BROWN CLAY OVER RED CLAY

General Description: *Shallow red brown or dark brown strongly structured seasonally cracking clay, over a coarsely structured red clay, calcareous with depth.*

Landform: Gentle slopes, flats and high level plains.

Substrate: Tertiary heavy clay, usually red, with coarse prismatic or lenticular aggregates.

Vegetation:

Type Site:

Site No.:	CL904	1:50,000 mapsheet:	6629-2 (Kapunda)
Hundred:	Kapunda	Easting:	310800
Section:	1244	Northing:	6208150
Sampling date:	06/03/91	Annual rainfall:	490 mm average

Lower slope of fan, 1% slope. Seasonally cracking surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-12	Very dark greyish brown firm light clay with strong medium granular structure. Clear to:
12-27	Brown hard massive light clay. Abrupt to:
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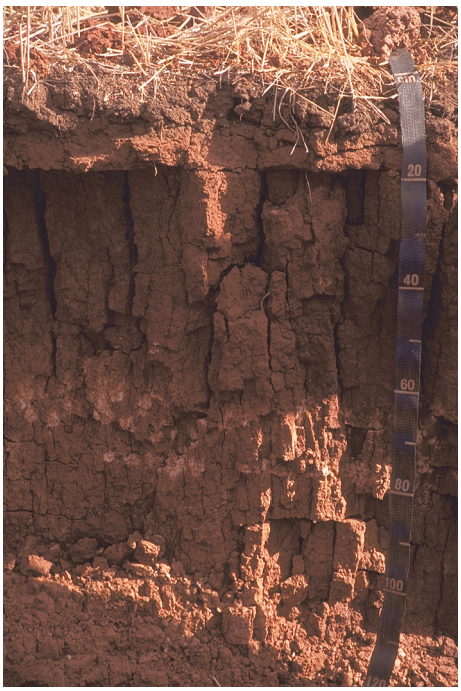
Truncated buried soil:	
27-63	Reddish brown hard slightly calcareous medium clay with strong very coarse prismatic structure. Clear to:
63-78	Reddish yellow hard very highly calcareous light clay with strong coarse prismatic structure and 10-20% fine carbonate segregations. Gradual to:
78-100	Yellowish red very hard medium clay with strong very coarse prismatic structure.



Classification: Epipedal, Brown Vertosol / Calcic, Red Sodosol

Summary of Properties

Drainage: Moderately well to imperfectly drained. The clayey texture and poorly structured dispersive clayey subsoil prevent free drainage and the soil may remain wet for a week or two following heavy or prolonged rainfall.

Fertility: Inherent fertility is very high, due to high clay content and presumed high degree of calcium saturation at the surface. Apart from nitrogen and phosphorus, zinc is commonly deficient on these soils.

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

Rooting depth: 78 cm in pit, but few roots below 63 cm.

Barriers to root growth:

Physical: The hard coarsely structured subsoil restricts root growth and density, as roots are forced along surfaces of aggregates, with few penetrating.

Chemical: High boron concentrations, high pH, moderate salinity and probably high sodicity restrict deeper root growth.

Waterholding capacity: Approximately 90 mm in the rootzone.

Seedling emergence: Satisfactory to fair. Emerging seedlings can be damaged if surface dries and cracks following germination.

Workability: The clayey surface becomes sticky and intractable when wet.

Erosion Potential:

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-12	7.5	6.7	2	0.09	-	1.42	45	610	-	-	1.5	23	12.5	0.3	-	-	-	-	-	-
12-27	7.8	6.6	1	0.03	-	0.33	5	190	-	-	0.8	16	15.7	0.1	-	-	-	-	-	-
27-63	8.6	7.6	3	0.22	-	0.40	2	410	-	14	2.0	17	4.7	0.1	-	-	-	-	-	-
63-78	9.3	8.2	20	0.43	-	0.21	1	360	-	22	1.4	8.7	1.5	0.1	-	-	-	-	-	-
78-100	9.0	8.3	14	1.10	-	0.11	2	400	-	-	0.8	7.6	1.1	0.0	-	-	-	-	-	-

Further information: DEWNR Soil and Land Program