**Project Name:** **Improving Soil Survey Field Measurement and Interpretation. LWRRDC Project No. 90/R16**
**Project Code:** **Morphology** **Site ID:** **CP335** **Observation ID:** **1**
**Agency Name:** **CSIRO Division of Soils (ACT)**

## Site Information

| | | | |
|---|---|---|---|
| **Desc. By:** | N.J. McKenzie | **Locality:** | |
| **Date Desc.:** | 08/02/94 | **Elevation:** | 815 metres |
| **Map Ref.:** | Sheet No. : 8723-1-N 1:25000 | **Rainfall:** | 1200 |
| **Northing/Long.:** | 5898000 AMG zone: 55 | **Runoff:** | Very slow |
| **Easting/Lat.:** | 712600 Datum: AGD66 | **Drainage:** | Well drained |

## Geology

| | | | |
|---|---|---|---|
| **ExposureType:** | Soil pit | **Conf. Sub. is Parent. Mat.:** | No Data |
| **Geol. Ref.:** | No Data | **Substrate Material:** | Soil pit, Granodiorite |

## Land Form

| | | | |
|---|---|---|---|
| **Rel/Slope Class:** | Rolling hills 90-300m 10-32% | **Pattern Type:** | Hills |
| **Morph. Type:** | Mid-slope | **Relief:** | 100 metres |
| **Elem. Type:** | Hillslope | **Slope Category:** | Moderately inclined |
| **Slope:** | 11 % | **Aspect:** | 170 degrees |

**Surface Soil Condition (dry):** Soft

**Erosion:**

## Soil Classification

**Australian Soil Classification:**
Melanic Dystrophic Red Kandosol
**ASC Confidence:**
Confidence level not specified

**Mapping Unit:** N/A
**Principal Profile Form:** Gn4.11
**Great Soil Group:** N/A

**Site Disturbance:** Limited clearing, for example selective logging

**Vegetation:** Low Strata - Fern, 0.51-1m, Closed or dense. *Species includes - None recorded
Mid Strata - Tree, >35.01m, Mid-dense. *Species includes - Eucalyptus fastigata, Acacia dealbata
Tall Strata - Tree, >35.01m, Sparse. *Species includes - Eucalyptus fastigata

**Surface Coarse Fragments:** No surface coarse fragments

## Profile Morphology

| | | |
|---|---|---|
| O1 | 0 - 0.05 m | Organic Layer; ; Moist; Clear, Smooth change to - |
| A11 | 0.05 - 0.15 m | Black (5YR2.5/1-Moist); Dark brown (7.5YR3/2-Dry); , 0-0% ; Clay loam; Moderate grade of structure, 2-5 mm, Granular; Moderate grade of structure, 2-5 mm, Granular; Earthy fabric; Moderately moist; Field pH 6.5 (Raupach); Many, medium (2-5mm) roots; Gradual, Smooth change to - |
| A12 | 0.15 - 0.25 m | Dark reddish brown (5YR3/2-Moist); , 0-0% ; Clay loam; Moderate grade of structure, 5-10 mm, Granular; Moderate grade of structure, 2-5 mm, Granular; Earthy fabric; Moderately moist; Field pH 6.5 (Raupach); Many, coarse (>5mm) roots; Gradual, Smooth change to - |
| B1 | 0.25 - 0.4 m | Dark reddish brown (5YR3/3-Moist); , 0-0% ; Light clay; Moderate grade of structure, 10-20 mm, Subangular blocky; Moderate grade of structure, 5-10 mm, Granular; Rough-ped fabric; Moderately moist; Field pH 6.5 (Raupach); Many, medium (2-5mm) roots; Gradual, Smooth change to - |
| B21 | 0.4 - 0.55 m | Dark reddish brown (2.5YR3/4-Moist); , 0-0% ; Light medium clay; Weak grade of structure, 10-20 mm, Polyhedral; Moderate grade of structure, 5-10 mm, Granular; Rough-ped fabric; Moderately moist; Field pH 6 (Raupach); Common, medium (2-5mm) roots; Diffuse, Smooth |
| B22 | 0.55 - 0.85 m | Dark red (2.5YR3/6-Moist); , 0-0% ; Light medium clay; Weak grade of structure, 10-20 mm, Polyhedral; Weak grade of structure, 2-5 mm; Rough-ped fabric; Moderately moist; Field pH 6 (Raupach); Common, medium (2-5mm) roots; Diffuse, Smooth change to - |
| B31 | 0.85 - 1.15 m | Dark red (2.5YR3/6-Moist); , 0-0% ; Light clay; Massive grade of structure; Weak grade of structure, 2-5 mm; Rough-ped fabric; Moderately moist; Field pH 5.5 (Raupach); Common, fine (1-2mm) roots; Diffuse, Smooth change to - |
| B32 | 1.15 - 1.55 m | Dark red (2.5YR3/6-Moist); , 10YR56, 2-10% , 30-mm, Distinct; Diffuse, Smooth change to - |
| B33 | 1.55 - 2.05 m | Red (2.5YR4/8-Moist); , 10YR56, 2-10% , 15-30mm, Distinct; |

## Morphological Notes

## Observation Notes

Medium, non-gravelly, clay loamy, clayey, very deep. Auger boring also carried out. Substrate Material - General Type,

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**Site Notes**

Nalbaugh State Forest, Bombala. Severely burnt in 1952. (Morph 34)

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## Laboratory Test Results:

| Depth | pH | 1:5 EC | Exchangeable Cations | | | | Exchangeable | CEC | ECEC | ESP |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ca | Mg | K | Na | Acidity | | | |
| m | | dS/m | Cmol (+)/kg | | | | | | | % |
| 0 - 0.05 | | | | | | | | | | |
| 0 - 0.2 | | | | | | | | | | |
| 0 - 0.2 | | | | | | | | | | |
| 0.05 - 0.15 | 5.68A | 0.13A | 18.6B | 4.71 | 0.96 | 0.15 | | 28.7A | | 0.52 |
| 0.15 - 0.25 | 6.16A | 0.07A | 12.3B | 3.5 | 0.68 | 0.1 | | 19.8A | | 0.51 |
| 0.2 - 0.35 | | | | | | | | | | |
| 0.2 - 0.35 | | | | | | | | | | |
| 0.25 - 0.4 | 5.94A | 0.04A | 4.7B | 1.7 | 0.43 | 0.08 | | 10.4A | | 0.77 |
| 0.4 - 0.55 | 5.64A | 0.02A | 1.6B | 1.1 | 0.32 | 0.08 | | 6.5A | | 1.23 |
| 0.55 - 0.85 | 5.58A | 0.01A | 0.46B | 0.78 | 0.18 | 0.09 | | 6.8A | | 1.32 |
| 0.6 - 0.8 | | | | | | | | | | |
| 0.6 - 0.8 | | | | | | | | | | |
| 0.85 - 1.15 | 5.52A | 0.01A | 0.16B | 0.58 | 0.11 | 0.1 | | 4.9A | | 2.04 |
| 1.15 - 1.55 | 5.47A | 0.01A | 0.34B | 0.62 | 0.18 | 0.13 | | 5.2A | | 2.50 |
| 1.55 - 2.05 | 5.38A | 0.02A | 0.14B | 0.35 | 0.17 | 0.07 | | 6.3A | | 1.11 |

| Depth | CaCO3 | Organic C | Avail. P | Total P | Total N | Total K | Bulk Density | Particle Size Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | GV | CS | FS | Silt | Clay |
| m | % | % | mg/kg | % | % | % | Mg/m3 | | | % | | |
| 0 - 0.05 | | | | | | | | | | | | |
| 0 - 0.2 | | | | | | | 0.84 | | | | | |
| | | | | | | | 0.75 | | | | | |
| 0 - 0.2 | | | | | | | 0.84 | | | | | |
| | | | | | | | 0.75 | | | | | |
| 0.05 - 0.15 | | 11.51B | | | | | 0.78 | 3 | | | | |
| 0.15 - 0.25 | | 5.49B | | | | | | 3 | | | | |
| 0.2 - 0.35 | | | | | | | 0.85 | | | | | |
| | | | | | | | 0.93 | | | | | |
| | | | | | | | 1.01 | | | | | |
| | | | | | | | 0.91 | | | | | |
| 0.2 - 0.35 | | | | | | | 0.85 | | | | | |
| | | | | | | | 0.93 | | | | | |
| | | | | | | | 1.01 | | | | | |
| | | | | | | | 0.91 | | | | | |
| 0.25 - 0.4 | | 3.31B | | | | | 0.96 | 3 | | | | |
| 0.4 - 0.55 | | 1.41B | | | | | | 4 | | | | |
| 0.55 - 0.85 | | 0.72B | | | | | 1.42 | 2 | | | | |
| 0.6 - 0.8 | | | | | | | 1.53 | | | | | |
| | | | | | | | 1.52 | | | | | |
| | | | | | | | 1.51 | | | | | |
| | | | | | | | 1.46 | | | | | |
| 0.6 - 0.8 | | | | | | | 1.53 | | | | | |
| | | | | | | | 1.52 | | | | | |
| | | | | | | | 1.51 | | | | | |
| | | | | | | | 1.46 | | | | | |
| 0.85 - 1.15 | | 0.48B | | | | | | 3 | | | | |
| 1.15 - 1.55 | | 0.38B | | | | | | 7 | | | | |
| 1.55 - 2.05 | | 0.11B | | | | | | 5 | | | | |

| Depth | COLE | Gravimetric/Volumetric Water Contents | | | | | | | K sat | K unsat |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Sat. | 0.05 Bar | 0.1 Bar | 0.5 Bar | 1 Bar | 5 Bar | 15 Bar | | |
| m | | g/g - m3/m3 | | | | | | | mm/h | mm/h |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0 - 0.05 | | | | | | | | | |
| 0 - 0.2 | | 0.5E | 0.4E | 0.37E | 0.33D | 0.19F | 0.18F | 10839D | 706A |
| | | 0.53E | 0.41E | 0.38E | 0.32D | 0.19F | 0.18F | | |
| 0 - 0.2 | | 0.5E | 0.4E | 0.37E | 0.33D | 0.19F | 0.18F | 10839D | 706A |
| | | 0.53E | 0.41E | 0.38E | 0.32D | 0.19F | 0.18F | | |
| 0.05 - 0.15 | 0B | | | | | | | | |
| 0.15 - 0.25 | | | | | | | | | |
| 0.2 - 0.35 | | 0.46E | 0.37E | 0.35E | 0.31D | 0.19F | 0.18F | 1379D | 446.2A |
| | | 0.48E | 0.4E | 0.38E | 0.34D | 0.17F | 0.18F | | |
| | | 0.5E | 0.42E | 0.4E | 0.36D | | | | |
| | | 0.51E | 0.39E | 0.37E | 0.33D | | | | |
| 0.2 - 0.35 | | 0.46E | 0.37E | 0.35E | 0.31D | 0.19F | 0.18F | 1379D | 446.2A |
| | | 0.48E | 0.4E | 0.38E | 0.34D | 0.17F | 0.18F | | |
| | | 0.5E | 0.42E | 0.4E | 0.36D | | | | |
| | | 0.51E | 0.39E | 0.37E | 0.33D | | | | |
| 0.25 - 0.4 | 0.008B | | | | | | | | |
| 0.4 - 0.55 | | | | | | | | | |
| 0.55 - 0.85 | 0.025B | | | | | | | | |
| 0.6 - 0.8 | | 0.38E | 0.36E | 0.34E | 0.32D | 0.24F | 0.21F | 8.2D | 0.2A |
| | | 0.38E | 0.36E | 0.34E | 0.32D | 0.23F | 0.22F | | |
| | | 0.39E | 0.36E | 0.35E | 0.32D | | | | |
| | | 0.39E | 0.36E | 0.34E | 0.31D | | | | |
| 0.6 - 0.8 | | 0.38E | 0.36E | 0.34E | 0.32D | 0.24F | 0.21F | 8.2D | 0.2A |
| | | 0.38E | 0.36E | 0.34E | 0.32D | 0.23F | 0.22F | | |
| | | 0.39E | 0.36E | 0.35E | 0.32D | | | | |
| | | 0.39E | 0.36E | 0.34E | 0.31D | | | | |
| 0.85 - 1.15 | | | | | | | | | |
| 1.15 - 1.55 | | | | | | | | | |
| 1.55 - 2.05 | | | | | | | | | |

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**Laboratory Analyses Completed for this profile**

| | |
|---|---|
| 15A2_CA | Exchangeable bases (Ca2+,Mg2+,Na+,K+) - 1M ammonium chloride at pH 7.0, pretreatment for soluble salts |
| 15A2_CEC | Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts |
| 15A2_K | Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts |
| 15A2_MG | Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts |
| 15A2_NA | Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts |
| 3A1 | EC of 1:5 soil/water extract |
| 4A1 | pH of 1:5 soil/water suspension |
| 6B2 | Total organic carbon - high frequency induction furnace, volumetric |
| P10_GRAV | Gravel (%) |
| P10_S_0.20 | 0.20 micron (cumulative %) - Sedigraph |
| P10_S_0.48 | 0.48 micron (cumulative %) - Sedigraph |
| P10_S_1 | 1 micron (cumulative %) - Sedigraph |
| P10_S_1000 | 1000 micron (cumulative %) - Sedigraph |
| P10_S_125 | 125 micron (cumulative %) - Sedigraph |
| P10_S_15.6 | 15.6 micron (cumulative %) - Sedigraph |
| P10_S_2 | 2 micron (cumulative %) - Sedigraph |
| P10_S_20 | 20 micron (cumulative %) - Sedigraph |
| P10_S_2000 | 2000 micron (cumulative %) - Sedigraph |
| P10_S_250 | 250 micron (cumlative %) - Sedigraph |
| P10_S_3.9 | 3.9 micron (cumulative %) - Sedigraph |
| P10_S_31.2 | 31.2 micron (cumulative %) - Sedigraph |
| P10_S_500 | 500 micron (cumulative %) - Sedigraph |
| P10_S_53 | 53 micron (cumulative %) - Sedigraph |
| P10_S_63 | 63 micron (cumulative %) - Sedigraph |
| P10_S_7.8 | 7.8 micron (cumulative %) - Sedigraph |
| P3A1 | Bulk density - g/cm3 |
| P3B2VL_15 | 15 BAR Moisture m3/m3 - Volumetric using disturbed sample on pressure plate |
| P3B2VL_5 | 5 BAR Moisture m3/m3 - Volumetric using disturbed sample on pressure plate |
| P3B3VLb001 | 0.01 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996) |
| P3B3VLb003 | 0.03 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996) |
| P3B3VLb005 | 0.05 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996) |
| P3B3VLb01 | 0.1 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996) |
| P3B3VLb05 | 0.5 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996) |
| P3B3VLbSAT | Saturated Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996) |
| P4_50_McK | Unsaturated Hydraulic Conductivity - 50mm potential (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996) |
| P4_sat_McK | Saturated Hydraulic Conductivity (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996) |
| P5_LS_MOD | Modified linear shrinkage (McKenzie, Jacquier and Ringrose-Voase, AJSR, 1994, 32, 931-8) |