LOAM OVER DISPERSIVE RED CLAY

General Description: *Hard sandy loam to clay loam abruptly overlying a red coarsely structured dispersive clay, calcareous with depth*

Landform: Outwash fans

Substrate: Clayey outwash sediments

Vegetation: Mallee

Type Site:

Site No.:	MP005	1:50,000 mapsheet:	6728-4 (Angaston)
Hundred:	Jellicoe	Easting:	339000
Section:	240	Northing:	6168100
Sampling date:	31/07/1992	Annual rainfall:	375 mm average

Gently sloping outwash fan. Hard setting surface with 2-10% quartzite stones. 4% slope.

Soil Description:

Depth (cm)	Description
0-13	Firm red brown loam with moderate granular structure and 2-10% quartz gravel. Sharp to:
13-30	Hard red medium clay with strong coarse angular blocky structure. Clear to:
30-55	Hard red highly calcareous light medium clay with strong polyhedral structure. Gradual to:
55-94	Hard red light medium clay with strong prismatic structure and slickensides. Clear to:
94-130	Red and grey mottled hard sandy light clay with 10-20% sandstone and quartz gravel. Clear to:
130-168	Grey and red mottled hard light medium clay with 2-10% ironstone and quartz gravel.

Classification: Vertic, Hypernatric, Red Sodosol; medium, slightly gravelly, loamy / clayey, moderate

Summary of Properties

Drainage: Moderately well to imperfectly drained. The dispersive clay subsoil perches water for a week or possibly longer following heavy or prolonged rainfall.

Fertility: Natural fertility is high as indicated by the exchangeable cation data. Levels of all measured nutrient elements are adequate, and organic carbon levels are satisfactory.

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

Rooting depth: 140 cm in pit, but few roots below 55 cm.

Barriers to root growth:

Physical: The dispersive clay subsoil prevents uniform root distribution patterns, and consequently causes reduced water use efficiency.

Chemical: Root growth is restricted by high pH from 30 cm, very high boron and sodicity, and moderate salinity from 13 cm.

Waterholding capacity: Approximately 50 mm in the rootzone.

Seedling emergence: Fair due to hard setting sealing surface soil.

Workability: Fair. There is a limited moisture range for effective working, outside of which the soil will shatter if too dry, or puddle if too wet.

Erosion Potential:

Water: Moderate, due to slope and high soil erodibility.

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	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
										Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.1	6.8	0	0.26	2.33	1.03	35	530	4.2	3.2	10.4	11.2	0.6	8.7	5.46	2.81	1.04	1.05	12.1
0-13	7.9	7.5	<0.1	0.22	1.14	1.05	37	560	5.7	1.0	7.0	7.6	0.5	12.6	6.23	2.89	1.42	1.10	11.3
13-30	9.1	8.5	3.6	0.90	4.85	0.74	<5	770	32.4	1.7	9.1	1.3	0.3	28.4	6.74	8.00	10.75	2.10	37.9
30-55	9.3	8.6	16.0	1.37	5.94	0.37	<5	600	25.0	1.2	7.0	0.8	0.3	20.0	4.36	6.70	10.99	1.27	55.0
55-94	9.0	8.6	0.3	1.62	6.83	0.10	<5	630	29.3	0.9	9.0	0.2	0.3	22.8	3.80	7.64	13.02	1.33	57.1
94-130	8.3	7.8	<0.1	1.47	5.86	0.12	<5	540	14.5	0.8	13.4	0.1	0.3	20.7	3.07	5.82	11.11	1.05	53.7
130-168	5.9	5.4	0	1.08	7.19	0.17	<5	450	5.8	0.8	46.4	0.2	0.3	20.0	2.90	5.17	10.13	0.93	50.7

Note: Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.
CEC (cation exchange capacity) is 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