

**Project Name:** Hardsetting Soils  
**Project Code:** HS                      **Site ID:** CP291                      **Observation ID:** 1  
**Agency Name:** CSIRO Division of Soils (ACT)

**Site Information**

|                        |                              |                   |                          |
|------------------------|------------------------------|-------------------|--------------------------|
| <b>Desc. By:</b>       | C.J. Chartres                | <b>Locality:</b>  | Southeast of 'The Rock'. |
| <b>Date Desc.:</b>     | 01/01/92                     | <b>Elevation:</b> | No Data                  |
| <b>Map Ref.:</b>       | Sheet No. : 8327    1:100000 | <b>Rainfall:</b>  | No Data                  |
| <b>Northing/Long.:</b> | 6093500 AMG zone: 55         | <b>Runoff:</b>    | No Data                  |
| <b>Easting/Lat.:</b>   | 513350    Datum: AGD66       | <b>Drainage:</b>  | No Data                  |

**Geology**

|                      |                       |                                    |         |
|----------------------|-----------------------|------------------------------------|---------|
| <b>ExposureType:</b> | Undisturbed soil core | <b>Conf. Sub. is Parent. Mat.:</b> | No Data |
| <b>Geol. Ref.:</b>   | No Data               | <b>Substrate Material:</b>         | No Data |

**Land Form**

|                         |           |                        |            |
|-------------------------|-----------|------------------------|------------|
| <b>Rel/Slope Class:</b> | No Data   | <b>Pattern Type:</b>   | No Data    |
| <b>Morph. Type:</b>     | Mid-slope | <b>Relief:</b>         | No Data    |
| <b>Elem. Type:</b>      | Hillslope | <b>Slope Category:</b> | No Data    |
| <b>Slope:</b>           | %         | <b>Aspect:</b>         | 45 degrees |

**Surface Soil Condition (dry):**

**Erosion:**

**Soil Classification**

|  |                                |                                |     |
|--|--------------------------------|--------------------------------|-----|
| <b>Australian Soil Classification:</b> | N/A                            | <b>Mapping Unit:</b>           | N/A |
| <b>ASC Confidence:</b>                 | Confidence level not specified | <b>Principal Profile Form:</b> | N/A |
|  |                                | <b>Great Soil Group:</b>       | N/A |

**Site Disturbance:**

**Vegetation:**

**Surface Coarse Fragments:**

**Profile Morphology**

|      |               |  |
|------|---------------|--|
| A11  | 0 - 0.11 m    | Dark brown (10YR3/3-Moist); ; Loam; Moderate grade of structure, <2 mm, Granular; Very weak consistence; Many  |
| A12  | 0.11 - 0.2 m  | Strong brown (7.5YR4/6-Moist); ; Fine sandy loam; Moderate grade of structure, 5-10 mm, Subangular blocky; Very weak consistence; Many   |
| A2   | 0.2 - 0.35 m  | Brown (10YR5/3-Moist); ; Loam; Weak grade of structure, 10-20 mm, Subangular blocky; Firm consistence; Common  |
| BA   | 0.35 - 0.51 m | Yellowish red (5YR5/6-Moist); , 10YR54, 10-20% , 5-15mm, Distinct; Silty clay loam; Weak grade of structure, 20-50 mm, Prismatic; Weak grade of structure, 10-20 mm, Subangular blocky; Weak consistence; Common |
| B21t | 0.51 - 0.65 m | Yellowish red (5YR5/8-Moist); ; Silty clay; Moderate grade of structure, 10-20 mm, Subangular blocky; Firm consistence; Common   |
| B22t | 0.65 - 0.8 m  | Strong brown (7.5YR5/8-Moist); ; Silty clay; Moderate grade of structure, 10-20 mm, Subangular blocky; Firm consistence; Few   |
| B23t | 0.8 - 0.95 m  | Strong brown (7.5YR5/8-Moist); , 10YR66, 20-50% , 5-15mm, Distinct; , 5YR46, 10-20% , 5-15mm, Distinct; Silty clay; Moderate grade of structure, 10-20 mm, Subangular blocky; Firm consistence; Few              |
| BC1  | 0.95 - 1.35 m | Yellowish brown (10YR5/6-Moist); , 5YR56, 10-20% , 5-15mm, Distinct; Silty clay; Massive grade of structure; Firm consistence;   |
| BC2  | 1.35 - 1.75 m | Yellowish brown (10YR5/6-Moist); , 5YR56, 10-20% , 5-15mm, Distinct; Silty clay loam; Massive grade of structure; Firm consistence;  |
| BC3  | 1.75 - 2.05 m | Yellowish brown (10YR5/4-Moist); , 5YR56, 10-20% , 5-15mm, Distinct; , 10YR62, 2-10% , 0-5mm, Distinct; Silty clay loam; Massive grade of structure; Firm consistence;   |
| BC4  | 2.05 - 2.4 m  | Yellowish brown (10YR5/4-Moist); , 5YR56, 10-20% , 5-15mm, Distinct; , 10YR62, 10-20% , 5-15mm, Distinct; Silty clay loam; Massive grade of structure; Firm consistence;   |
| BC5  | 2.4 - 2.75 m  | Strong brown (7.5YR5/6-Moist); , 10YR62, 2-10% , 0-5mm, Distinct; Silty clay loam; Massive grade of structure; Firm consistence;   |

**Morphological Notes**

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A11  
A12                      American system, horizon is A2.  
A2                      American system, horizon is E. Some cementation in 20-51cm horizons; roots are mainly  
                                 in channels.  
BA                      American system, horizon is BE. Some cementation in 20-51cm horizons; roots are  
                                 mainly in channels. Silt and fine sand prism coatings in 35-51cm horizon.  
B21t                      American system, horizon is Bt1.  
B22t                      American system, horizon is Bt2.  
B23t                      American system, horizon is Bt3.

**Observation Notes**

Soil Taxonomy: Typic Natrixeralf, fine.

**Site Notes**

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**Laboratory Test Results:**

| Depth       | pH    | 1:5 EC | Exchangeable Cations |      |      | Exchangeable      | CEC     | ECEC | ESP |
|-------------|-------|--------|----------------------|------|------|-------------------|---------|------|-----|
| m           |       | dS/m   | Ca                   | Mg   | K    | Na<br>Cmol (+)/kg | Acidity |      | %   |
| 0 - 0.11    | 5.17A | 0.12A  | 1.1E                 | 0.38 | 0.86 | 0                 |         |      |     |
| 0.11 - 0.2  | 6.04A | 0.06A  | 1.2E                 | 0.4  | 0.42 | 0                 |         |      |     |
| 0.2 - 0.35  | 7.57A | 0.09A  | 2.2E                 | 2.4  | 0.59 | 0.72              |         |      |     |
| 0.35 - 0.51 | 8.04A | 0.22A  | 4.2E                 | 6    | 0.95 | 2.5               |         |      |     |
| 0.51 - 0.65 | 8.5A  | 0.34A  | 4.1E                 | 8    | 0.96 | 3.6               |         |      |     |
| 0.65 - 0.8  | 8.65A | 0.39A  | 4E                   | 8.3  | 0.98 | 4.1               |         |      |     |
| 0.8 - 0.95  | 8.72A | 0.38A  | 3.4E                 | 8.3  | 0.86 | 4.3               |         |      |     |
| 0.95 - 1.35 | 8.86A | 0.31A  | 3.8E                 | 9.4  | 1.1  | 5                 |         |      |     |
| 1.35 - 1.75 | 8.95A | 0.33A  | 3.1E                 | 8.7  | 0.82 | 4.7               |         |      |     |
| 1.75 - 2.05 | 9.03A | 0.41A  |                      |      |      |                   |         |      |     |
| 2.05 - 2.4  | 9.14A | 0.29A  |                      |      |      |                   |         |      |     |
| 2.4 - 2.75  | 9.22A | 0.25A  |                      |      |      |                   |         |      |     |

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**Laboratory Analyses Completed for this profile**

|           |  |
|-----------|--|
| 13A1_AL   | Oxalate-extractable aluminium  |
| 13A1_FE   | Oxalate-extractable iron   |
| 13A1_MN   | Oxalate-extractable manganese  |
| 13A1_SI   | Oxalate-extractable silicon  |
| 13C1_AL   | Citrate/dithionite-extractable iron, aluminium, Manganese and Silicon  |
| 13C1_FE   | Citrate/dithionite-extractable iron, aluminium, Manganese and Silicon  |
| 13C1_SI   | Citrate/dithionite-extractable iron, aluminium, Manganese and Silicon  |
| 15C1_CA   | Exchangeable bases (Ca <sup>2+</sup> ,Mg <sup>2+</sup> ,Na <sup>+</sup> ,K <sup>+</sup> ) - alcoholic 1M ammonium chloride at pH 8.5, pretreatment for soluble salts |
| 15C1_K    | Exchangeable bases and CEC - alcoholic 1M ammonium chloride at pH 8.5, pretreatment for soluble salts  |
| 15C1_MG   | Exchangeable bases and CEC - alcoholic 1M ammonium chloride at pH 8.5, pretreatment for soluble salts  |
| 15C1_NA   | Exchangeable bases and CEC - alcoholic 1M ammonium chloride at pH 8.5, pretreatment for soluble salts  |
| 15I4      | CEC measurement - titration of ammonium and chloride ions  |
| 3A1       | EC of 1:5 soil/water extract   |
| 4A1       | pH of 1:5 soil/water suspension  |
| 6B3       | Total organic carbon - high frequency induction furnace, infrared  |
| P10_PB_C  | Clay (%) - Plummet balance   |
| P10_PB_CS | Coarse sand (%) - Plummet balance  |
| P10_PB_FS | Fine sand (%) - Plummet balance  |
| P10_PB_Z  | Silt (%) - Plummet balance   |