

## VE9: Endohypersodic, Epipedal, Grey Vertisol

### General description of the soil

A grey, shrink-swell, cracking clay soil that has a blocky structured A1 horizon and is strongly sodic (i.e. ESP >15) below 0.50 m. The soil is non-calcareous.

<b>Distribution:</b>	A very common Vertisol in the eastern half of the continent.
<b>Typical land use:</b>	Dryland cropping.
<b>Common variants:</b>	A strongly sodic horizon (ESP >15) may occur above 0.5 m and such soils would have an Epihypersodic subgroup. Gypsum usually occurs in soils of the more arid regions.
<b>World Reference Base:</b>	Sodic Vertisol.
<b>Other names:</b>	Grey Clays and Cracking Clays.

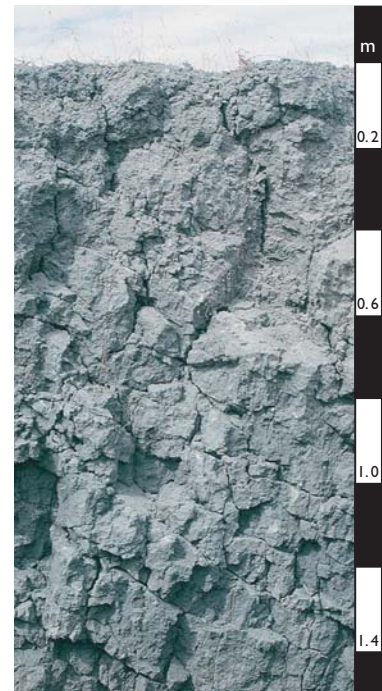
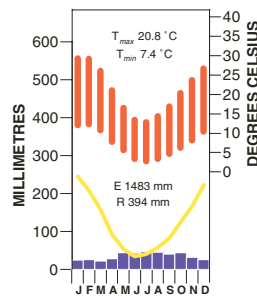
### Environment and location of the example profile

<b>Landform:</b>	Level plain.
<b>Parent material or substrate:</b>	Quaternary alluvial and aeolian deposits.
<b>Drainage class:</b>	Imperfectly drained.
<b>Surface condition:</b>	Periodic cracking.

### Site location



### Site climate



Near Horsham, Wimmera Region, central western Victoria

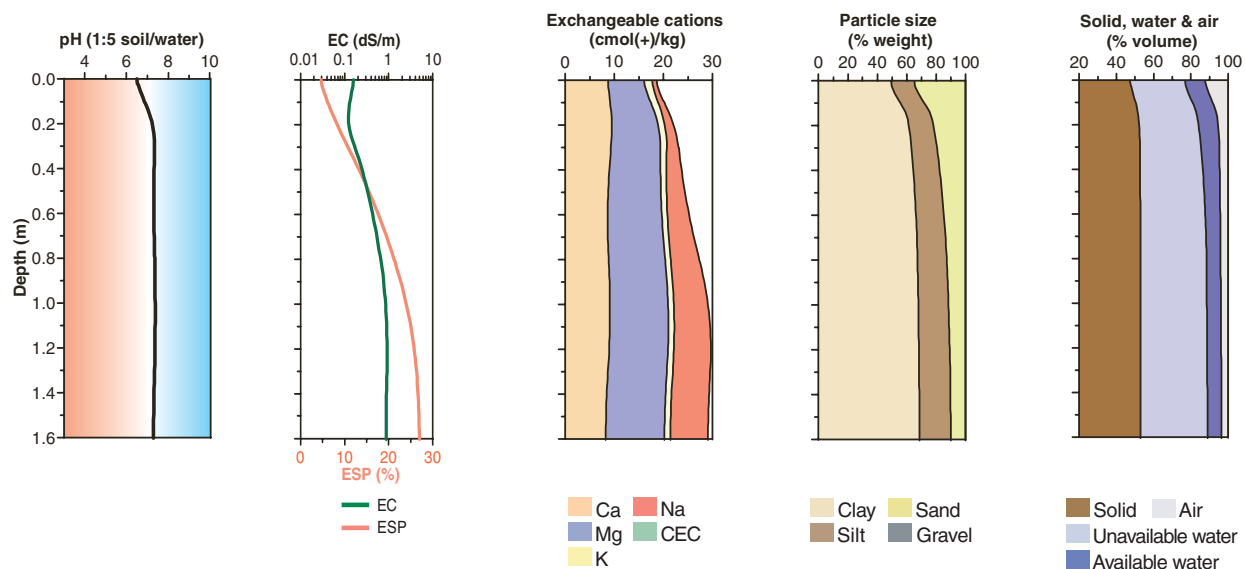
### Soil morphology

Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1	0.00–0.10	dark greyish brown (10YR 4/2)	–	heavy clay	moderate	angular blocky	10–20 mm	strong (dry)	–	–	clear
B21	0.10–0.30	grey (10YR 5/1)	–	heavy clay	moderate	prismatic parting to subangular blocky	>100 mm	strong (dry)	–	–	clear
B22	0.30–1.30	grey (10YR 5/1)	–	heavy clay	(slickensides)			strong (dry)	–	–	gradual
B23	1.30–1.60	grey (10YR 5/1)	greyish brown (2.5Y 5/2)	heavy clay	strong (slickensides)	prismatic	>100 mm	strong (moist)	–	–	

### Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H <sub>2</sub> O <sup>A</sup>	pH CaCl <sub>2</sub> <sup>B</sup>	Elect. Cond. dS/m <sup>A</sup>	CaCO <sub>3</sub> %	Org. C % <sup>A</sup>	Extr. P mg/kg	Tot. P %	Tot. K %	Cation exchange properties <sup>1</sup> cmol(+)/kg						ESP % <sup>C</sup>	Bulk dens. Mg/m <sup>3</sup>	Particle size % <sup>G</sup>				
										Ca	Mg	K	Na	H+Al	CEC			ECEC	CS	FS	Silt	Clay
A1	0.00–0.10	6.6	5.9	0.15		1.4				8.8	7.5	1.6	1.0				5		10	23	15	47
B21	0.10–0.30	7.5	6.2	0.07						10.0 <sup>G</sup>	10.0 <sup>G</sup>	1.3 <sup>G</sup>	1.8 <sup>G</sup>				8		5	14	16	60
B22	0.30–0.80	7.3	6.5	0.36						8.4	11.0	1.1	4.1				17		3	11	18	63
B22	0.80–1.30	7.4	6.8	0.93						9.3	12.0	1.2	7.4				25		1	9	20	65
B23	1.30–1.60	7.3	6.7	0.87						8.2	12.0	1.2	7.7				27					

## Key profile properties



## General qualities of the soil

<b>Infiltration:</b>	Slow to very slow.
<b>Available water store:</b>	Moderate.
<b>Permeability:</b>	Low to very low deeper in the profile.
<b>Physical root limitations:</b>	Restricted aeration when wet and possible soil strength limitations. Prone to compaction.
<b>Erosion hazard:</b>	Surface soil is non-sodic but disperses completely after remoulding, therefore vegetation cover is important to avoid erosion. The subsoil is sodic and also susceptible to dispersion and erosion.
<b>Nutrient availability:</b>	Moderate.
<b>Toxicities:</b>	Possible subsoil salinity.



**Extensive plains with Grey Vertosols near Horsham – the Grampians are in the far distance, Wimmera Region, Victoria.**

*Acknowledgements:* Soil image, soil description and laboratory data: Department of Primary Industries, Victoria. Site WP4, Longerenong. Landscape image: Department of Primary Industries, Victoria.