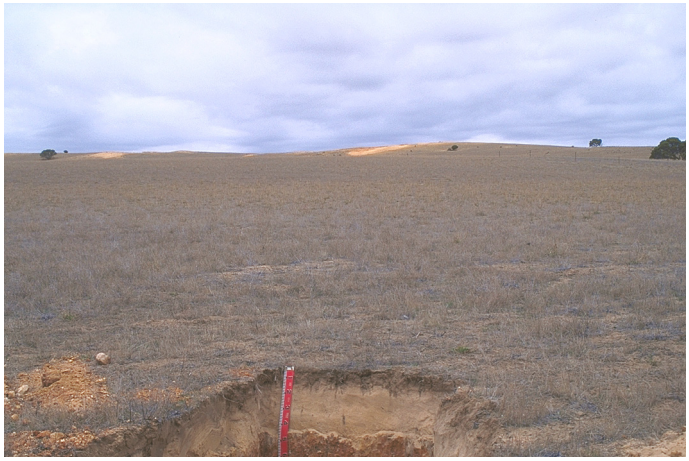
THICK SAND OVER POORLY STRUCTURED BROWN CLAY

General Description: *Thick sand over coarsely structured brown sandy clay, calcareous with depth*



Landform: Gently undulating dunefield.

Substrate: Medium textured Tertiary sediments (Parilla Sand equivalent).

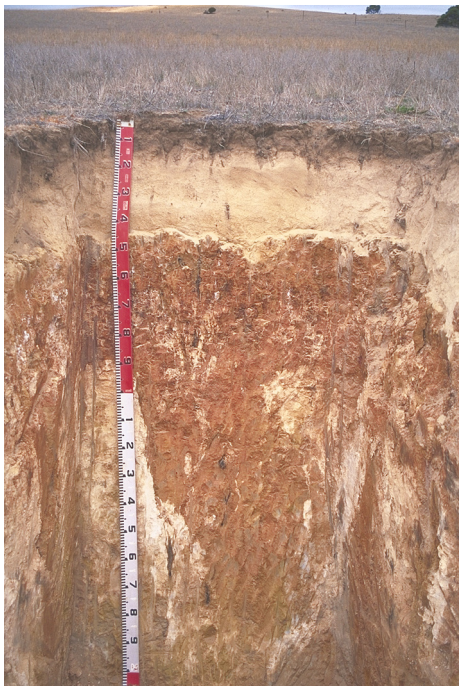
Vegetation: Mallee - broombush

Type Site:

Site No.:	MM132	1:50,000 mapsheet:	6927-1 (Kulkami)
Hundred:	Cotton	Easting:	437820
Section:	78	Northing:	6109950
Sampling date:	23/05/1996	Annual rainfall:	335 mm average

Swale, loose surface, no stones.

Soil Description:



Depth (cm)	*Description*
0-12	Brown loose loamy sand. Clear to:
12-45	Very pale brown (bleached) loose sand. Sharp to:
45-65	Reddish yellow and yellowish red very hard moderately calcareous sandy light clay with coarse columnar structure. Clear to:
65-90	Brownish yellow and reddish yellow hard very highly calcareous medium clay with coarse prismatic structure. Diffuse to:
90-165	Brownish yellow and reddish yellow hard massive moderately calcareous sandy light clay with 20-50% carbonate filled channels. Diffuse to:
165-210	Brownish yellow friable massive slightly calcareous light sandy clay loam with 10-20% carbonate filled channels.

Classification: Bleached-Sodic, Calcic, Brown Chromosol; thick, non-gravelly, sandy / clayey, moderate

Summary of Properties

Drainage: Moderately well drained. Water perches on the dense clayey subsoil for a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is low, as indicated by the exchangeable cation data for the sandy surface layers. Although the subsoil has good nutrient retention capacity, root growth in those layers is poor. Phosphorus, nitrogen, copper and zinc deficiencies are likely. Concentrations of all these (nitrogen not tested) and sulphur are low at the sampling site. Organic carbon levels are also low.

pH: Neutral at the surface, alkaline at depth.

Rooting depth: 90 cm in pit, but few roots below 45 cm.

Barriers to root growth:

Physical: The massive subsoil and substrate impede root growth.

Chemical: There are no chemical barriers, but low nutrient retention capacity and status restrict root growth.

Waterholding capacity: Approximately 45 mm in the rootzone.

Seedling emergence: Satisfactory, but can be reduced by water repellence in dry years.

Workability: Soft / loose surface is easily worked.

Erosion Potential:

Water: Low.

Wind: Moderate.

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 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	6.7	6.1		0.04	0.43	0.5	8	114	4	0.5	0.12	28	2.54	0.27	2.6	1.92	0.53	0.09	0.11	na
0-12	6.9	6.4		0.04	0.47	0.6	<4	99	4	0.6	-	-	-	-	3.2	2.74	0.72	0.10	0.13	na
12-45	7.7	6.9	<0.1	0.02	0.17	<0.1	<4	75	1	0.2	-	-	-	-	1.3	0.89	0.28	0.10	0.10	na
45-65	8.5	8.0	0.3	0.12	0.39	0.2	<4	375	2	2.8	-	-	-	-	13.1	6.84	5.79	0.30	0.85	2.3
65-90	8.5	8.0	1.9	0.17	0.37	0.3	<4	643	2	9.1	-	-	-	-	26.6	11.16	14.34	0.72	1.97	2.7
90-165	9.0	8.3	3.9	0.14	0.42	<0.1	<4	278	5	6.1	-	-	-	-	9.8	3.20	6.55	0.64	0.55	6.5
165-210	9.4	8.6	1.4	0.19	0.50	<0.1	<4	179	5	5.2	-	-	-	-	6.8	1.82	4.46	1.27	0.31	18.6

Note: Paddock sample bulked from 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