SANDY LOAM OVER BROWN CLAY

General Description: *Thick massive sandy loam to loamy sand with a bleached and ironstone gravelly subsurface layer, abruptly overlying a hard coarsely structured brown, yellow and red mottled clay*

Landform: Very gently undulating plains.

Substrate: Tertiary age clay.

Vegetation:

Type Site:

Site No.:	SE138	1:50,000 mapsheet:	7023-1 (Struan)
Hundred:	Jessie	Easting:	486930
Section:	107	Northing:	5903100
Sampling date:	27/08/08	Annual rainfall:	590 mm average

Rise on very gently undulating plain, 0% slope. Firm surface with patches of minor ironstone gravel brought to the surface by cultivation.

Soil Description:

Depth (cm)	*Description*
0-10	Dark greyish brown soft massive heavy loamy sand with 2-10% ironstone nodules (6-20 mm). Cultivation layer. Gradual to:
10-23	Dark brown soft massive sandy loam with 2-10% ironstone nodules (6-20 mm). Clear to:
23-43	Pink (bleached) with strong brown mottles, soft massive heavy loamy sand with 2-10% ironstone nodules (6-20 mm). Abrupt to:
43-65	Yellowish brown, light brownish grey and red mottled friable medium clay with moderate coarse, breaking to strong fine angular blocky structure, and 2-10% soft ferruginous segregations. Diffuse to:
65-100	Brownish yellow, light yellowish brown and red mottled friable medium clay with moderate coarse lenticular structure breaking to strong fine angular blocky, slickensides and 2-10% ironstone fragments to 20 mm. Diffuse to:
100-130	Brownish yellow, light yellowish brown and light grey mottled firm heavy clay with moderate coarse lenticular structure, breaking to strong coarse angular blocky.

Classification: Bleached-Vertic, Eutrophic, Brown Chromosol; thick, slightly gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Moderately well to imperfectly drained. Water perches on top of the clayey subsoil for a week or two following heavy or prolonged rainfall. This is only likely to affect grape vines during wet springs.

Fertility: Inherent fertility is moderately low, as indicated by the exchangeable cation data. Most topsoil nutrient retention capacity is provided by the organic matter fraction, with a very low sum of cations value in the bleached 23-43 cm layer. Although there is adequate nutrient retention capacity in the subsoil, most root growth is in the topsoil, where regular monitoring of nutrient levels is required. Test results indicate marginal phosphorus levels. Concentrations of other elements appear adequate.

pH: Slightly alkaline throughout.

Rooting depth: Roots to 100 cm in pit, but few below 65 cm.

Barriers to root growth:

Physical: The clayey subsoil restricts even proliferation of roots, thereby limiting efficiency of water uptake.

Chemical: There are no chemical barriers to root growth. Salinity, pH, sodicity and boron levels are all satisfactory.

Waterholding capacity: (Estimates for potential rootzone of grape vines)
Total available: 90 mm
Readily available: 45 mm

Seedling emergence: Good provided that organic matter levels are maintained.

Workability: Satisfactory.

Erosion Potential:

Water: Low.

Wind: Moderately 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	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-10	7.7	6.8	0	0.09	0.45	2.50	31	255	4	4.2	0.9	6.64	169	13.7	4.13	5.9	5.02	0.62	0.05	0.25	0.8
10-23	7.7	6.9	0	0.05	0.23	1.69	14	146	2	4.0	0.7	1.25	215	10.7	1.02	4.3	3.90	0.21	0.05	0.15	1.1
23-43	7.7	6.8	0	0.05	0.31	0.47	9	51	2	3.0	0.3	0.34	161	2.74	0.49	1.3	1.15	0.09	0.04	0.03	3.4
43-65	7.2	6.5	0	0.18	1.00	0.81	2	108	70	118	2.0	0.37	33	8.57	0.42	12.6	7.39	4.24	0.44	0.48	3.5
65-100	7.2	6.6	0	0.24	1.12	0.33	1	99	48	136	2.2	0.18	13	2.54	0.35	8.9	3.56	4.50	0.64	0.22	7.2
100-130	7.8	6.9	0	0.20	1.00	0.27	4	79	81	91.8	3.4	0.25	12	4.61	0.69	9.1	2.84	4.88	1.14	0.21	12.6

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