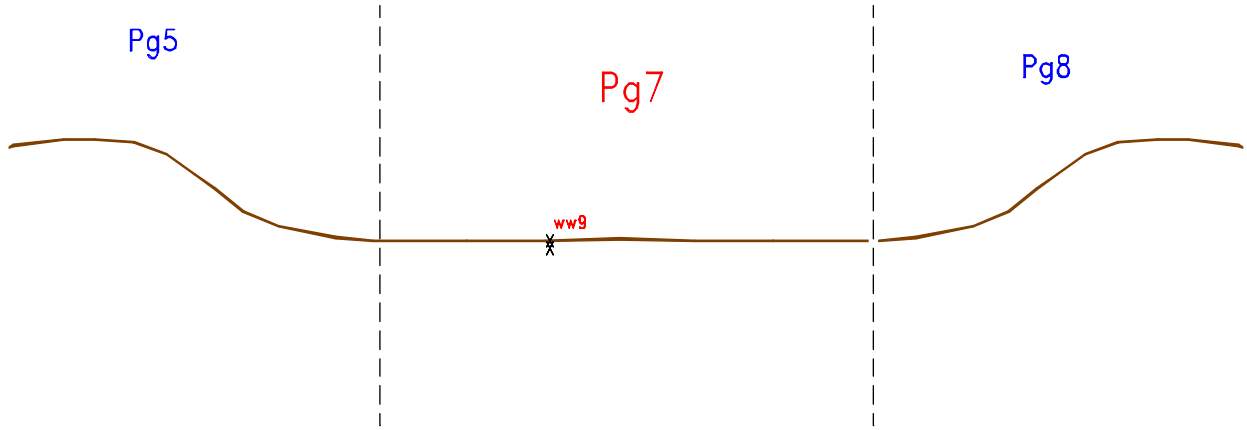
6.2.7 SELF-MULCHING CLAY PLAINS - 7 LAND SYSTEM
Map unit Pg7



Landscape
This land system consists of the clay plains south of Serviceton and extending towards Kaniva, and is generally gently undulating, with some minor NNW-SSE sand rises dissecting the landscape.

Native Vegetation
This land system supports mainly Buloke.

Soil types
The soils are predominantly cracking clays (vertosols), with signs of gilgai micro-relief (WW9).

The gilgai pattern of the land, due to the high shrink-swell of the soil, has caused variation in soil over a small area. There is evidence of red cracking soil in close proximity to grey cracking soils.

The surface is strongly self-mulching, which means that the surface layer forms a shallow mulch of soil when dry. These soils tend to self repair after cultivation, therefore tillage of the wet soil will not cause compaction.

Current land use
Due to the gentle slope of the land, good physical characteristics of the soil and ability to self repair when worked, these self mulching vertosols are ideally suited to cropping.

REPRESENTATIVE SOIL TYPE FOR THE SELF-MULCHING CLAY PLAINS - 7 - Pg7 LAND UNIT

MAP UNIT: Pg7 **Site No.:** WW9

Position in Landscape: Flat **Grid Ref:** 504 601 E, 5972 743 N
Aust. Soil Class.: Epicalcareous-Endohypersodic Self-mulching, Grey VERTOSOL
Northcote Factual Key: Ug5.2 ***Great Soil Group:*** grey clay

General Landscape Description:

This soil type occurs on the gently undulating plains south of Serviceton and extends east towards Kaniva. The soils have a strongly self-mulching surface and a high shrink/swell potential.

Soil Profile Morphology:

Topsoil
A1 0-10 cm Very dark grey (10YR3/1) *light medium clay*, self-mulching surface condition, moderate blocky structure, (peds 20-50 mm), breaking to polyhedral structure, peds 5-10 mm. pH 8.3.

Subsoil

B21 10-25 cm Dark grey (10YR4/1) *light medium clay*, moderate blocky structure, (peds 20-50 mm), smooth faced peds, some rough faces due to compaction. pH 8.7.

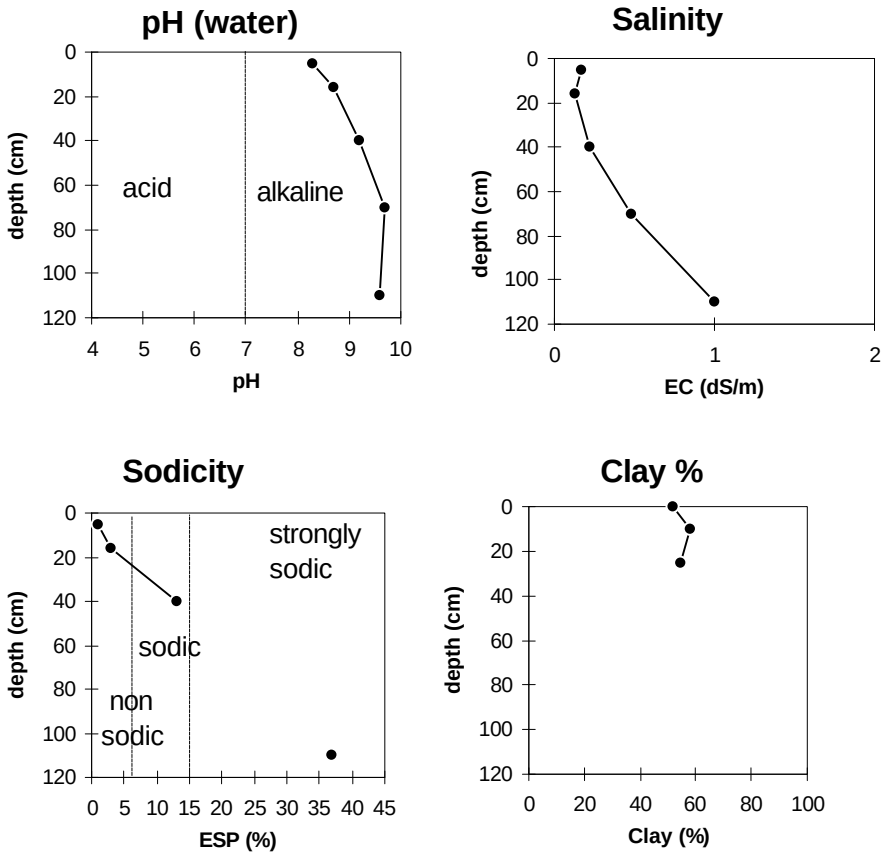
B22 25-55 cm Dark reddish grey (2.5Y4/1) *light medium clay*, moderate prismatic structure, (peds 50-100 mm), breaking to strong blocky structure, (peds 20-50 mm), breaking further to moderate blocky structure, (peds 10-20 mm), very strong consistence when dry, a few soft calcium carbonate segregations. pH 9.2.

B23K 55-110 cm Light grey (2.5Y7/2) *light clay*, moderate prismatic structure, (peds 50-100 mm), breaking to moderate blocky structure, (peds 20-50 mm), many soft calcium carbonate segregations. pH 9.7.

B24 110-190 cm+ Light grey (2.5Y7/2) *medium heavy clay*, strong lenticular structure, with some small slickensides. pH 9.6.

Soil Profile Characteristics:

Horizon	pH	Salinity	Sodicity	Dispersion	Internal Drainage	Hydro-phobicity
Surface (A1 horizon)	moderately alkaline	very low	non-sodic	nil	moderately well drained	nil
Subsoil (B21 horizon)	strongly alkaline	very low	non-sodic	nil		
Deeper subsoil (at 1 metre)	extremely alkaline	high	strongly sodic	slight		



Key Profile Features:

- Alkaline topsoil and subsoil
- Non-sodic and non-dispersive in first metre
- Soil salinity increases with depth
- The landscape is has gilagi micro-relief, creating uneven horizons. In some cases the carbonate horizon can be within 30 cm of surface
- A discontinuous bleached A2 horizon with a fine sandy clay texture can occur that indicates that some waterlogging may occur in the depressions on the gilgai micro-relief
- Surface is self-mulching
- Topsoil can become compacted following cultivation when soil is wet
- Plant Available Water Capacity (PAWC) is considered to be high (estimated at 200 mm) for this site profile based on an Effective Rooting Depth (ERD) of 100 cm. Rooting depth will be restricted by subsoil conditions, such as strongly sodic (Exchangeable Sodium Percentage >20%), high soluble salt levels (Chloride >0.1%), poor structure (e.g. massive or very coarse, columnar or prismatic), very high carbonate (lime) content (not applicable to all plant species) or hard rock.

Soil Restrictions and Management Prescriptions

Feature	Result	Management Prescription
Alkaline topsoil	Potential nutrient imbalance. Unsuitable for alkaline intolerant plants.	Grow alkaline tolerant species. Supply trace elements (zinc) in fertiliser.
Alkaline subsoil	Potential nutrient imbalance. Unsuitable for alkaline intolerant plants. May indicate subsoil sodicity.	Grow shallow rooted species. Grow alkaline tolerant plants.
Soil salinity at depth	Poor or no plant growth for deeper rooted species. Indication of waterlogging (impeded internal drainage) or high water table.	Grow shallow rooted species. Increase plant water use throughout the catchment. Install subsoil drainage (if appropriate). Minimise irrigation water loss below the root zone (improve irrigation efficiency).

Land Suitability Rating Table

LAND USE	SUITABILITY CLASS	MAJOR LIMITING COMPONENT
Wheat	2	Climate
Canola	2	Climate, soil
Chickpeas	2	Climate, soil
Lentils	2	Climate, soil
White clover seed	2	Soil
Lucerne for seed production	3	Soil
Viticulture	3	Soil
Apples	3	Soil
Potatoes	3	Soil
Carrots	2	Soil
Onions	3	Soil
Sweet corn	2	Soil
Radiata Pine	3	Climate, soil
Blue Gum	3	Climate, soil

Land Suitability Assessment and Primary Limitations

Wheat	*Climate*	2*	Moderate to high frost risk
	Landscape	1	No major limitation
	Soil	1	No major limitation
Canola	*Climate*	2*	Moderate to high frost risk
	Landscape	1	No major limitation
	Soil	2	Soil salinity, slightly alkaline pH
Chickpeas	*Climate*	2*	Moderate to high frost risk
	Landscape	1	No major limitation
	Soil	2	Slightly alkaline subsoil pH, slightly impeded internal drainage
Lentils	*Climate*	2*	Moderate to high frost risk
	Landscape	1	No major limitation
	Soil	2	Slightly alkaline subsoil pH, slightly impeded internal drainage
White clover seed	*Climate*	1	No major limitation
	Landscape	1	No major limitation
	Soil	2	Slightly alkaline pH, soil salinity
Lucerne for seed production	*Climate*	1	No major limitation
	Landscape	1	No major limitation
	Soil	3	Soil salinity
Viticulture	*Climate*	2*	Moderate to high frost risk
	Landscape	1	No major limitation
	Soil	3	Soil salinity
Apples	*Climate*	2*	Moderate to high frost risk, slightly high mean maximum January temperature
	Landscape	1	No major limitation
	Soil	3	Alkaline pH, soil salinity
Potatoes	*Climate*	2	Slightly high mean maximum January temperature
	Landscape	1	No major limitation
	Soil	3	Alkaline topsoil pH
Carrots	*Climate*	1	No major limitation
	Landscape	1	No major limitation

	Soil	2	Slightly alkaline topsoil pH, soil salinity, slightly impeded internal drainage, topsoil texture
Onions	*Climate*	2*	Moderate to high frost risk
	Landscape	1	No major limitation
	Soil	3	Shallow depth of topsoil, alkaline topsoil pH
Sweet corn	*Climate*	1	No major limitation
	Landscape	1	No major limitation
	Soil	2	Slightly alkaline topsoil pH, slightly impeded internal drainage
Radiata Pine	*Climate*	3	Low rainfall
	Landscape	1	No major limitation
	Soil	3	Alkaline subsoil pH
Blue Gum	*Climate*	3	Low rainfall
	Landscape	1	No major limitation
	Soil	3	Alkaline subsoil pH

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