

<b>Site code<sup>1</sup></b>	<b>MM104</b>
<b>Location</b>	<b>Deans Marsh (Salt Creek Lane), Colac district, south-west Victoria</b>
<b>Landform</b>	Gently undulating rises
<b>Geology</b>	Palaeogene: Eastern View Formation: <i>fluvial sand, gravel, clay, brown coal</i>
<b>Element</b>	Crest

### Profile morphology

Horizon	Depth (cm)	Description
A1	0–25	Dark brown (10YR3/3); fine sandy loam; apedal massive structure; weak consistence (dry); clear boundary to:
A2	25–55	Brown (10YR5/3), conspicuously bleached, light grey (10YR7/2 dry); fine sandy loam; weak consistence (dry); very many fine to coarse segregations; sharp boundary to:
B21	55–80	Dark brown (10YR3/3) with red (2.5YR4/6) mottles; heavy clay; strong coarse blocky structure; very firm consistence (dry); gradual boundary to:
B22	80+	Yellowish brown (10YR5/6) with red (2.5YR4/6) mottles; medium clay; moderate medium blocky structure; very firm consistence (moderately moist).

**ASC:** Eutrophic; Mottled-Subnatric; Brown Sodosol

### Analytical data<sup>2</sup>

Site MM104 Horizon	Sample depth cm	pH		EC	NaCl	Ex Ca	Ex Mg	Ex K	Ex Na	Ex Al	Ex acidity
		H <sub>2</sub> O	CaCl <sub>2</sub>	dS/m	%	cmol <sub>c</sub> /kg	cmol <sub>c</sub> /kg	cmol <sub>c</sub> /kg	cmol <sub>c</sub> /kg	mg/kg	cmol <sub>c</sub> /kg
A1	0–25	5.5	N/R	0.05	N/R	1.4	1.4	0.1	0.3	N/R	12.8
A2	25–55	6.1	N/R	0.03	N/R	1	1	0	0.3	N/R	4.7
B21	55–80	7.2	N/R	0.15	N/R	3	3	0.2	3.5	N/R	10.3
B22	80+	7.3	N/R	0.1	N/R	2.8	2.8	0.2	3.6	N/R	11.3

Site MM104 Horizon	Sample depth cm	FC (-10kPa) %	PWP (-1500kPa) %	KS %	FS %	Z %	C %	Org C %	Bulk density t m <sup>-3</sup>
A1	0–25	23.9	12.2	3	64	13	14	2.9	1.11
A2	25–55	N/R	N/R	6	70	14	10	0.8	N/R
B21	55–80	50.3	35.3	2	11	4	83	N/R	1.18
B22	80+	N/R	N/R	1	8	1	90	N/R	N/R

### Management considerations

This soil has a very strong texture contrast between the fine sandy loam surface, subsurface soil and the medium to heavy clay subsoil. There is some depth (55cm) before the clay is reached which acts as a throttle to water and gases. Restricted water movement is also evident by the bleached A2 horizons (or subsurface soils). These bleached horizons may act as conduit for subsurface flow, particularly on sloping ground. If the soil is dispersive then gypsum application would be suitable, while increasing organic matter and maintaining vegetative cover is important.

The subsoil is mottled and sodic. These sodic subsoils usually have poor structure (generally as coarse domed columns). The poor structure results in dispersion (and subsequent clogging of pores), restricting water and gas movement through the subsoil, as evidenced by the mottling. These soils are hardsetting and

<sup>1</sup> Source: Maher JM, Martin JJ 1987 Soils and landforms of south-western Victoria. Department of Agriculture and Rural Affairs. Research Report No. 40.

<sup>2</sup> Source: Government of Victoria, State Chemistry Laboratory.

## Maher & Martin Reference Site

have limited opportunity for cultivation without further damage to soil structure. The application of gypsum is used to counter the effect of the sodicity. Penetration by deep-rooted crops is also useful as is minimum tillage practices which avoids bring the sodic, dispersive material to the surface.