

CALCAREOUS GRADATIONAL CLAY LOAM TO CLAY

General Description: *Calcareous well structured clay loam to light clay, becoming more clayey with depth, over very highly calcareous deep subsoil clay underlain by coarsely structured lake bed clay*

Landform: Level to very gently undulating plains.

Substrate: Old lake bed clay of Pleistocene age (Hindmarsh Clay).

Vegetation:

Type Site:	Site No.:	CL058	1:50,000 mapsheet:	6628-4 (Gawler)
	Hundred:	Port Gawler	Easting:	278799
	Section:	145	Northing:	6178271
	Sampling date:	2013	Annual rainfall:	410 mm average

Very gently sloping plain, with slope of 0.5%. Firm, seasonally cracking surface with no stones.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-7	Dark reddish brown moderately calcareous clay loam with strong granular structure. Clear to:
7-25	Reddish brown highly calcareous light clay with weak subangular blocky structure. Clear to:
25-40	Reddish brown very highly calcareous light medium clay with moderate subangular blocky structure and 2-10% soft calcareous segregations. Clear to:
40-70	Strong brown very highly calcareous massive light medium clay with more than 50% soft calcareous segregations.
70-90	Strong brown very highly calcareous medium clay with moderate coarse angular blocky structure and more than 50% soft calcareous segregations.



Classification: Endohypersodic, Pedal, Hypercalcic Calcarosol; thick, non-gravelly, clayey / clayey, deep



Summary of Properties

Drainage: Moderately well drained. No part of the profile is likely to remain wet for more than a week following heavy or prolonged rainfall.

Fertility: Inherent fertility is high, as indicated by the exchangeable cation data (CEC exceeding 15 cmol(+)/kg means high nutrient retention capacity). There are no deficiencies at this site according to the laboratory data. Phosphorus and potassium levels are particularly high. Alkaline pH and free carbonate can reduce availability of phosphorus and some trace elements, but 2.5% surface carbonate will have minimal effect.

pH: Alkaline at the surface, strongly alkaline with depth.

Rooting depth: Most root growth is in the upper 40 cm (i.e. above the main carbonate layer, but there is some growth to 70 cm).

Barriers to root growth:

Physical: There are no significant physical barriers.

Chemical: High pH and sodicity from 70 cm severely restricts deeper root growth.

Waterholding capacity: Approximately 80 mm in potential rootzone.

Seedling emergence: Satisfactory.

Workability: Moderately good – clay loamy surface can become sticky when wet.

Erosion Potential

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	NO ₃ mg/kg	Avail. P mg/kg	PBI	Avail. K mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
													Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	8.2	7.6	2.6	0.242	0.85	2.67	21	107	145	1045	8.7	1.8	1.33	7	8.66	2.15	34.2	27.9	3.56	0.49	2.2	1.6
0-7	8.4	7.7	2.4	0.194	0.63	2.52	15	53	169	691	6.7	1.8	1.23	8	6.00	1.13	34.6	28.4	3.61	0.39	2.1	1.1
7-25	8.5	7.8	4.1	0.140	0.53	2.12	7	31	-	384	6.0	1.9	1.41	7	4.28	1.46	33.6	27.9	4.06	0.45	1.1	1.3
25-40	8.6	7.8	17	0.182	0.50	1.69	5	53	-	305	9.1	1.9	1.58	7	3.63	1.79	31.9	26.3	4.24	0.61	0.8	1.9
40-70	9.1	8.1	45	0.360	1.50	0.63	2	6	-	172	34.5	2.5	1.15	4	1.18	0.26	24.0	15.2	5.68	2.7	0.4	11.2
70-90	9.3	8.3	35	0.700	2.56	0.34	1	<2	-	235	69.7	10.6	0.57	4	0.65	0.50	24.2	8.99	7.89	6.67	0.6	27.6

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.

Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC.

Further information: [DEWNR Soil and Land Program](#)

