GRADATIONAL SANDY LOAM OVER WEATHERED ROCK

General Description: *Medium to thick sandy to loamy surface soil with variable quartz gravel, overlying a brown, grey and red mottled clayey subsoil grading to silty alluvium, or deeply weathered schistose bedrock*

Landform: Lower slopes and narrow valley, eastern Mt. Lofty Ranges

Substrate: Deeply weathered schistose bedrock of the Kanmantoo Group

Vegetation: Red and blue gum woodland

Type Site:

Site No.:	CH088	1:50,000 mapsheet:	6628-2 (Onkaparinga)
Hundred:	Kanmantoo	Easting:	313050
Section:	1898	Northing:	6125600
Sampling date:	19/01/96	Annual rainfall:	725 mm average

Lower slope of undulating rises. Hard setting surface, 6% slope. 2-10% rock outcrop. Eroded watercourse and saline seepage in adjacent drainage depression.

Soil Description:

Depth (cm)	*Description*
0-10	Dark greyish brown weakly structured, hard fine sandy loam. Gradual to:
10-25	Brown (bleached when dry) hard massive fine sandy loam. Gradual to:
25-45	Brown (bleached when dry) hard massive fine sandy clay loam with 20-50% schist gravel. Abrupt to:
45-70	Dark brown, yellowish brown and red mottled light medium clay with strong coarse prismatic structure. Gradual to:
70-100	Dark brown, yellowish brown, orange and light grey mottled silty light clay with moderate blocky structure. Gradual to:
100-170	Soft weathering schist.

Classification: Bleached-Sodic, Mesotrophic, Brown Dermosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Moderately well drained. Water does not move freely through the soil, resulting in temporary waterlogging for a week or so following rain.

Fertility: The natural fertility is low as indicated by the subsoil CEC values. The higher values in the surface are mostly due to excessively high organic matter levels. Nutrient retention capacity is affected by the low pH, and phosphorus, calcium and magnesium appear to be deficient. Very high iron locks up phosphate.

pH: Strongly acidic at the surface, neutral to slightly alkaline with depth. Dolomitic lime is needed to correct pH and maintain correct calcium / magnesium ratios.

Rooting depth: 100 cm in pit.

Barriers to root growth

Physical: The tight subsoil clay may restrict growth.

Chemical: Low fertility, acidity and possible aluminium toxicity are the main barriers.

Waterholding capacity: 120 mm in pit (very high).

Seedling emergence: Fair. Hard setting surface.

Workability: Fair, due to sporadic rockiness and hard setting, sealing surface soil.

Erosion Potential:

Water: Moderate, due the gradient and potential for water run-on from up slope.

Wind: The soil will pulverize when dry, causing potential for wind erosion.

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 (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	5.3	4.6	0	0.14	0.66	4.9	17	266	23	1.0	3.4	1200	160	4.3	12.1	3.20	0.98	0.17	0.25	1.4
0-10	5.3	4.6	0	0.12	0.67	4.1	36	245	22	0.9	-	-	-	-	10.2	3.12	1.30	0.28	0.35	2.7
10-25	5.9	4.9	0	0.07	0.60	1.5	4	215	12	0.7	-	-	-	-	7.2	2.35	1.42	0.26	0.29	3.6
25-45	6.5	5.3	0	0.06	0.39	0.5	<4	200	13	0.5	-	-	-	-	4.8	1.45	1.45	0.37	0.33	7.7
45-70	6.5	6.0	0	0.45	2.81	0.2	<4	206	85	1.1	-	-	-	-	5.6	0.85	1.45	0.82	0.18	14.6
70-100	7.1	6.5	0	0.47	3.95	0.1	<4	139	62	0.9	-	-	-	-	3.6	0.77	1.45	1.04	0.16	na
100-170	7.4	6.7	0	0.32	2.35	<0.1	<4	126	30	0.1	-	-	-	-	2.0	0.64	1.21	0.87	0.08	na

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