground water tables. Productivity depends on maintaining or improving fertility on rises and establishing salt tolerant species on

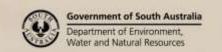
flats.





**Soil Landscape Unit summary:** 8 Soil Landscape Units (SLUs) mapped in the Caora Land System:

SLU	% of area	Main features #		
МЈС	40.0	Undulating to rolling rises and low hills formed on calcreted calcarenite and overlain by siliceous sand. There is up to 30 m relief and slopes vary from 3-12%. There is variable surface calcrete, depending on presence of sand. 10-20% stone cover is common, with outcropping reefs and heavy stone in places.  Main soils: loamy sand over sandy clay loam - G2 (E), deep bleached sand - H3 (E), shallow stony loamy sand over calcrete - B3 (C) and sand over brown clay on calcrete - B7a (L).		
		Key properties: Drainage: Fertility: Physical condition:	Rapidly to well drained.  Very low on deep sands to moderately low on stony soils.  Surface soils are soft to loose and do not restrict root growth.  Where subsoils occur they are friable and not restrictive to root	
		AWHC:	growth.  Moderate on sandy soils. Very low to low on stony soils, due to shallow depth to hard calcrete.	
		Salinity: Erosion potential: Water repellence: Rockiness: Other:	Low. Water: Low to moderate, depending on slope. Wind: High on sand spreads to moderately low on stony ground. Strong on sand spreads. Low to slight on stony land. Nil on sand spreads. Variable to 50%, usually less than 20%. The higher rises are exposed.	
		<u>Summary</u> : Deep, lo of marginal fertility.	w fertility, water repellent and erodible sands with shallow, stony soils	
MJb MJt	11.8	Complex of calcarenite rises and depressions.  MJb Low rises with about 20% flats and minor swamps.  MJt Low rises with about 20% swampy flats.  Main soils: shallow stony loamy sand on calcrete - B3 (C), loamy sand over sandy clay loam - G2 (L), sand over brown clay on calcrete - B7a (L) and deep bleached sand - H3 (L) on rises. Soils on flats include sand over brown clay on calcrete - B7b and sand over dispersive clay - G3/G4 (moderately well drained), sand over saline clay (on calcrete) - N2/G4 and B7/N2 (imperfectly drained), and wet saline soils - N2a and N2b in swamps.		
		Key properties: Drainage:  Fertility: Physical condition: AWHC: Salinity: Erosion potential: Water repellence: Rockiness	Well drained on rises. Moderately well to poorly drained in depressions.  Moderately low to low.  No limitations to root growth.  Moderate.  Moderately low on rises. Moderate to very high in depressions.  Water: Low Wind: Moderately low.  Moderately low.  Up to 20% surface calcrete on rises.	
		<u>Summary</u> : Low fertility (but well drained and non saline soils) on rises are dominant. Flats are variable; the less saline areas are potentially productive, but rising saline water tables are reducing this potential.		
NAp	16.2	Very gently undulating flats formed on Padthaway Formation sediments with extensive very low sandy rises and limited poorly drained depressions.  Main soils: <a href="mailto:sandover brown clay on calcrete">sandover brown clay on calcrete</a> - <a href="mailto:B7b">B7b</a> (E) on moderately well drained flats, loamy sand over sandy clay loam - <a href="mailto:G2">G2</a> (E) on rises, <a href="mailto:sandover dispersive clay">sandover dispersive clay</a> - <a href="mailto:G3">G3/G4</a> (L) on imperfectly drained flats, and <a href="mailto:sandover saline clay on calcrete">sandover saline clay</a> on <a href="mailto:Calcrete">Calcrete</a> - <a href="mailto:B7/N2">B7/N2</a> (M) and <a href="mailto:Sandover saline clay">sandover saline clay</a> - <a href="Mailto:N2">N2/G4</a> (M) in poorly drained depressions.		
		Key properties: Drainage:	Moderately well drained (flats), rapidly drained (rises) and poorly drained (depressions).	

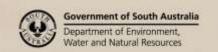




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		Fertility:	Moderately low to low.	
		Physical condition:	No restrictions to root growth except in subsoils of dispersive G3/G4 soils.	
		AWHC:	Moderate to moderately low.	
		Salinity:	Moderate (flats), low (rises), moderately high (depressions).	
		Erosion potential	Water: Low Wind: Moderate to moderately low.	
		Water repellence:	Moderate to low.	
		Rockiness:	Minor surface calcrete on flats.	
		Summary: These fla	ts are potentially productive with mostly well drained moderately	
			n threats are likely increases in salinity and waterlogging as saline	
		ground water table	s rise.	
ZnJ	6.4	Flats formed on Pac	Ithaway Formation sediments, generally affected by saline ground	
ZnL	8.5	water tables. There	are varying proportions of swampy depressions and low calcarenite	
ZnO	1.6	rises.		
Znl	2.7	ZnJ Flats with minor swamps.		
		<b>ZnL</b> Flats with low		
			ensive swampy depressions.	
			stony rises and extensive swamps.	
			er saline clay - N2/G4 (C-L), sand over saline clay on calcrete - B7/N2	
			us sandy loam - A5 (C-L), with wet saline soils - N2a and N2b (M-E) in	
		swampy depressions. <u>Sand over friable brown clay on calcrete</u> - <b>B7a</b> (M-L) and <u>shallow</u> <u>stony loamy sand over calcrete</u> - <b>B3</b> (M-L) occur on stony rises.		
		STOTIY TOUTTLY SUITU O	ver calcrere - <b>b3</b> (IVI-L) occur on storry fises.	
		Key properties:		
		Drainage:	Poor to very poor (except stony rises).	
		Fertility:	Moderately low.	
		,	No surface limitations, but some subsoils are dispersive and restrict	
		,	root growth.	
		AWHC:	Moderate.	
		Salinity:	High to very high.	
		Erosion potential:	Water: Low. Wind: Moderately low to low.	
		Water repellence:	Low.	
		Rockiness:	Nil (except on stony rises).	
		C #1		
		Summary: These flats have low productive potential unless sown to salt and waterlogging		
			ecies. Most of the land is too saline for conventional grasses and	
		clovers.		

# 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:

A5 <u>Calcareous sandy loam (Supracalcic Calcarosol)</u>

Calcareous sandy loam grading to a grey highly calcareous sandy clay loam over rubbly calcrete within 60 cm.

**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.

**B7a** Sand over brown clay on calcrete (Petrocalcic, Brown Chromosol)

Medium thickness sand overlying yellowish brown friable clay on calcreted calcarenite within 50 cm.

**B7b** Sand over brown clay on calcrete (Petrocalcic, Brown Chromosol/ Sodosol)

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

**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.

G2 <u>Loamy sand over sandy clay loam (Petrocalcic, Brown Chromosol / Kandosol)</u>

Medium to thick loamy sand with a bleached A2 layer abruptly overlying a brownish friable light sandy clay loam to sandy clay over calcreted calcarenite.

G3/G4 Sand over dispersive clay (Lithocalcic, Brown / Grey Sodosol)

Medium to thick sand abruptly overlying a brown and grey mottled columnar sandy clay loam to sandy clay, with rubbly carbonate at depth.

N2/G4 Wet sand over clay (Hypercalcic / Lithocalcic, Grey Sodosol OR Sodosolic, Hypersalic Hydrosol)

Medium thickness loamy sand abruptly overlying a grey and yellow brown mottled clay (seasonally saturated), with rubbly to soft carbonate at depth.

**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.

N2a Saline clay over sand (Petrocalcic, Calcarosolic, Salic Hydrosol)

Thin black saline clay overlying a highly calcareous sandy soil with variable calcrete pans and fragments and a saline water table within 100 cm.

**N2b** Wet highly saline calcareous loam (Calcarosolic, Hypersalic Hydrosol)

Grey very highly calcareous loam grading to a pale grey clay loam over a white very highly calcareous silty clay loam by about 30 cm, with a water table within 100 cm.

Further information: DEWNR Soil and Land Program

