

# Sandbrook soil – sandy soil with bleached A2 horizon and iron-humus pan under dry forest

## Site description

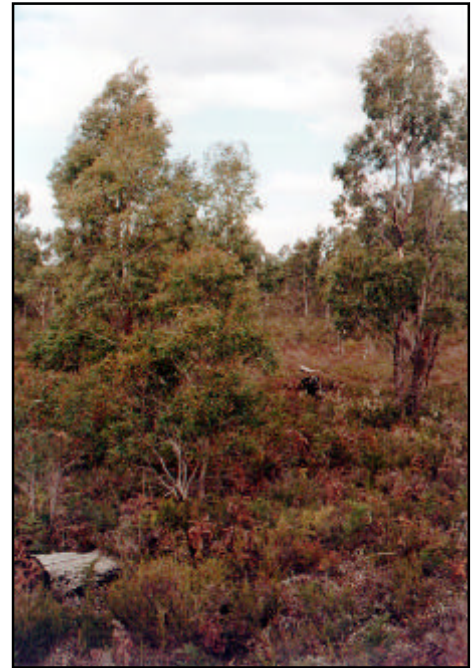
*Occurrence:* Mainly on east coast below 500 m altitude, where mean annual rainfall is in the 500-800 mm range

*Parent Material:* In-situ Triassic sandstone

*Landform:* Undulating and rolling land dissected by gullies

*Drainage Class:* Well drained

*Vegetation:* Dry sclerophyll forest with *Eucalyptus amygdalina*, *E. globulus*, *Leucopogon* sp., *Melaleuca squamea*, *Casuarina* sp., *Pteridium esculentum* and low heath.



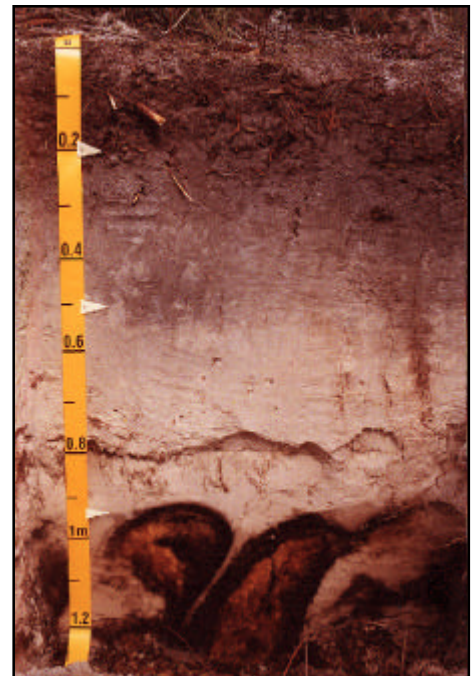
## Distinguishing Soil Properties

### *Profile Features:*

- Sandy structureless profiles
- Prominent bleached A2 horizon >50 cm thick
- Iron-humus pan at depth

### *Chemical and physical features*

- Very low total P and  $\text{SO}_4\text{-S}$  in topsoil (0-30 cm) and throughout profile
- Medium total C and low total N in topsoil (total C probably increased by charcoal); very low N in deeper horizons
- High susceptibility to nutrient leaching (very low P retention, low CEC)
- Low aggregate stability
- Permeability – high; moderate to slow in iron-humus pan



## Similar soils

- Soil 11.1, Forest Soils of Tasmania - in Tertiary outwash sands from granite
- Soil 19.1, Forest Soils of Tasmania - in coastal aeolian sand

## Soil Degradation Potential

FACTOR	RATING OF DEGRADATION POTENTIAL
Erodibility:	High
Compaction and puddling:	Low
Mixing:	High
Nutrient depletion:	High
Landslides:	Slight
Flooding:	Negligible, except in local depressions

## Site Productivity

Very low productivity, limited by low nutrients and very low moisture availability

## Soil Management

Topsoil provides essential protection against water and wind erosion and should not be cultivated except by spot methods.  
Surface horizons, with higher organic and nutrient levels, should be left intact.  
Any soil disturbance or burning is likely to reduce productivity.

## Native Forest Logging and Regeneration

### LOGGING AND CLEARING:

Partial logging only is strongly recommended. Nutrient levels are very low and almost entirely concentrated in the surface horizon. The soils are prone to degradation by erosion, including wind erosion if large areas are cleared.

### PREPARATION FOR REGENERATION:

Minimal seedbed preparation is required. Disturbance during logging should be sufficient.  
Burning will reduce further the low levels of nutrients in this soil.

### SILVICULTURAL CONSIDERATIONS:

Low nutrient status (P, S and N) and droughtiness severely limit long-term productivity. Long-term management as a strictly controlled low wood-production forest is likely to be the most viable economic option. Alternatively reserve areas dominated by these soils as protection forest.

## Suitability for Plantations

**Unsuitable** for plantations because of very low site productivity and high erodibility

## Profile

Author: PDM and MDL

Date: 21.9.00

Location: South side of "1313" road, 150 m west of Buckland Road (C318)

Map reference: Sheet 5429 (Woodsdale) 525 927

Landform: Shoulder slope in rolling landscape

Vegetation: *Eucalyptus amydalina*, *E. globulus*, *Casuarina*, *Leucopogon collina*, *Melaleuca squamea*, *Pteridium esculentum*, heath plants.

Parent material: Triassic sandstone.

Drainage: Well drained

Slope: 5°

Aspect: Northwest

Altitude: 345 m

Photographs: PDM 10-00-1 (site); PDM 9-00-22a (profile)

Australian Soil Classification: **Semiaquic Humosesquic Podosol**

A1	0-20 cm	Very dark grey (2.5Y3/1) (moist) medium sand; loose; single grain; abundant fine and coarse roots; NaF 0/5.
A21	20-50 cm	Dark grey (2.5Y4/1) (moist) medium sand; 20% light brownish grey (2.5Y6/2) mottles 10-20 mm diameter; very weak strength; massive, breaking to single grain; many fine roots; NaF 0/5.
A22e	50-95 cm	Light olive grey (5Y6/2) (moist) medium sand; loose; single grain; many fine roots; NaF 0/5.
Bhs	95-120 cm	Strong brown (7.5YR5/6) (moist) loamy medium sand; 30% yellow (2.5Y7/6) mottles 5 mm diameter; 20% black (7.5YR2.5/1) mottles 10-60 mm diameter; hard; massive to 30-40 cm columnar structure; black staining 30 mm thick on column surfaces; NaF 2/5.
R	120+cm	Sandstone

## Laboratory Analyses

Horizon	Depth (cm)	pH (H <sub>2</sub> O)	Total C (%)	Total N (%)	C/N	Colwell P (mg/kg)	Total P (mg/kg)	P retn. (%)	SO <sub>4</sub> -S (mg/kg)	Water-stable aggreg. (%)
	<b>0-30</b>	3.6	4.03	0.10	39	4	33	0	1	<i>n.d.</i>
A1	0-20	3.8	5.57	0.14	39	4	46	0	1	28
A21	20-50	4.6	0.21	0.01	26	1	16	1	0	8
A22e	50-95	4.9	0.03	0.00	-	<i>n.d.</i>	13	1	0	5
Bhs	95-120	4.7	0.75	0.03	27	<i>n.d.</i>	48	11	1	30

Horizon	Depth (cm)	Exch. Ca (cmol(+)/kg)	Exch. Mg (cmol(+)/kg)	Exch. K (cmol(+)/kg)	Exch. Na (cmol(+)/kg)	CEC (cmol(+)/kg)	BS (%)
	<b>0-30</b>	0.04	1.20	0.09	0.05	14.1	10
A1	0-20	0.04	1.93	0.32	0.26	20.2	13
A21	20-50	0.00	0.12	0.03	0.02	1.5	12
A22e	50-95	0.22	0.01	0.00	0.00	0.3	70
Bhs	95-120	0.03	0.10	0.02	0.03	5.0	3

Analytical methods were those of Blakemore et al. (1987), Laffan et al. (1996) and Rayment and Higginson (1992), with variation of methods for C, N and SO<sub>4</sub>-S (details available from P. D. McIntosh, Forest Practices Board).

## **References**

- Blakemore, L. C.; Searle, P. L. and Daly, B. K. 1987. Methods of chemical analysis of soils. *New Zealand Soil Bureau Scientific Report 80*.
- Laffan, M. D.; Grant, J and Hill, R. 1996. A method for assessing the erodibility of Tasmanian forest soils. *Australian Journal of Soil and Water Conservation* 9: 16 – 22.
- Rayment, G. E, and Higginson, F. R. 1992. Australian Laboratory Handbook of Soil and Water Chemical Methods. Incarta Press, Melbourne. 330p.

## **Acknowledgements**

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## **Citation:**

McIntosh, P.D.; Laffan, M.D.; Wong, L.; Miller, M. and Holz, G. 2001. Sandbrook soil. *Tasmanian forest soil fact sheet no. 3*. Forest Practices Board, Hobart; Gunns Ltd, Launceston and Forestry Tasmania, Hobart. 4 p.

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