LOAMY SAND OVER RED AND BROWN MOTTLED CLAY

General Description: *Thick loamy sand with a bleached sub-surface over a blocky red and brown mottled clay*

Landform: Very gently sloping alluvial fans and plains.

Substrate: Clayey alluvium with slight accumulation of fine carbonate.

Vegetation: Red gum (E.camaldulensis) woodland.

Type Site:

Site No.:	CL054	1:50,000 mapsheet:	6729-3 (Truro)
Hundred:	Moorooroo	Easting:	317420
Section:	153	Northing:	6183140
Sampling date:	18/12/07	Annual rainfall:	505 mm average

Very gently inclined (1% slope) alluvial fan. Firm surface with no stones

Soil Description:

Depth (cm)	*Description*
0-10	Dark brown soft massive loamy sand. Clear to:
10-20	Brown soft massive loamy sand. Clear to:
20-35	Pink (bleached) with brown stainings firm massive light sandy loam. Abrupt to:
35-55	Dark reddish brown, brown and yellowish brown mottled firm medium clay with weak coarse prismatic, breaking to strong medium angular blocky structure. Diffuse to:
55-80	Brown, red and dark greyish brown mottled firm medium clay weak coarse prismatic, breaking to strong medium angular blocky structure. Diffuse to:
80-105	Dark reddish brown, strong brown and dark greyish brown mottled firm medium clay weak coarse prismatic, breaking to strong coarse angular blocky structure. Diffuse to:
105-145	Yellowish brown, brown and reddish brown mottled firm light clay with weak coarse subangular blocky structure and minor soft carbonate segregations.

Classification: Bleached-Mottled, Hypocalcic, Red Chromosol; thick, non-gravelly, sandy / clayey, deep

Summary of Properties

Drainage: Imperfectly to moderately well drained. The clayey subsoil perches water, saturating the lower part of the topsoil for a week to several weeks at a time following heavy or prolonged rainfall. This is only likely to affect grape vines in the event of heavy summer rain.

Fertility: Inherent fertility is moderate, with surface soil fertility attributable more to high organic carbon levels that clay content. Levels of all tested nutrient elements are high to very high, suggesting contamination (e.g. from the abundant grape pips on and in the surface soil) and / or residues from historical pest management practices (in the case of copper and zinc). The reason for the extremely high subsoil potassium level is unknown. Decomposing pips are probably responsible for the very high organic carbon levels.

pH: Slightly acidic at the surface, alkaline with depth.

Rooting depth: There are some roots to 145 cm, moderate growth between 55 and 105 cm, with most growth in the upper 55 cm.

Barriers to root growth:

Physical: The coarsely structured subsoil clay uniform proliferation of roots.

Chemical: There are no apparent chemical barriers.

Waterholding capacity: (Estimates for potential rootzone of irrigated crops)
Total available: 145 mm
Readily available: 65 mm

Seedling emergence: Satisfactory.

Workability: Satisfactory.

Erosion Potential:

Water: Low.

Wind: Low to moderately low. No erosion likely unless bare cultivated.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	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	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	6.0	5.4	0	0.24	1.09	5.44	158	584	45	15.7	1.6	8.39	419	54.2	15.5	22.7	17.8	3.35	0.24	1.35	1.1
10-20	6.5	5.9	0	0.13	0.58	3.20	333	517	11	7.8	1.5	10.5	508	33.3	12.4	15.8	12.3	1.98	0.08	1.39	0.5
20-35	7.2	6.4	0	0.10	0.78	0.75	347	540	11	8.5	0.8	12.7	803	73.7	11.6	6.4	4.20	0.80	0.07	1.36	1.1
35-55	7.8	7.1	0	0.22	1.41	0.56	168	3856	19	13.6	4.2	7.53	167	16.9	1.21	17.2	8.03	3.89	0.30	4.94	1.7
55-80	8.0	7.3	0	0.21	1.51	0.41	27	3830	21	16.6	3.0	3.38	68	47.0	0.51	15.6	6.69	3.62	0.39	4.86	2.5
80-105	8.1	7.4	0	0.18	1.52	0.27	6	3060	27	19.5	1.4	3.02	50	101	0.51	14.9	6.60	4.33	0.45	3.50	3.0
105-145	8.7	8.2	2.3	0.23	1.46	0.19	5	2088	26	29.3	1.5	1.79	26	75.8	0.43	17.3	9.11	5.58	0.71	1.92	4.1

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