GRADATIONAL CLAY LOAM

General Description: *Clay loam grading to a red or brown well structured clay, calcareous with depth*

Landform: Gently inclined outwash fans.

Substrate: Medium textured outwash sediments.

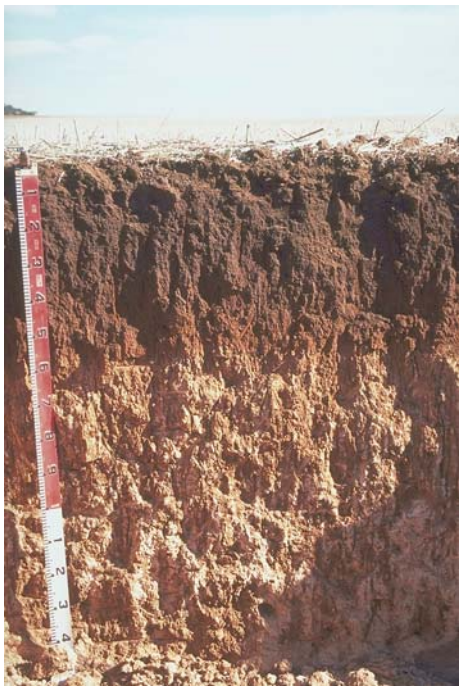
Vegetation: Mallee.

Type Site: Site No.: CM072

1:50,000 sheet:	6529-4 (Wakefield)	Hundred:	Kulpara
Annual rainfall:	425 mm	Sampling date:	11/03/96
Landform:	Upper slope of outwash fan, 3% slope		
Surface:	Firm with 2-10% quartz stone (20-60 mm)		

Soil Description:

Depth (cm)	*Description*
0-10	Dark brown hard massive clay loam. Abrupt to:
10-35	Dark brown firm clay loam with weak prismatic structure. Clear to:
35-60	Reddish brown friable clay loam with moderate subangular blocky structure. Abrupt to:
60-100	Yellowish red firm very highly calcareous light clay with weak subangular blocky structure and 20-50% fine carbonate segregations. Gradual to:
100-150	Orange firm very highly calcareous clay loam with weak subangular blocky structure and 20-50% fine carbonate segregations.



Classification: Sodic, Hypercalcic, Brown Dermosol; medium, slightly gravelly, clay loamy / clayey, deep

Summary of Properties

Drainage Well drained. Soil rarely remains wet for more than a few days following heavy or prolonged rainfall.

Fertility Inherent fertility is moderate, as indicated by the exchangeable cation data. Surface fertility relies on organic matter levels which are adequate, and on phosphorus levels which are good at the sampling site. Trace element concentrations are high.

pH Neutral at the surface, alkaline with depth and substrate is strongly alkaline.

Rooting depth 100 cm in pit.

Barriers to root growth

Physical: There are no significant physical limitations.

Chemical: Conditions for plant root growth are very favourable to 60cm, nutrient levels are good and calcium dominates the exchangeable cations. However conditions are less favourable below. The soil from 60-100cm has a pH of 9, is sodic, and has a less favourable balance of exchangeable cations than the layers above. The soil below 100cm is strongly alkaline causing nutrient imbalances, is highly sodic, has marginally toxic levels of boron, and has unfavourable exchangeable cation ratios.

Water holding capacity Approximately 110 mm (high) in rootzone.

Seedling emergence Good to fair. Surface structure is cloddy, organic matter levels need to be maintained, and possibly workings reduced, to preserve & improve surface structure.

Workability Good.

Erosion Potential

Water: Moderately low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4-S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP	Exch Al mg/kg
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
Paddock	7.3	6.6	-	0.16	1.05	1.43	42	813	16.6	0.9	1.36	17	24.5	5.44	-	13.2	2.80	0.43	2.31	2.3	0.28
0-10	7.1	6.4	-	0.10	0.60	1.61	44	947	10.2	1.2	-	-	-	-	-	11.8	2.44	0.27	2.58	1.8	1.27
10-35	8.0	7.1	-	0.11	0.50	0.77	4	535	5.3	1.5	-	-	-	-	-	21.5	4.06	0.37	1.69	1.3	0.26
35-60	8.6	7.8	-	0.15	0.33	0.54	3	285	3.8	1.1	-	-	-	-	-	22.8	5.72	1.09	1.10	3.5	0.51
60-100	9.0	8.0	-	0.32	1.45	0.36	3	327	18.9	1.5	-	-	-	-	-	14.5	4.87	2.79	1.17	12.0	0.87
100-150	9.5	8.3	-	0.89	4.69	0.18	2	510	66.2	14.1	-	-	-	-	-	7.71	7.13	9.60	1.72	36.7	0.80

Note: Paddock sample taken from 20 soil cores (0-10 cm) from around pit.

ESP (Exchangeable Sodium Percentage) is estimated by dividing the exchangeable sodium value by the sum of base cations (as an approximation of CEC - no results available).