

LOAM OVER FRIABLE BROWN CLAY ON ROCK

General Description: *Hard loam grading to a pale coloured gravelly clay loam over a well structured yellowish brown to yellowish red clay grading to weathering shaly rock*

Landform: Rolling to steep low hills and hills.

Substrate: Soft kaolinized yellow siltstone

Vegetation: Eucalyptus obliqua (messmate stringybark) forest.



Type Site: Site No.: CH156A
 Hundred: Onkaparinga
 Section: 50
 Sampling date: 13/11/06

1:50,000 mapsheet: 6628-2 (Onkaparinga)
 Easting: 303400
 Northing: 6134600
 Annual rainfall: 890 mm average

Upper slope of rolling low hills, 12% slope. Hard setting surface with minor siltstone fragments

Soil Description:

Depth (cm)	Description
0-7	Dark brown friable loam with moderate granular structure and 2-10% siltstone fragments. Clear to:
7-23	Strong brown (reddish yellow dry) firm massive clay loam with 2-10% siltstone fragments. Clear to:
23-45	Strong brown and yellowish red firm medium clay with strong fine polyhedral structure and 50% ferruginized yellow siltstone fragments. Diffuse to:
45-100	Red firm medium clay with strong fine polyhedral structure and 80-90% yellow siltstone fragments. Diffuse to:
100-150	Brownish yellow, white and dark red kaolinized and ferruginized soft weathering siltstone with silty loam texture.



All layers are slightly silty.

Classification: Haplic, Eutrophic, Brown Chromosol; thick, slightly gravelly, loamy / clayey, deep



Summary of Properties

Drainage: Well drained. The soil is unlikely to remain wet for more than a couple of days or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately low as indicated by the exchangeable cation data. Most nutrient retention capacity at the surface is attributable to organic matter. At sampling site, concentrations of P are very low, while Cu and Zn may also be deficient. Sulphur levels are marginal, but improve with depth. High phosphate fixation potential is indicated by the reactive iron level.

pH: Neutral at the surface, acidic with depth.

Rooting depth: 120 cm in sampling pit, but few roots below 100 cm.

Barriers to root growth:

Physical: No apparent barriers above the basement rock, although this is still soft enough for root growth to at least 150 cm.

Chemical: There are no apparent chemical barriers.

Waterholding capacity: (Estimates for potential rootzone of grape vines)

Total available: 100 mm

Readily available: 50 mm

Seedling emergence: Fair to good, depending on friability of surface soil.

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

Erosion Potential:

Water: Moderate to moderately high.

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	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	
0-7	6.5	5.9	0	0.088		4.13	8	213	23	5.5	0.6	1908	2.38	314	10.0	1.89	12.7	9.24	2.93	0.10	0.47	0.8
7-23	6	4.8	0	0.027		1.07	3	111	7	1.9	0.5	1010	0.71	75	1.45	0.18	3.9	2.49	1.04	0.08	0.27	2.1
23-45	6	5.1	0	0.024		0.64	2	109	8	13.1	1.0	821	0.68	31	0.49	0.13	7.4	4.01	2.91	0.16	0.28	2.2
45-100	5.9	4.8	0	0.021		0.23	2	46	8	17.1	1.0	758	0.50	20	0.46	0.14	4.6	1.56	2.72	0.13	0.14	2.9
100-150	5.8	4.9	0	0.017		0.08	2	57	13	14.6	0.4	531	0.21	14	0.41	0.28	2.1	0.55	1.39	0.07	0.12	3.3

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](#)

