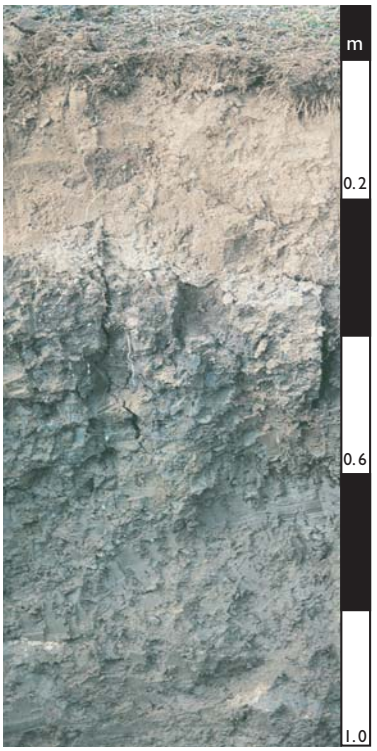
# SO10: Vertic, Mottled-Mesonatric, **Black Sodosol**




**Corangamite region, south-west Victoria**

## General description of the soil

A texture-contrast soil which is sodic in the upper 0.2 m of the black, mottled, clayey B2 horizon. Slickensides are present in the lower B2 horizon indicating vertic properties.

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| **Distribution:** | A common and sometimes widespread soil scattered through the subcoastal and inland plains of eastern and south-eastern Australia. They are often associated with Black Vertosols. |
| **Typical land use:** | Dryland farming. |
| **Common variants:** | The A2 horizons are of variable thickness, and the A2 may be sporadically bleached above the heavy clay B2 horizon. |
| **World Reference Base:** | Vertic Solonetz. |
| **Other names:** | Often called Solodised Solonetz and Solodic soils. |

## Environment and location of the example profile

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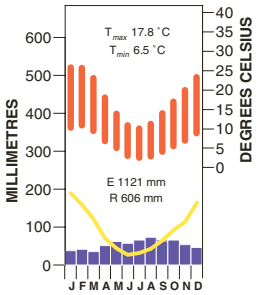
| **Landform:** | Gently undulating plain. |
| **Parent material or substrate:** | Alluvial swamp deposits. |
| **Drainage class:** | Imperfectly drained. |
| **Surface condition:** | Hardsetting. |
| **Site disturbance:** | Cultivated. |
| **Native vegetation:** | Eucalypt woodland dominated by *Eucalyptus camaldulensis.* |

## Site location

## Site climate



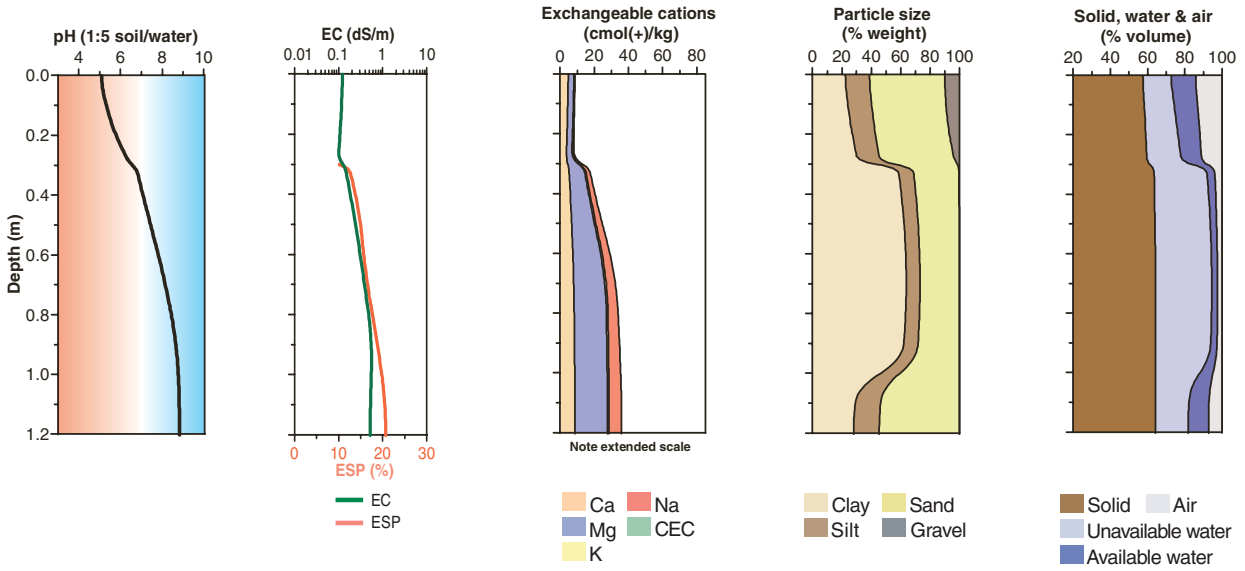

## Soil morphology

| Horizon | Depth (m) | Colour | Mottles | Texture | Structure | | | Consistence | Coarse fragments | Segregations | Boundary |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Grade | Shape | Size | | | | |
| A11 | 0.00–0.25 | dark brown (10YR 3/3) | rusty root channels | fine sandy clay loam | weak | | | firm (dry) | – | 5% ferromanganiferous nodules (3–8 mm) | abrupt and wavy |
| A2 | 0.25–0.30 | brown (10YR 4/3) | rusty root channels | fine sandy clay loam | weak | | | firm (moist) | – | 5% ferromanganiferous nodules (3–8 mm) | sharp |
| B21 | 0.30–0.55 | dark grey (10YR 3/1) | yellowish brown (10YR 5/8) | heavy clay | moderate | angular blocky | 20–50 mm | strong (moist) | – | – | clear |
| B22 | 0.55–0.80 | greyish brown (10YR 5/2) | yellowish (10YR 7/6) diffuse | medium heavy clay | | | | very firm (moist) | – | 2% ferromanganiferous nodules | clear |
| B23 | 0.80–1.00 | greyish brown (10YR 5/2) | – | medium heavy clay | slickensides below 0.70 m | | | very firm (moist) | – | 2–5% soft and 2% hard carbonates | abrupt |
| B3 | 1.00+ | dark greyish brown (10YR 4/2) | – | sandy clay loam | | | | very firm (moist) | – | 5% manganese coatings | |

## Soil chemical and physical properties

| Horizon | Sample Depth (m) | pH $H_2O$ [A] | pH $CaCl_2$ [B] | Elect. Cond. dS/m [A] | $CaCO_3$ % | Org. C % [A] | Extr. P mg/kg | Tot. P % | Tot. K % | Cation exchange properties [J] cmol(+)/kg | | | | | | | ESP % [C] | Bulk dens. $Mg/m^3$ | Particle size % [C] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Ca | Mg | K | Na | H+Al | CEC | ECEC | | | CS | FS | Silt | Clay |
| A1 | 0.00–0.25 | 5.0 | 4.4 | 0.12 | | 3.0 | | | | 4.6 | 3.0 | 0.4 | 0.1 | | | | – | | 12 | 41 | 17 | 27 |
| A2 | 0.25–0.30 | 6.1 | 4.9 | 0.06 | | | | | | 2.2 | 2.1 | 0.3 | 0.3 | | | | – | | | | | |
| B21 | 0.30–0.55 | 7.2 | 6.2 | 0.18 | | | | | | 6.6 [G] | 11.0 [G] | 0.9 [G] | 3.1 [G] | | | | 15 | | 7 | 19 | 9 | 61 |
| B22 | 0.55–0.80 | 8.2 | 7.2 | 0.33 | | | | | | 8.5 | 19.0 | 0.9 | 5.3 | | | | 16 | | | | | |
| B23 | 0.80–1.00 | 8.9 | 8.3 | 0.70 | | | | | | 8.4 | 19.0 | 0.9 | 6.6 | | | | 19 | | | | | |
| B3 | 1.00+ | 8.9 | 8.1 | 0.50 | | | | | | 8.8 | 19.0 | 0.9 | 7.5 | | | | 21 | | | | | |

## Key profile properties




## General qualities of the soil

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| **Infiltration:** | Moderate or less if compacted and dispersed. |
| **Available water store:** | Small and depends on depth of A horizon. |
| **Permeability:** | Low to very low. |
| **Physical root limitations:** | Effective rooting depth often about 0.50 m – restricted by the strongly sodic and dispersive subsoil (poor aeration and excessive strength). |
| **Erosion hazard:** | Risk is low provided vegetation cover is adequate. |
| **Nutrient availability:** | Molybdenum, calcium, magnesium and potassium deficiencies in the strongly acid surface horizons. |
| **Toxicities:** | Aluminium problems may occur in the strongly acid surface horizons. Medium to high salinity below 0.5 m. |

**Aerial view of lakes and dry lake beds that support Black Sodosols – north-west of Ballarat, Victoria**

*Acknowledgements:* Soil image, soil description and laboratory data: Department of Primary Industries, Victoria. Site LP 65, Lexton. Landscape image: Qasco/VicImage.