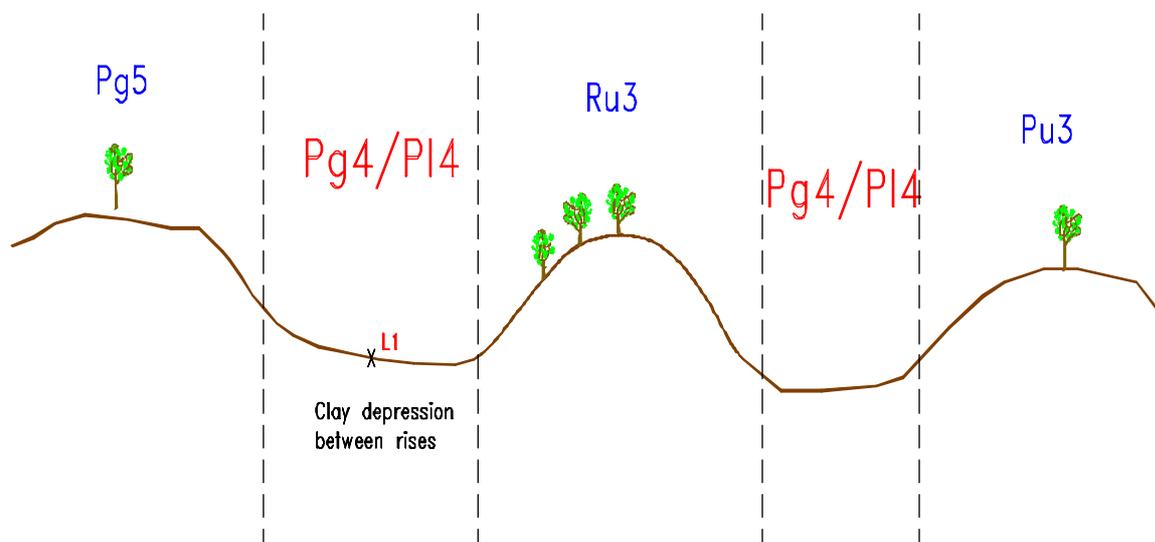


6.2.4 NORTHERN CRACKING CLAY PLAINS - 4 LAND SYSTEM

Map units Pg4, P14



Landscape

The Northern Cracking Clay Plains are generally level to very gently undulating plains occupying low-lying areas between north-south trending rises and low hills. Gilgai micro-relief is common due to the high shrinking and swelling of the clay. This land system has been spatially separated from the Southern Cracking Clay Plains-10 by the Little Desert.

Small areas that could not be mapped individually, due to restrictions of scale, occur between the rises of some of the units north of the Little Desert.

The northern cracking clay plains are often poorly drained due to the low position in the landscape.

The parent material is a combination of past lowland swamp deposits and clay deposition (probably estuarine, riverine and lacustrine) behind stranded beach ridges (Blackburn et al. 1966).



Plate 10 Clay plains between the rises

Native Vegetation

Black Box and Lignum Bush are commonly found on the clay soils.

Soil types

Grey vertosol (cracking uniform clay soil) is the dominant soil type. This soil cracks deeply on drying and usually has a self-mulching surface. Less commonly, the soil is weakly structured and hard with significant surface cracking. Surface horizons are generally slightly alkaline (but may be slightly acid in undisturbed areas), strongly structured and dark grey in colour. Subsoils are sodic to strongly sodic, becoming paler in colour and more alkaline with depth. The zone of maximum carbonate accumulation usually occurs below a depth of 50 cm.

REPRESENTATIVE SOIL TYPE FOR NORTHERN CRACKING CLAY PLAINS -4 - Pg4/P14 LAND UNITS

MAP UNIT: Pg4, P14

Site No.: L1

Position in Landscape: Plain

Aust. Soil Class: Epicalcareous-Epihypersodic, Self-mulching, Grey VERTOSOL

Northcote Factual Key: Ug 5.2

Great Soil Group: grey clay

General Landscape Description:

This soil type represents both the level plains (P14) and the gently undulating clay plain (Pg4) land units north of the Little Desert. It commonly occurs between north-south trending rises. Gilgai micro-relief is apparent. Black Box occurs in undisturbed areas.



Soil Profile Morphology

Topsoil

A1 0-5 cm Dark grey (10YR4/1) *medium clay*, strong subangular blocky structure, very firm consistence dry, surface cracking occurs when dry. pH 6.5. Abrupt and irregular change to:

Note: patches of bleached *fine sandy light clay* (pH 7.2) can occur below the surface horizon.

Subsoil

B21 5-90 cm Grey (10YR5/1) *heavy clay*, strong coarse prismatic, breaking to strong coarse blocky structure (becoming strong fine blocky with depth), strong consistence dry, contains a trace (1 %) amount of ironstone. pH 8.3. Gradual change to:

B22k 90-140 cm Light olive grey (5Y6/2) *medium heavy clay*, strong coarse blocky, breaking to strong fine-medium blocky structure; contains few (5 %) soft and hard carbonate nodules. pH 9.1.

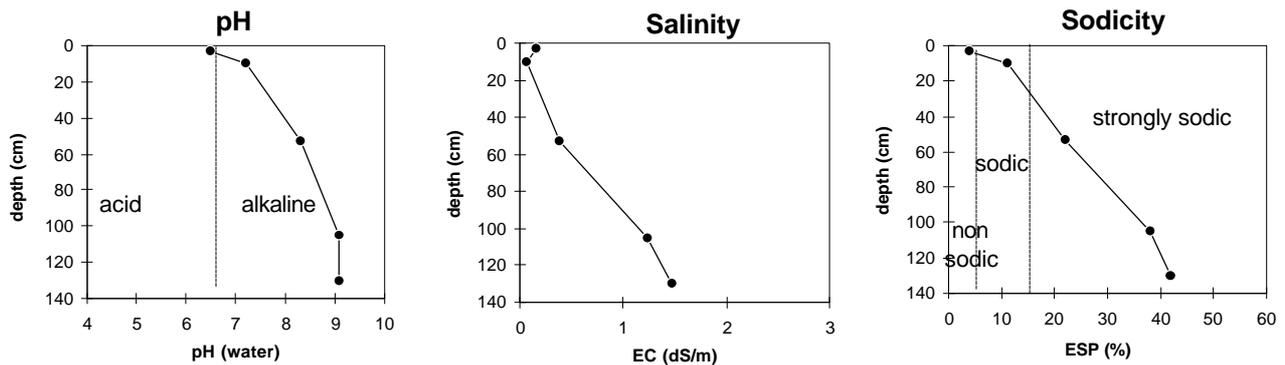


Soil Profile Characteristics:

Horizon	pH	Salinity	Sodicity	Dispersion	Internal Drainage	Hydrophobicity
Surface (A1 horizon)	slightly acid	very low	non-sodic	none ¹	moderately well drained	nil*
Subsoil (B21 horizon)	moderately alkaline	low	strongly sodic	moderate		
Deeper subsoil (at 1 metre)	very strongly alkaline	high	strongly sodic	strong		

1 strong dispersion after remoulding.

* estimate



Note: The relatively low surface pH reading will not be representative of the paddock, as the site is on a relatively undisturbed fence line.

Key Profile Features:

- Sodic subsoil
- Alkaline subsoil
- Carbonates at depth
- Self-mulching surface soil
- Clay texture throughout profile
- Strong cracking when dry

Soil Restrictions and Management Prescriptions

Feature	Result	Management Prescription
Sodic clay subsoil	Poor water and air movement into the subsoil resulting in waterlogging (impeded internal drainage). Poor root growth into the subsoil reducing the volume of the soil able to be exploited.	Gypsum applications if the subsoil is close to the surface and topsoil textures are light. <i>Dryland cropping</i> - include deep rooted crops in the rotation, minimum tillage and stubble retention. <i>Horticulture</i> - deep ripping with gypsum, install tile drainage (if appropriate).
Alkaline subsoil	Potential nutrient imbalance. Unsuitable for alkaline intolerant plants. May indicate subsoil sodicity.	Grow shallow rooted species. Grow alkaline tolerant plants.
Carbonate layer (lime)	Highly alkaline layer. Can restrict root growth of sensitive plant species. Potential for nutrient imbalance.	Grow alkaline tolerant species. Supply trace elements ie zinc. Considered sub-surface drainage (if appropriate).

	May restrict water movement if layer is hard rock.	
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Land Suitability Rating Table

LAND USE	SUITABILITY CLASS	MAJOR LIMITING COMPONENT
Wheat	1	No major limitation
Canola	2	Soil
Chickpeas	2	Soil
Lentils	2	Soil
White clover seed	2	Soil
Lucerne for seed production	2	Soil
Viticulture	2	Soil
Apples	2	Climate, soil
Potatoes	3	Soil
Carrots	3	Soil
Onions	3	Soil
Sweet corn	2	Soil
Radiata Pine	3	Climate
Blue Gum	3	Climate

Land Suitability Assessment and Primary Limitations

Wheat	<i>Climate</i>	1*	No major limitations (some areas may be high frost risk)
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	1	No major limitation
Canola	<i>Climate</i>	1*	No major limitations (some areas may be high frost risk)
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	2	Soil salinity
Chickpeas	<i>Climate</i>	1*	No major limitations (some areas may be high frost risk)
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	2	Topsoil and subsoil texture, soil salinity, slightly impeded internal drainage
Lentils	<i>Climate</i>	1*	No major limitations (some areas may be high frost risk)
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	2	Topsoil and subsoil texture, soil salinity, slightly impeded internal drainage
White clover seed	<i>Climate</i>	1	No major limitations
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	2	Slightly alkaline subsoil pH, soil salinity

Lucerne for seed

Production	<i>Climate</i>	1	No major limitation
	<i>Landscape</i>	1	No major limitations
	<i>Soil</i>	2	Soil salinity, slightly impeded internal drainage
Viticulture	<i>Climate</i>	1*	No major limitations (some areas may be high frost risk)
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	2	Slightly alkaline subsoil pH, soil salinity, slightly impeded internal drainage
Apples	<i>Climate</i>	2	Slightly high mean maximum January temperature
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	2	Slightly alkaline subsoil pH, soil salinity, slightly impeded internal drainage
Potatoes	<i>Climate</i>	2	Slightly high mean maximum January temperature
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	3	Clay topsoil
Carrots	<i>Climate</i>	1	No major limitation
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	3	Clay topsoil
Onions	<i>Climate</i>	1*	No major limitations (some areas may be high frost risk)
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	3	Clay topsoil
Sweet corn	<i>Climate</i>	1	No major limitation
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	2	Clay topsoil, soil salinity, slightly impeded internal drainage
Radiata Pine	<i>Climate</i>	3	Low rainfall
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	2	Topsoil depth, slightly alkaline subsoil pH
Blue Gum	<i>Climate</i>	3	Low rainfall
	<i>Landscape</i>	1	No major limitation
	<i>Soil</i>	2	Topsoil depth, slightly alkaline subsoil pH

* Some areas may be a higher frost risk, therefore may be potentially unsuitable. Obtain local knowledge on frost prior to investment.