LOAM OVER BROWN HEAVY CLAY ON ROCK

General Description: *Medium to thick hard setting fine sandy loam to loam with a bleached and gravelly A2 layer, over a brown mottled coarsely structured heavy clay, grading to weathering rock*

Landform: Slopes of undulating to rolling low hills and hills.

Substrate: Medium to fine grained metamorphosed basement rock. Balhannah Formation schist at this site.

Vegetation:

Type Site:

Site No.:	CH167	1:50,000 mapsheet:	6628-2 (Onkaparinga)
Hundred:	Talunga	Easting:	310310
Section:	223	Northing:	6150210
Sampling date:	03/01/07	Annual rainfall:	740 mm average

Mid slope of undulating rise, 3% slope. Hard setting surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-15	Very dark greyish brown friable silty loam with weak granular structure. Gradual to:
15-30	Light grey and yellowish brown mottled friable massive silty loam. Abrupt to:
30-35	Silty loam (as above) with more than 50% ironstone gravel, and 2-10% quartz gravel to 6 mm. Abrupt to:
35-65	Dark yellowish brown, light olive brown and yellowish brown mottled extremely hard medium heavy clay with strong coarse prismatic, breaking to medium angular blocky structure. Gradual to:
65-90	Yellowish brown and light olive brown extremely hard medium clay with strong very coarse lenticular, breaking to coarse angular blocky structure. Gradual to:
90-125	Olive brown and light yellowish brown very hard medium clay with strong coarse angular blocky structure.
125-160	Weathering schist

Classification: Eutrophic, Mottled-Subnatric, Brown Sodosol; thick, non-gravelly, silty / clayey, deep

Summary of Properties

Drainage: Moderately well to imperfectly drained. The subsoil clay may perch water for a week or two at a time following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate to moderately low, as indicated by the exchangeable cation data. Levels of all tested nutrient elements are satisfactory, possibly a legacy of previous row crops. High phosphate fixation is indicated by the reactive iron levels.

pH: Slightly acidic at the surface, neutral at depth.

Rooting depth: 125 cm in sampling pit, but few roots below 65 cm.

Barriers to root growth:

Physical: The tight clayey subsoil presents a moderate barrier to root growth, reducing water use efficiency because roots are confined to the surfaces of coarse clay aggregates. Sodicity is probably higher than normal for this soil type due to the effects of past irrigation.

Chemical: There are no apparent chemical barriers, apart from marginal salt accumulation in the deep subsoil.

Waterholding capacity: Approximately 90 mm in the potential rootzone.

Seedling emergence: Fair if compacted, to satisfactory if favourable tilth is maintained.

Workability: Surface tends to shatter if worked too dry, and puddle if worked too wet.

Erosion Potential:

Water: Moderate.

Wind: Low.

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	
0-15	6.2	5.5	0	0.25	1.78	2.01	121	519	171	17.7	0.8	2027	2.55	572	73	9.37	8.3	5.12	1.32	0.51	1.37	6.1
15-30	6.6	5.7	0	0.11	0.76	0.68	24	197	54	5.6	0.4	1597	1.08	188	57.9	2.01	4.0	2.65	0.81	0.17	0.38	4.2
30-35	7.0	6.0	0	0.05	0.46	0.41	14	167	18	2.8	0.3	1092	1.55	114	84.1	1.45	3.5	2.14	0.83	0.2	0.33	5.7
35-65	7.4	6.2	0	0.20	1.15	0.63	4	374	103	49.8	0.8	1675	2.13	104	14.5	0.35	24.4	10.5	9.79	3.24	0.95	13.3
65-90	7.3	6.4	0	0.36	1.76	0.47	4	327	296	144	1.1	998	1.45	46	23.7	0.15	28.0	11.1	11.9	4.13	0.87	14.8
90-125	7.2	6.3	0	0.40	2.52	0.37	4	206	477	69.5	0.5	650	1.2	64	83.6	0.31	41.1	16.4	18.6	5.69	0.48	13.8
125-160	7.4	6.4	0	0.15	1.61	0.11	6	183	161	23.4	0.2	600	0.3	45	7.82	0.24	22.4	10.2	9.25	2.68	0.21	12.0

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