CALCAREOUS GRADATIONAL SANDY LOAM

General Description: *Calcareous sandy loam, with a near surface rubble layer, becoming more clayey and calcareous with depth and grading to heavy clay below 100 cm*

Landform: Level to very gently undulating plains.

Substrate: Hindmarsh Clay - heavy lake floor clay with pockets of fine carbonate leached in from above.

Vegetation:

Type Site:

Site No.:	CL053	1:50,000 mapsheet:	6628-4 (Gawler)
Hundred:	Mudla Wirra	Easting:	287650
Section:	693	Northing:	6177170
Sampling date:	25/07/07	Annual rainfall:	430 mm average

Flat plain, firm surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-10	Dark brown friable moderately calcareous weakly granular fine sandy loam. Clear to:
10-20	Dark brown friable weakly subangular blocky highly calcareous light clay loam. Clear to:
20-40	Strong brown friable very highly calcareous massive clay loam with 20-50% carbonate nodules (6-20 mm). Gradual to:
40-75	Reddish yellow friable very highly calcareous massive clay loam with more than 50% fine carbonate segregations and 2-10% carbonate nodules. Diffuse to:
75-125	Reddish yellow friable very highly calcareous massive heavy clay loam with more than 50% fine carbonate segregations. Diffuse to:
125-160	Yellowish red firm highly calcareous medium clay with moderate coarse angular blocky structure and 20-50% fine carbonate segregations. Diffuse to:
160-185	Red, with light yellowish brown mottles, hard heavy clay with moderate very coarse lenticular structure, 2-10% soft carbonate and manganese segregations.

Classification: Endohypersodic, Regolithic, Supracalcic Calcarosol; medium, non-gravelly, loamy/clayey, deep

Summary of Properties

Drainage: Moderately well drained. No part of the profile is likely to be saturated for more than a week at a time.

Fertility: Inherent fertility is moderately high, as indicated by the exchangeable cation data. Test data indicate that levels of all nutrient elements are adequate to very high.

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

Rooting depth: 160 cm in sampling pit, but few roots below 75 cm.

Barriers to root growth:

Physical: The only apparent physical barrier is the hard, coarsely structured clayey substrate, but at 125 cm depth, it will only affect root growth of perennial plants.

Chemical: Low nutrient availability caused by high carbonate concentrations in a clayey matrix impede root growth below 75 cm. High pH, sodicity and boron concentrations below 125 cm severely restrict deeper root growth

Waterholding capacity: Approximately 100 mm in the potential rootzone.

Seedling emergence: Satisfactory.

Workability: Calcareous sandy loams are easily worked over a range of moisture conditions, although dry working causes powdering.

Erosion Potential:

Water: Low.

Wind: Low to moderately low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO_4-S mg/kg	Boron mg/kg	React Fe mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
													Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-10	8.5	7.7	4	0.24	2.13	1.55	142	2004	44	21.6	2.7	555	0.98	23	18.4	5.98	30.5	21.2	4.28	0.22	4.85	0.7
10-20	8.5	7.7	4	0.24	1.72	0.49	86	1716	63	17.6	2.7	608	0.86	19	12.3	3.35	27.4	20.6	2.49	0.23	4.08	0.8
20-40	8.8	7.8	30	0.20	1.38	0.67	35	1362	68	19.0	3.3	409	0.64	11	3.26	0.65	25.3	18.7	2.70	0.39	3.47	1.5
40-75	8.9	7.9	46	0.19	1.15	0.38	10	1373	41	24.4	3.9	253	0.51	11	1.52	0.32	20.9	13.9	3.21	0.44	3.33	2.1
75-125	9.1	8.0	57	0.23	1.43	0.26	6	1400	35	34.9	5.9	254	0.25	9	1.46	0.49	20.5	9.56	6.12	1.34	3.48	6.5
125-160	9.3	8.1	49	0.28	1.14	0.18	2	342	42	20.7	14.9	325	0.2	13	2.43	0.24	21.5	6.99	9.05	4.41	1.04	20.5
160-185	9.5	8.4	6	0.41	1.25	0.11	1	474	67	18.5	43.0	542	0.31	21	51.2	0.25	28.9	4.32	12.2	11.0	1.32	38.1

Note: 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, in this case estimated by the sum of cations.

Further information: DEWNR Soil and Land Program