HARD SANDY LOAM OVER RED CLAY

General Description: *Medium to thick reddish brown hard sandy loam over a coarsely structured red clay, calcareous with depth, grading to silty medium to fine grained alluvium*

Landform: Alluvial plains of the Bremer River.

Substrate: Silty clay alluvium.

Vegetation:

Type Site:

Site No.:	CH162B	1:50,000 mapsheet:	6727-3 (Alexandrina)
Hundred:	Strathalbyn	Easting:	319500
Section:	71	Northing:	6093100
Sampling date:	28/11/06	Annual rainfall:	405 mm average

Alluvial plain, 0% slope. Hard surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-15	Dark reddish brown firm massive sandy loam. Clear to:
15-32	Yellowish red firm massive sandy loam. Abrupt to:
32-60	Dark reddish brown firm medium clay with weak very coarse prismatic, breaking to medium strong angular blocky structure. Gradual to:
60-85	Dark brown firm highly calcareous light clay with strong medium angular blocky structure and 2-10% fine and nodular carbonate segregations. Diffuse to:
85-115	Dark brown and strong brown firm moderately calcareous fine sandy clay loam with weak coarse subangular blocky structure and 2-10% fine carbonate segregations. Diffuse to:
115-160	Brown (with dark brown clay skins) firm silty light clay with strong medium angular blocky structure and traces of fine carbonates.

Classification: Calcic, Mesonatric, Red Sodosol; thick, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Moderately well drained. Water is likely to perch on top of the clayey subsoil for a week or so at a time following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. Concentrations of zinc are marginal at the sampling site, but levels of other tested elements are adequate. Unusually high surface sulphur levels may be the residual of a past gypsum application.

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

Rooting depth: 115 cm in sampling pit, but few roots below 60 cm.

Barriers to root growth:

Physical: High soil strength throughout restricts (but does not prevent) root growth, leading to reduced water use efficiency. Elevated sodicity levels in the topsoil and probably upper subsoil are due to the effects of irrigation water. Maintenance of electrolyte concentration is needed to prevent dispersion in these materials, although the subsoil is presumed to be naturally sodic.

Chemical: High pH, sodicity, salinity and boron all limit root vigour below 60 cm.

Waterholding capacity: (Estimates for potential rootzone of grape vines)
Total available: 100 mm
Readily available: 40 mm

Seedling emergence: Fair due to hard setting, sealing surface.

Workability: Fair. The surface shatters if worked too dry, and puddles if worked too wet.

Erosion Potential:

Water: Low.

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	8.5	7.7	0	0.342		1.20	36	381	263	60.6	2.1	608	3.87	121	157	2.46	9.6	6.17	1.77	1.01	0.65	10.5
15-32	8.7	7.8	0	0.191		0.40	4	217	108	24.3	1.5	525	2.75	49	171	0.37	7.9	4.42	1.85	1.19	0.48	15.0
32-60	8.7	8.0	0.7	0.633		0.69	5	408	389	146	3.7	855	4.95	51	137	0.19	24.9	10.4	7.47	5.95	1.06	23.9
60-85	9.5	8.3	5.0	0.929		0.38	3	495	706	144	4.9	728	2.54	19	21.9	0.2	26.2	11.4	6.40	7.28	1.20	27.7
85-115	9.2	8.3	1.7	0.601		0.26	3	499	664	84.7	5.1	636	2.84	41	125	0.19	22.4	9.27	5.94	5.94	1.26	26.5
115-160	8.7	8.1	0.6	0.915		0.54	7	620	1046	111	7.2	698	4.33	57	157	0.85	25.8	9.35	8.22	6.81	1.46	26.4

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