

## VE5: Haplic, Epipedal, Brown Vertisol

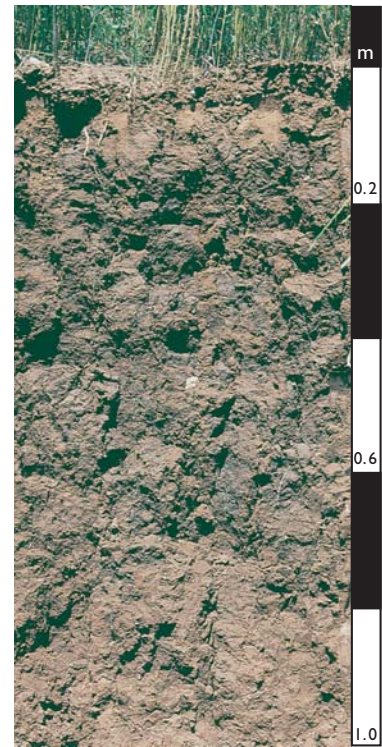
### General description of the soil

A brown, cracking clay soil that has a coarse blocky A1 horizon and a highly calcareous substrate. Sodicity increases with depth (up to an ESP of 14).

<b>Distribution:</b>	These soils are very common in many parts of eastern Australia, including the arid zone.
<b>Typical land use:</b>	Wide range of winter and summer crops, particularly cereals and oilseeds.
<b>Common variants:</b>	In the more arid areas there is usually an increase in sodicity, and carbonate and gypsum tend to occur throughout the profile.
<b>World Reference Base:</b>	Vertic Luvisol.
<b>Other names:</b>	Brown Clays and Cracking Clays.

### Environment and location of the example profile

<b>Landform:</b>	Slight rise on a gently undulating plain.
<b>Parent material or substrate:</b>	Substrate is highly calcareous.
<b>Drainage class:</b>	Imperfectly drained.
<b>Surface condition:</b>	Periodic cracking.
<b>Site disturbance:</b>	Cultivation.
<b>Native vegetation:</b>	Eucalypt woodland.

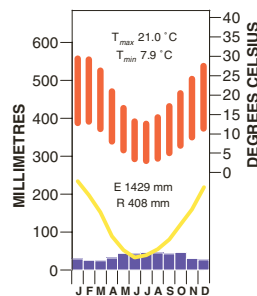


Near Charlton, north-central Victoria

### Site location



### Site climate



### Soil morphology

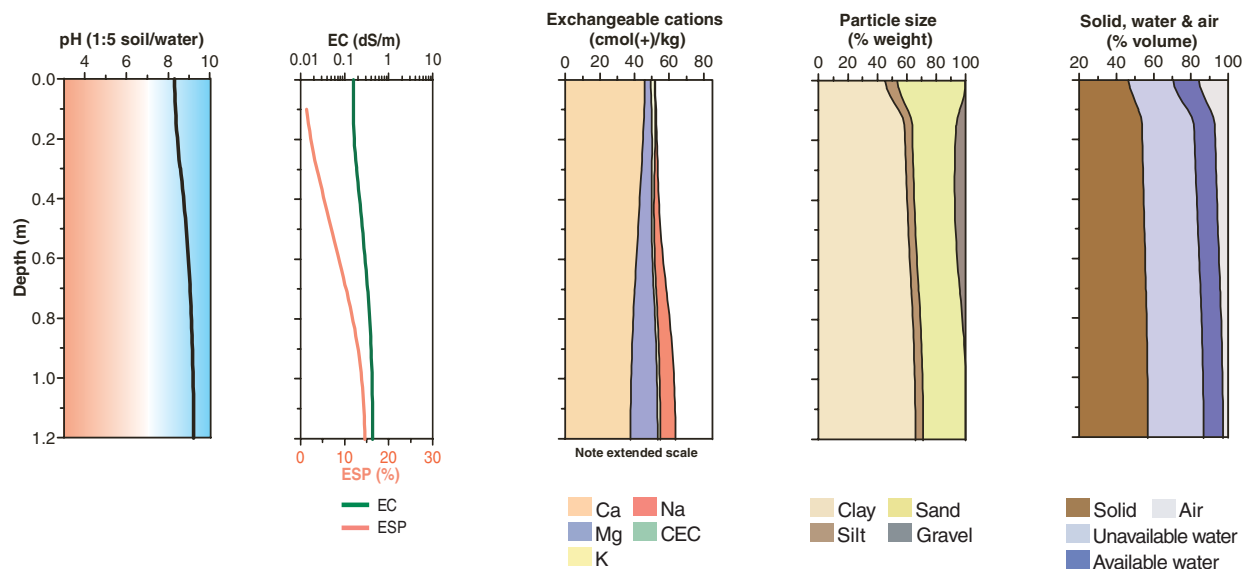
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1	0.00–0.10	dark brown (7.5YR 3.5/4)	–	light medium clay	moderate	subangular blocky	20–50 mm	firm (dry)	–	–	abrupt
B21	0.10–0.70	dark brown (10YR 3/3)	–	medium heavy clay	moderate parting to strong	prismatic parting to subangular blocky	50–100 mm parting to 20–50 mm	very firm (dry)	2% angular quartz (5–10 mm)	2% ferromanganiferous nodules (10–20 mm)	clear
B22	0.70–1.20	brown (10YR 4/3)	strong brown (7.5YR 5/6)	medium heavy clay	moderate	prismatic parting to subangular blocky	50–100 mm parting to 20–50 mm	strong (dry)	–	–	abrupt
D	1.20 +	calcrete and soft carbonate									

### 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>C</sup>			
										Ca	Mg	K	Na	H+Al	CEC			ECEC	CS	FS	Silt
A1	0.00–0.10	8.3	7.7	0.16		1.4				46.0	3.6	2.3	0.2					11	30	7	46
B21	0.10–0.30	8.4	7.8	0.15						45.0	5.5	1.7	0.9					8	20	5	62
B21	0.30–0.70	8.9	7.8	0.25						42.0	7.5	1.3	3.7								
B22	0.70–1.20	9.2	8.2	0.42						38.0	15.0	1.6	8.4								

Note: No pretreatment for soluble salts, hence exchangeable sodium and ESP may be inflated.

## Key profile properties



## General qualities of the soil

<b>Infiltration:</b>	Slow to very slow.
<b>Available water store:</b>	Moderate but dependent on depth of chemical or physical impeding layers. Low infiltration may restrict filling of the soil water store.
<b>Permeability:</b>	Low.
<b>Physical root limitations:</b>	Restricted aeration when wet and possible soil strength limitations. Prone to compaction.
<b>Erosion hazard:</b>	Serious on slopes during high intensity rainfall.
<b>Nutrient availability:</b>	Nitrogen and phosphorus decline with cultivation. Possible zinc deficiency in strongly alkaline soils.
<b>Toxicities:</b>	Some arid soils may be highly saline.



**Brown Vertosols occur on the upper slopes of slight rises – near Charlton, north-central Victoria.**

*Acknowledgements:* Soil image, soil description and laboratory data: Department of Primary Industries, Victoria. Site LP 95, Gooroc. Landscape image: Peter Walton, Australian Scenics.