SAND OVER COARSELY STRUCTURED SANDY CLAY LOAM

General Description: *Thick loose sand to loamy sand with a bleached sub-surface layer, abruptly overlying a coarsely structured yellow to brown heavy sandy loam to sandy clay loam, calcareous with depth*

Landform: Gently undulating dunefield

Substrate: Parilla Sand – hard massive clayey sand with pockets of fine carbonate leached in from above

Vegetation:

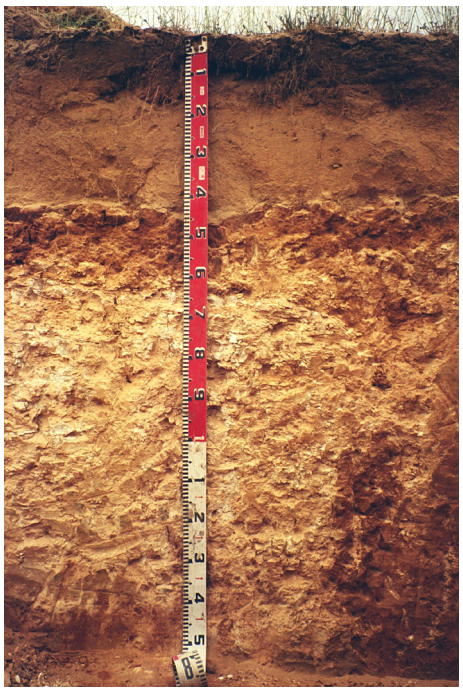
Type Site:

Site No.:	MM161	1:50,000 mapsheet:	6827-1 (Karoonda)
Hundred:	Vincent	Easting:	390600
Section:	48	Northing:	6120890
Sampling date:	15/06/2007	Annual rainfall:	335 mm average

Flat in gently undulating dunefield, 0% slope. Loose to soft surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-10	Brown soft single grain light loamy sand. Clear to:
10-25	Strong brown soft single grain light loamy sand. Gradual to:
25-42	Reddish yellow soft single grain light loamy sand. Sharp to:
42-60	Strong brown firm light sandy clay loam with weak coarse columnar structure. Gradual to:
60-80	Very hard platy carbonate in matrix of reddish yellow massive very highly calcareous light sandy clay loam. Diffuse to:
80-130	Reddish yellow, firm, massive, very highly calcareous light sandy clay loam with 10-20% carbonate fragments. Diffuse to:
130-155	Reddish yellow and red firm massive slightly calcareous clayey sand with 2-10% carbonate tubules.



Classification: Sodic, Lithocalcic, Brown Chromosol; thick, non-gravelly, sandy/clay loamy, deep

Summary of Properties

Drainage: Well drained. Water may perch on top of the subsoil for a few days at a time following heavy or prolonged rainfall.

Fertility: Inherent fertility is low, as indicated by the exchangeable cation data. This is due to the low clay content of the topsoil. Phosphorus, potassium and sulphur levels are marginal to low. There are some subsoil reserves of macro-nutrients (e.g. Ca, Mg, K). Trace elements (although soil test unreliable), suggest low Cu & Mn. Zinc value is highly suspect.

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

Rooting depth: A few roots penetrate to 80 cm, but most are in the upper 60 cm.

Barriers to root growth:

Physical: Compaction in the near-surface soil is apparent in places. The subsoil impedes root growth to some extent, forcing many roots around the large aggregates, rather than allowing penetration. This results in sub-optimal root density and reduced water uptake.

Chemical: Low nutrient status in the subsurface sand restricts root density. In the deep subsoil, high pH, sodicity and boron restrict root growth, but not to the same extent as would be the case in a more clayey soil. Low nutrient availability is likely to be a significant limitation.

Waterholding capacity: Approximately 70 mm (moderate) in the potential rootzone.

Seedling emergence: Potentially patchy in water repellence seasons.

Workability: Satisfactory.

Erosion Potential:

Water: Low.

Wind: Moderate due to the thick sandy surface soil.

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	7.5	0	0.08	0.35	0.42	12	90	12	2	5.1	352	0.36	72	7.66	16.3	3.4	2.51	0.64	0.08	0.19	2.3
10-25	8.4	7.5	0	0.06	0.41	0.22	2	55	5	4.1	1.3	556	0.49	130	2.93	0.64	3.3	2.54	0.56	0.05	0.14	1.5
25-42	8.2	7.5	0	0.05	0.35	0.11	2	48	6	2.9	1.1	496	0.25	76	1.37	0.29	2.6	1.93	0.47	0.06	0.12	2.3
42-60	9.4	8.6	0	0.28	1.99	0.15	2	300	44	12	6	685	0.45	46	6.66	0.74	16.1	4.72	7.09	3.53	0.79	21.9
60-80	9.5	8.7	31	0.41	2.65	0.27	2	379	88	38.2	14.5	530	0.31	15	0.51	0.71	20.0	8.13	6.35	4.56	0.91	22.9
80-130	9.5	8.4	21	0.39	1.75	0.15	2	371	49	22.7	14.7	506	0.41	15	0.27	0.81	17.6	7.35	5.01	4.33	0.95	24.5
130-155	9.6	8.7	1.4	0.41	1.66	0.11	3	405	69	16.2	11.1	-	0.27	13	4.21	0.40	15.2	3.11	5.27	5.79	1.05	38.0

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