

Panic soil – uniform loamy soil in granite under wet forest

Site description

Occurrence: In northern Tasmania on mid-altitude sites where mean annual rainfall is >1200 mm

Parent Material: In-situ deeply weathered granite

Landform: Undulating and rolling hills

Drainage Class: Well drained

Vegetation: Mixed forest with *Eucalyptus obliqua*, *Atherosperma moschatum*, *Phebalium squameum*, *Pomaderris apetala*, *Dicksonia antarctica* and *Tasmania lanceolata*

Distinguishing Soil Properties

Profile Features:

- Thin A1 horizon
- Brown colours throughout
- Uniform silt loam and clay loam textures
- Firm weakly structured lower B2 horizon

Chemical and physical features

- Medium total C, P and N in surface layer (0-30 cm)
- High total C, P and N in thin A1 horizon
- Permeability – moderate, limited by firm lower B2 horizon

Similar soils

- Stronach soil (Forest Soils of Tasmania Soil 11.3) – gradational soils under wet forest; thicker A1 horizon and higher nutrient status
- Hogarth soil (Grant et al. 1995) – red-weathered in subsoils
- Wurrawa soil (Laffan and McIntosh 2002) – similar profile under dry forest; lower nutrients



Soil Degradation Potential

FACTOR	RATING OF DEGRADATION POTENTIAL
Erodibility:	Moderate
Compaction and puddling:	Moderate
Mixing:	High
Nutrient depletion:	High
Landslides:	Slight
Flooding:	Negligible

Site Productivity

Moderate to high productivity, limited by medium levels of nutrients. The soils superficially resemble high-productivity Stronach soils, but are less fertile.

Soil Management

Topsoils are thin, probably as a result of burning. In native forest management, surface horizons should be left intact as far as possible. Excessive disturbance and burning may reduce productivity and should be avoided.

Native Forest Logging and Regeneration

LOGGING AND CLEARING:

Nutrient levels are concentrated in the thin surface horizon. Cording and matting should be used.

PREPARATION FOR REGENERATION:

Scarification or burning is required to prepare a seedbed. Very hot burning should be avoided.

SILVICULTURAL CONSIDERATIONS:

Normal Code provisions for clearfell and burning apply.

Suitability for Plantations

Moderately to highly suitable for plantations; suitability is limited by medium levels of nutrients.

CLEARING: Dozer clearing must be done using a rake blade.

CULTIVATION: Ripping to >50 cm depth is likely to be beneficial.

FERTILISER TREATMENT: Fertilising planted seedlings is required. Secondary fertilisation may be necessary.

Profile

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Location: Turn right off road going south to Loyetea, into Panic Road. Cross first Class 3 stream. Site is 50 m south of road on western boundary of streamside reserve.

Map reference: Sheet 4042 (Loyetea) 411800 5429500

Landform: Upper midslope on side of Class 3 stream gully, on boundary of streamside reserve

Vegetation: Mixed forest: *Eucalyptus obliqua*, *Atherosperma moschatum*, *Phebalium squameum*, *Pomaderris apetala*, *Dicksonia antarctica* and *Tasmannia lanceolata*

Parent material: Deeply weathered granite

Drainage: Well drained

Slope: 10°

Aspect: East

Altitude: 400 m

Photographs: PDM 1-02-30 (site); 8-00-2A (profile)

Australian Soil Classification: **Haplic Mesotrophic Brown Dermosol**

A1	0-7 cm	Very dark grey (10YR3/1) (moist) humic silty loam; 30% subangular quartz gravels 2-4 mm diameter; loose; moderate 2-5 mm granular structure; many fine roots; NaF 0/5.
B1	7-41 cm	Brown (10YR4/3) (moist); clay loam; 30% subangular quartz gravels 2-4 mm diameter; weak 10-30 mm subangular blocky structure; common fine roots; NaF 0/5.
B2/B1	41-80 cm	Strong brown (7.5YR5/6) (moist) silty loam; brown (10YR4/3) on ped surfaces; 20% 100-200 mm diameter inclusions of horizon above; 60% subangular quartz gravels 2-4 mm diameter; abundant strongly weathered feldspars, strong brown (7.5YR5/8); weak strength; moderate 10-30 mm blocky structure; few very fine roots; NaF 1/5.
B3	80-100 cm	Strong brown (7.5YR5/6) (moist) loam; brown (10YR4/3) on ped surfaces; 60% subangular quartz gravels 2-4 mm diameter; abundant strongly weathered feldspars, strong brown (7.5YR5/8); firm strength; weak to moderate 10-30 mm blocky structure; no roots; NaF 1/5.

Laboratory Analyses

Horizon	Depth (cm)	pH (H ₂ O)	Total C (%)	Total N (%)	C/N	Total P (mg/kg)	Citrate-dithionite Fe (%)	P retention (%)	Water stable aggregates (%)
	0-30	5.0	4.9	0.20	25	120	1.49	27	<i>n.d.</i>
A1	0-7	4.6	15.9	0.81	19	320	0.79	11	40
B1	7-41	5.1	3.2	0.11	29	100	1.56	34	82
B2/B1	41-80	5.3	1.6	0.07	23	90	1.95	51	82
B3	80-100	5.5	1.1	0.03	-	70	1.52	45	75

Analytical methods were those of Blakemore et al. (1987), Laffan et al. (1996) and Rayment and Higginson (1992), except that total C was analysed by the Walkley/Black digestion method.

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*.
- Grant, J.; Laffan, M. and Hill, R. 1995. Soils of Tasmanian State Forests. 2. Forester Sheet. *Soils Bulletin 2*. Forestry Tasmania, Hobart. 246 p.
- Laffan, M. D. and Hill, R. 1996. A method for assessing the erodibility of Tasmanian forest soils. *Australian Journal of Soil and Water Conservation* 9: 16 – 22.
- Laffan, M.D. and McIntosh, P.D. 2002. Wurrawa soil. *Tasmanian forest soil fact sheet no. 19*. Forest Practices Board, Hobart and Forestry Tasmania, Hobart. 4 p.
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Citation

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