





# MATERIAL CHARACTERISATION STUDY: BLACKWATER MINE

December 2025

Whitehaven Coal Limited

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**Project Number:** 1035.25e

**Report Title:** Material Characterisation Study: Blackwater Mine

**Client:** Whitehaven Coal Limited

## Review History

| Version Number | Prepared by: | Reviewed by: | Date |
|---|---|---|---|
| Rev 0 (draft) | L. McGrath | S. Buchanan | 18/10/2023 |
| Rev 1 (draft) | L. McGrath | BHP | 13/11/2023 |
| Rev 2 (final) | L. McGrath | BHP | 19/12/2023 |
| Rev 3 (revised) | E. Howard | | 11/12/2025 |

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# 1 INTRODUCTION

Whitehaven Coal Limited (Whitehaven) engaged Landloch to provide a material characterisation study of potential growth media at the Blackwater Mine (BWM). Specifically, the study is to evaluate the quality of materials for their use as growth media in rehabilitation.

To ensure rehabilitation success, the materials planned to be placed near the surface of the rehabilitated landforms need to be assessed for their suitability to support the vegetation required to meet the post-mining land use (PMLU).

## 1.1 Project description

BWM is a coal mine operated by Whitehaven, located to the south-west of the town of Blackwater in Queensland's Bowen Basin. Mining activities commenced in 1967 and consist of an open cut strip mine using dragline and truck and shovel fleets, and historic underground operations. Whitehaven acquired BWM from BHP Mitsubishi Alliance (BMA) in 2024.

## 1.2 Scope of work

The scope of work involved the following tasks:

1. Review previous soil, waste, and land assessments undertaken at BWM.
2. Review available published soils, geology, and land data within the region.
3. Conduct a data gap analysis to determine information required to:
    a. Develop an inventory of materials available for rehabilitation; and
    b. Assess the suitability of materials as a plant growth media.
4. Sample and analyse the topsoil stockpiles to gain data and fill the identified information gaps.
5. Collate existing and newly acquired soil and spoil characterisation data.
6. Interpret data, characterise materials, and prepare a report.

# 2 DESKTOP REVIEW

## 2.1 Climate

The mine is situated in Queensland's sub-tropical climate zone that is characterised by high summer temperatures, warm dry winters and a distinct wet and dry season.

The closest meteorological recording station is located at Emerald Airport (Site No. 035264). Data from this station indicate mean seasonal temperature ranges from 21.5°C to 34.7°C in summer and 9.1°C to 25.5°C in winter, with a summer dominant rainfall pattern averaging a total of 560 mm annually (Bureau of Meteorology, 2023). Rainfall events are often associated with short-lived, intense thunderstorms. These high intensity rainfall events produce high runoff rates and can create conditions conducive to erosion. The area is also susceptible to prolonged periods of drought.

## 2.2 Topography

The topography of BWM consists of gentle undulating plains with gravelly ridgelines and hills. Several ephemeral creeks and gullies drain to the Mackenzie River in the east and Comet River in the west, and both are part of the Fitzroy Basin catchment. Most of the terrain within these catchments is undulating, with minor steep areas in the upper catchments.

## 2.3 Regional geology

Geoscience Australia mapping of the mine identifies four major geological units. Descriptions of each geological unit are provided in Table 1.

**Table 1:** Geological units and descriptions for BWM (Geoscience Australia, 2023).

| Geological unit | Description |
|---|---|
| Pwj – Permian | Rangal Coal Measures, Bandanna Formation, Baralaba Coal Measures. Sandstone, siltstone, mudstone, coal, tuff and conglomerate. |
| Pwt – Permian | Fair Hill Formation, Fort Cooper Coal Measures. Sandstone, conglomerate, mudstone, carbonaceous shale, coal and cherty tuff. |
| Pwg – Permian | Burngrove Formation. Siltstone, coal and sandstone. |
| Rr – Triassic | Rewan Group. Siltstone and sandstone. |

## 2.4 Waste materials

The waste materials at BWM consist of overburden/interburden materials (spoil), coal rejects and tailings.

### *2.4.1 Spoil material*

The spoil material at BWM consists of tertiary/weathered materials and fresh Permian materials.

Based on regional geology characteristics and spoil analysis data over the life of the mine, overburden/interburden geology at BWM can be broadly classified into:

- Tertiary/weathered materials: Cainozoic (Tertiary), ferruginous duricrusts and Quaternary calcareous sediments consisting of gravels, clays, sands, magnesite, laterite, and calcrete. These weathered materials are typically sodic, highly erodible, and prone to clay dispersion. They are known to have varying levels of salinity, but their main constraint is their high erosion risk.
- Fresh Permian materials: Permian sediments from the Blackwater Group, Rewan Group, and Emerald Formation to the south, consist of lithic sandstones, mudstones, pebble conglomerate, siltstones, shale, and mudstones. Carbonaceous zones are present close to the coal seams. The physical and chemical properties of these materials are highly variable. They are generally sodic, alkaline and have varying salinity, often reaching extremes where carbonaceous inclusions are present. Some carbonaceous strata are acidic or

acid forming. Erosion risk varies based on physical properties and sodicity, but generally the sandstones are more competent and resistant to weathering and erosion than the siltstones or mudstones. The predominantly fresh, medium to coarse grained grey sandstone materials are less saline and offer greater benefits to rehabilitation.

Characterisation studies were undertaken by B.R. Emmerton (1998) and GTES (December 2007). Generally, spoil materials at BWM were found to be:

- Adequate in acid neutralising capacity (ANC) to limit the risk of acid formation;
- Strongly acidic (most Tertiary and some weathered Permian) to strongly alkaline (most Permian and some Tertiary);
- Sodic to strongly sodic and dispersive;
- Potentially highly saline; and
- Low in fertility.

### *2.4.2 Coal rejects*

Coarse coal rejects are emplaced within the spoil materials and are not currently used as a rehabilitation resource. Further investigation may identify some to be beneficial for rehabilitation use due to their high organic carbon and coarse physical structure. Alternatively, strategies may be developed in the future for mixing them with spoil of high ANC to produce a combined material that is more suitable for use as a growth medium.

### *2.4.3 Tailings*

Tailings are not characterised in this report as they are not currently considered a rehabilitation resource.

## 2.5 Soils

### *2.5.1 Regional soils mapping*

Regional soils mapping of the mine identifies two broad soil groups across the project area (Department of Resources 2023) These include:

- MM7 – Vertosol or Dermosol; and
- Sl12 – Sodosols or Chromosols.

Relevant details of these soil groups are provided in Table 2.

**Table 2:** Summary details of regional soils.

| Soil Landscape Code | Description | Associated Australian Soil Classification (ASC) |
|---|---|---|
| MM7 | Dark and yellow friable earths with friable brown soils. | Vertosol, Dermosol |
| SI12 | Complex range of soils occurring. Dominant soils are sandy to loamy duplex soils. | Sodosol, Chromosol |

### *2.5.2 Recoverable soils*

Several soil surveys have been undertaken across the mine area. These assessments include:

- CSR South Blackwater Mines: Evaluation of Soil Resources Existing Lease Areas, Report ENV-SBW-8604 (Environmental Services CSR Coal Division, 1986).
- CSR South Blackwater Mines: Mimosa Soils – An Assessment of Their Suitability for Use in Mine Site Rehabilitation, Report MEA-8801 (Mark Evans and Associates, 1988).
- Soil and Land Suitability Survey of the South Marshmead Lease Area MLA 70139 (Land Reclamation Services, 1997).
- Soil Stripping Survey, in Potential Disturbance Areas in Advance of Mining, Bonnie Doon Area, Blackwater Mine (B. R. Emmerton Pty. Ltd., 1999).
- Soils and Land Suitability Survey, BMA Blackwater Mine (Groundwork Environmental Management Services Pty. Ltd., 2001).
- Soils, Vegetation, and Land Suitability Survey, Kennedy Area, BMA Blackwater Mine (Groundwork Environmental Management Services Pty. Ltd., 2002).
- BMA Blackwater Mine: Assessment of Strategic Cropping Land (SKM, 2013).

Across all assessments a total of 26 soil landscape units (SLU) including variations, were identified within the mine area. A consolidated summary of all SLUs is provided in Table 3.

A soil map displaying broad ASC soil types for the BWM area is provided in Figure A9 (Appendix A). The data used to generate this map is a synthesis of soils data and mapping sourced from –

- existing soil assessments completed by the sources above;
- existing land systems information sourced from the QLD Globe online spatial data system (State of Queensland (Department of Resources), 2023); and
- a regional land resource assessment completed by (Burgess, 2003).

The map is Landloch's interpretation of the available soils information.

**Table 3:** Summary details of the SLUs developed in the previous soil assessments for BWM site.

| SLU | Soil Details | Vegetation Description | Grazing Suitability Class |
|---|---|---|---|
| A1 | Uniform brown clay or texture contrast soils on alluvial material in and adjacent to active drainage lines. | Mixed brigalow, yellowwood, poplar box and sandalwood. River red gum and Moreton Bay ash in creek channel. | 2/3 |
| B1 | Gently undulating plains with cracking and non-cracking uniform clays and areas of gilgai developed from weathered non-quartzose Permian sedimentary rocks and Tertiary sediments. | Brigalow, blackbutt with associated bottle tree, poplar box and yellowwood. | 2 |
| B2 | Undulating plains and rises of generally non-cracking clays with significant surface gravel. | Brigalow with blackbutt, ooline, sandalwood, Leichhardt bean, carissa. Includes areas of undulating ridges and stony Yapunyah. | 3 |
| B2v | Reddish brown texture contrast soils with thin sandy or loamy surface layer over well-structured alkaline clay subsoils and gravel. | Main vegetation is brigalow and associated species which include poplar box. | 3/4 |
| B3 | Soils are reddish brown non-cracking clays often with a hard-setting sandy surface. Often quite shallow to weathered sediments. | Regrowth of brigalow, yellowwood, whitewood. Occasional poplar box. Ooline was present in original vegetation. | 3 |
| C1 | Yellowish brown cracking and non-cracking uniform clays situated on gentle undulating plains with deep effective rooting depth. | Buffel grass with vegetation regrowth, consisting of mainly brigalow. | 2 |
| C1v | Yellowish brown cracking and non-cracking clays with reddish clays at depth situated on gentle undulating plains. | Buffel grass with vegetation regrowth. | 5 |
| C1gv | Brown to dark brown cracking and non-cracking uniform clays situated on gentle undulating plains with microrelief present in the form of gilgai and melon holes of varying sizes. | Whipstick brigalow, brigalow, and buffel grass. | 5 |
| D1 | Grayish and minor dull yellow non-cracking clays situated on gentle undulating plains with deep effective rooting depth of approximately 45 – - 60 cm with soft lime and calcium carbonate present. | Buffel grass and brigalow. | 4 |
| D1gv | Grayish and minor dull yellow cracking and non-cracking uniform clays on gentle undulating plains with effective rooting depth of approximately 45 – 60 cm with normal gilgai present. | Whipstick brigalow, broom bush, buffel grass. | 4 |
| D2 | Brownish black and black medium hard cracking clays situated on gentle undulating plains with deep effective rooting depth of approximately 70 – 80 cm with soft lime and calcium carbonate present. | Bauhinia, broom bush, yellowwood and minor brigalow. | 3 |
| D3 | Light medium to medium clays overlying sand lenses near drainage, creek lines, and minor depressions. | Brigalow, whitewood. | 4 |

| SLU | Soil Details | Vegetation Description | Grazing Suitability Class |
|---|---|---|---|
| D4 | Cracking light to light medium uniform brown clays over gentle undulating plains with no microrelief present. | Buffel grass. | 3 |
| D4sv | Cracking light to light medium uniform brown clays over gentle undulating plains with no microrelief present, however, is located on a slope greater than 3%. | Buffel grass. | 3 |
| D4rv | Cracking medium to light brown clays over gentle undulating plains within shallow depressions and overland runoff with gravels and cobbles present. | Buffel grass, acacia. | 3 |
| D5 | Sandy clay loam overlying light brown clays along gently undulating plains. | Whipstick brigalow, Bauhinia, buffel grass. | 3 |
| E1 | Shallow, rocky earths with some areas of gravelly and shallow texture contrast soils on the mesa margins. | Dominated with lancewood and areas of Dawson gum, poplar box or yapunyah | 4/5 |
| E2 | Open ironbark with associated Acacias on hard-setting red sandy duplex of the tablelands. | Narrowleaf ironbark, yapunyah with associated acacias. | 4 |
| E3 | Sandy texture contrast soils usually with hard-setting, gravelly surface and with erosive yellowish clay subsoils which are gravelly. Includes areas of shallow gravelly ridges and exposed bedrock. | Mixed scrub of poplar box, brigalow and sandalwood. | 3 |
| E4 | Deeper loamy red earths on undulating plains. | Open silver leaf ironbark | 2 |
| E5 | Loamy red and yellow earths usually underlain with lateritic gravel before 60 cm depth on uplands and mesa tops. | Mainly narrowleaf ironbark and bloodwood with a variety of wattles and other species. | 3 |
| F1 | Alluvial creek areas with loam and silty loam soil profiles. | Brigalow, poplar box, bottle trees. | 4 |
| F2 | Active alluvial plains with loams and clayey sand with soft to firm sandy surface. | Mount coolabah, minor brigalow. | 3 |
| F3 | Brown silty clay loams on silty clays on gentle undulating plains. Calcium carbonate is present in subsoils. | Buffel grass. | 2 |
| R1 | Rocky outcrop/hill | Mixed vegetation. | 5 |
| S1 | Texture contrast and gradational soils situated on gentle undulating plains. | Buffel grass with very minor vegetation regrowth observed. | 4 |

### *2.5.3 Stockpiled soils*

Location and volume information on the current soil stockpiles was provided by the client. The approximate volume of available stockpiled material is 5,510,886 $m^3$ (in April 2023). Locations of topsoil stockpiles on BWM are presented in Figure 1.




**Figure 1:** Stockpiled topsoils across BWM.

## 2.6 Post-mining land use

Rehabilitation objectives for BWM are to create a safe, stable, non-polluting, and sustainable landscape with PMLUs in accordance with the EA:

- Cattle grazing ,
- Woodland habitat,
- Water storage, and
- Watercourse.

The predominant pre-mining land use was cattle grazing.

## 2.7 Revegetation methodology

Rehabilitation methods will vary between domains and PMLUs. Broadly, rehabilitation of disturbed areas will include:

- Respreading stockpiled or freshly stripped topsoil, or creating a growth media from spoil;
- Contour ripping;
- Seeding with an appropriate seed mix for the PMLU; and
- Applying appropriate fertiliser and ameliorants for plant establishment if required.

Where available, competent materials will be placed on steeper slopes to aid stability. A suitable seed mix will be used to establish a sustainable vegetation cover.

The material characterisation and landform design studies aim to identify and improve where possible:

- Growth media placement depth and soil profile depths relevant to the PMLU;
- Growth media preparation details; and
- Expected growth media amelioration activities.

More details on revegetation methodology can be found in the relevant section of the PRC Plan.

# 3 MATERIAL CHARACTERISATION METHODOLOGY

## 3.1 Materials

Soils and spoil materials were targeted for consideration as potential growth media. When considering the growth media at BWM, the quality of the stockpiled soil rather than the *in situ* topsoils is more representative of the material available for rehabilitation. Therefore, stockpiled soils were sampled by Landloch in a field program completed as part of this study. Spoil data collected by Landloch, as part of erodibility assessments for the Landform Design section of the PRC Plan, and data from previous studies were considered in the assessment of spoil materials as a potential growth media. All sampled

materials were characterised in terms of their basic chemical and physical properties. Any materials with the potential to be used at the surface of a rehabilitated landform as a primary growth media were subjected to additional fertility assessments.

## 3.2 Stockpiled soils

### *3.2.1 Field program details*

The field program was undertaken between 6 and 22 March 2023. Substantial rainfall events occurred within the sampling period, and the wet site conditions hindered the sample collection.

### *3.2.2 Sampling plan and intensity*

The soil sampling plan is listed in Table 4 and the stockpile sampling locations are shown in Figures A1–A4 (Appendix A).

The sample density adopted is consistent with a 'high (detailed)' intensity (McKenzie *et al.* 2008) and assumes soil will be placed at an average depth of 0.1 – 0.15 m at rehabilitation. Using these criteria, Table 5 shows the sample density for the stockpiles. Stockpile location details are provided in Table B1 (Appendix B).

**Table 4:** Soil stockpile sampling plan.

| Stockpile ID | Area ($m^2$) | Number of Sampling Sites | Stockpile ID | Area ($m^2$) | Number of Sampling Sites |
|---|---|---|---|---|---|
| 2 | 300 | 1 | 152 | 31,754 | 1 |
| 10 | 278 | 1 | 156 | 32,017 | 1 |
| 12 | 3,568 | 1 | 157 | 15,535 | 1 |
| 17 | 13,343 | 2 | 161 | 5,113 | 1 |
| 18 | 19,318 | 2 | 163 | 24,576 | 1 |
| 30 | 426 | 1 | 165 | 16,242 | 1 |
| 31 | 1,346 | 1 | 166 | 39,926 | 1 |
| 34 | 6,020 | 1 | 169 | 20,870 | 1 |
| 41 | 1,245 | 2 | 170 | 14,518 | 1 |
| 45 | 8,385 | 1 | 171 | 25,479 | 1 |
| 46 | 1,534 | 1 | 176 | 28,197 | 1 |
| 47 | 3,089 | 1 | 188 | 33,699 | 1 |
| 48 | 15,287 | 1 | 191 | 14,473 | 1 |
| 52 | 6,858 | 1 | 210 | 26,743 | 1 |
| 55 | 7,330 | 1 | 214 | 33,364 | 1 |
| 57 | 672 | 1 | 216 | 26,139 | 1 |
| 58 | 2,723 | 1 | 218 | 21,309 | 1 |
| 59 | 6,487 | 1 | 219 | 1,2041 | 1 |
| 61 | 87,246 | 2 | 221 | 2,281 | 1 |
| 62 | 4,244 | 1 | 222 | 2,592 | 1 |
| 67 | 73,177 | 1 | 228 | 56,528 | 2 |

| Stockpile ID | Area ($m^2$) | Number of Sampling Sites | Stockpile ID | Area ($m^2$) | Number of Sampling Sites |
|---|---|---|---|---|---|
| 68 | 1,986 | 1 | 231 | 58,701 | 2 |
| 69 | 9,891 | 1 | 232 | 9,377 | 1 |
| 70 | 8,488 | 1 | 248 | 7,784 | 1 |
| 71 | 10,837 | 1 | 250 | 7,849 | 1 |
| 72 | 2,526 | 1 | 251 | 7,697 | 1 |
| 73 | 25,601 | 1 | 253 | 2,771 | 1 |
| 81 | 14,463 | 1 | 255 | 18,995 | 1 |
| 82 | 42,205 | 1 | 256 | 16,144 | 1 |
| 86 | 77,119 | 1 | 259 | 7,187 | 1 |
| 93 | 14,274 | 1 | 267 | 14,781 | 1 |
| 102 | 10,616 | 1 | 268 | 147,397 | 3 |
| 103 | 17,646 | 1 | 270 | 12,941 | 1 |
| 108 | 14,767 | 1 | 275 | 2,399 | 1 |
| 111 | 1,566 | 1 | 278 | 827 | 1 |
| 123 | 9,953 | 1 | 283 | 8,481 | 1 |
| 124 | 36,029 | 1 | 284 | 14,379 | 1 |
| 126 | 11,565 | 1 | 285 | 7,802 | 1 |
| 130 | 23,621 | 1 | 291 | 77,725 | 2 |
| 138 | 742 | 1 | 296 | 12,305 | 1 |
| 145 | 11,257 | 1 | 315 | 10,534 | 1 |
| 148 | 68,544 | 1 | | | |
| Total | | | | | 92 |

**Table 5:** Sample density for soil stockpiles.

| Soil Volume ($m^3$) | Reinstatement Coverage (ha) | Total Samples | Sampling Density | Sampling Density | Survey Scale |
|---|---|---|---|---|---|
| 5,510,886 | 3,674* | 368 | 1 sample/ 14,975 $m^3$ | 1 sample/ 10 ha | 1:25,000 |

* Based on a replacement depth of 0.15m

### *3.2.3 Sample collection*

Samples of materials were taken from test pits and the depth of excavation was to the base of the stockpile, or to the limit of excavation (~3–5 m). Samples were collected at depth intervals of 0.5–1.0 m (e.g. 0.5–1.0 m, 1.5–2.0 m, 2.5–3.0 m etc.). Brief details and descriptions of the collected materials were recorded in the field. Sampling included composite and discrete samples, where each composite sample was composed of materials from three discrete samples.

### *3.2.4 Laboratory analysis*

Laboratory analysis was undertaken by East West EnviroAg, a laboratory with National Association of Testing Authorities (NATA) and Australian Soil and Plant Analysis Council (ASPAC) accreditations. Analysis of composite samples used a 'topsoil suite' to

characterise the soil nutrients and physico-chemical parameters of the materials. Laboratory analysis of discrete samples used a 'basic suite' of pH and salinity to indicate the heterogeneity (variability) within the stockpile and expose potential extreme values that may be masked in the testing of the composite samples. Laboratory analyses are described in Table 6.

**Table 6:** Laboratory analytical suites.

| Analyses | Analysis Suite | |
|---|---|---|
| | Topsoil | Basic |
| $pH_w$ and Electrical Conductivity ($EC_{1:5}$). | ✓ | ✓ |
| Exchangeable cations (with calculations of effective cation exchange capacity and exchangeable sodium percentage) and chloride | ✓ | |
| Total nitrogen and phosphorous; available phosphorous, potassium, and sulphur; trace nutrients (Cu, Zn, Mn, Fe, B), chloride, organic carbon, phosphorus buffer index (PBI), field texture | ✓ | |
| Dispersion potential | ✓ | |
| Total number of samples | 92 | 276 |

## 3.3 Spoil materials

Geochemical and physical characterisation data for the spoil materials were collated from multiple assessments previously conducted for the project and from waste characterisation data collected as part of the PRC Plan preparation. Information sources included:

- Blackwater Mine, Soil and Spoil Assessment 1998 (B. R. Emmerton Pty Ltd, 1998);
- BMA Coal Blackwater Mine Overburden Quality (GTES Pty Ltd, December 2007)
- Targeted assessment of wastes and recommendations for rehabilitation at the former South Blackwater mine – BMA (Highlands Environmental , 2022);
- Environmental Geochemical Actions Related to the Draft Transitional Environmental Program (Terrenus Earth Sciences and RGS Environmental, 2010);
- Blackwater Coal Mine Rehabilitation Monitoring Report 2024 (Lyngco 2025a);
- Blackwater Coal Mine Woodland Habitat Rehabilitation Report BWM25 and BWM33 (Lyngco 2025b);
- Spoil data collected and analysed to inform Landloch's landform erodibility study as part of the PRC plan development; and
- Internal BWM spoil monitoring data.

# 4 FINDINGS

The two categories of materials available for rehabilitation were characterised as part of this assessment, and include:

1. Topsoil stockpiles; and
2. Spoil materials.

This section of the report provides information about these materials. Site location details are provided in Figures A1 – A4 (Appendix A) and in Table B1 (Appendix B). Stockpile description records are provided in Table B2–B3 and laboratory results are provided in Tables B4–B6 (Appendix B).

## 4.1 Topsoil stockpiles

A total of 368 samples were collected from 83 topsoil stockpiles. The 'topsoil suite' analysis was conducted on 92 samples and the 'basic suite' analysis was conducted on the remaining 276 samples.

Stockpiled topsoil for use in rehabilitation was categorised into three management groups:

1. Loam topsoil;
2. Clay topsoil; and
3. Gravelly clay topsoil.

A summary of key chemical and physical properties is presented in Table 7. Topsoil within each management group is detailed in the following sections.

**Table 7:** Summary of key chemical and physical properties for topsoils at BWM.

| Analysis | Loam Topsoil | Clay Topsoil | Gravelly Clay Topsoil |
|---|---|---|---|
| Chemical Properties | | | |
| $pH_w$ (pH Units) | Strongly acidic to slightly alkaline (4.8 – 7.7) | Moderate to strongly alkaline (8 – 9) | Moderate to strongly alkaline (8.1 – 9) |
| $EC_{1:5}$ (dS/m) | Low to moderate (0.1 – 0.3) | Low to moderate (0.2 – 0.5) | Low to moderate (0.2 – 0.7) |
| Chloride (mg/kg) | Very low (<65) | Very low to moderate (60 – 463) | Very low to high (58 – 642) |
| Exchangeable sodium percentage (ESP) (%) | Non-sodic (0.7 – 4.7) | Non-sodic to sodic (3.3 – 13.6) | Non-sodic to Strongly sodic (4.5 – 16.6) |
| Total N (mg/kg) | Low (680 – 1,450) | Low to moderate (760 – 1,930) | Low (840 – 1,420) |
| Available P (mg/kg) | Low to moderate (10 – 24) | Low to moderate (6 – 36) | Low to moderate (9 – 34) |
| Available K (mg/kg) | Low to moderate (124 – 232) | Low to moderate (115 – 270) | Low (125 – 180) |
| Total Organic Carbon (TOC) (%) | Low to high (0.8 – 1.9) | Low to high (0.9 – 2.1) | Low to moderate (0.9 – 1.6) |
| Effective Cation Exchange Capacity (ECEC) (meg/100g) | Low (3 – 10.4) | Moderate to high (13.7 – 27) | Low to high (12 – 28.2) |
| Ca/Mg (ratio) | Low Ca to balanced (2.5 – 4.6) | Low Ca (1.9 – 3.6) | Low Ca (1.4 – 3.4) |

| Analysis | Loam Topsoil | Clay Topsoil | Gravelly Clay Topsoil |
|---|---|---|---|
| Physical Properties | | | |
| Clay content (%) | 10 – 30 | >35 | **>35** |
| Rock content (%) | 10 – 30 | <20 | 20 – 50 |
| Dispersion (EAT) | Slightly dispersive to slaking (3b – 5) | Slightly dispersive to stable (3b – 7) | Slightly dispersive to slaking (3b – 5) |
| Permeability | Moderate | Low to Moderate | Moderate |
| Associated regional soil | SI12 (Sodosol) | MM7 (Dermososl/Vertosol) | MM7 (Dermososl/Vertosol) |
| Associated SLU | B2v, D5, E1, E2, E3, E4, E5, F1, F2, F3 and S1 | A1, B1, B3, C1, C1v, C1gv, D1, D1gv, D2, D3, D4 and D4sv | B2, D4rv, E1 and R1 |

Note: Chemical properties for topsoil are based on average 10th and 90th percentile values for all stockpile samples analysed.

### *4.1.1 Loam topsoils*

Loam soils account for 10% of samples assessed across BWM topsoil stockpiles and are scattered around the southern portion of the mine. These materials have a degree of variability, but due to the limited volumes present, have been grouped together to aid their management.

The soils are generally brown, reddish brown or greyish brown in colour, and have textures ranging from sandy loam to silty clay loam. Gravel content can be variable, ranging from 2–30% with gravel size generally being less than 60 mm in diameter. However, occasional cobbles and boulders can be present. The soils are susceptible to slaking and dispersion, thereby increasing the risk of erosion. Figures 2–5 illustrate representative loam topsoils and vegetation cover levels at BWM.

The main requirement for this soil is to ensure that its chemical fertility is managed to support vigorous vegetation growth in the initial stage of rehabilitation and maintain suitable levels of surface groundcover in the longer term. A suitable rock cladding can also be applied to reduce the erosion risk while vegetation establishes.

The loam soils would require different rehabilitation methods than the clay and gravelly clay soils. When this soil is to be used in rehabilitation, its chemical and physical limitations will need to be considered and managed.



**Figure 2:** Soil material excavated at sampling site 410973d.



**Figure 3:** Soil profile at sampling site 410950c.



**Figure 4:** Soil material at stockpile 410976.



**Figure 5:** Vegetation cover on topsoil stockpile 410950.

### *4.1.2 Clay topsoils*

Clay topsoils account for 75% of samples assessed across BWM topsoil stockpiles and are distributed evenly throughout the mine area. Generally, these soils have relatively similar properties, but occasional minor inclusions of sands and loams were noted at varying stockpile depths. This is likely a result of topsoils from smaller texture contrast soil units being stripped simultaneously with the more dominant clays.

The soils are generally dark brown, reddish brown to brownish red or black in colour with occasional mottling and have textures ranging from light to medium heavy clay. Gravel content is generally less than 10% with gravel size being less than 60 mm in diameter. The soils often have vertic properties making them susceptible to slaking, thereby increasing the risk of erosion. Figures 6 – 9 illustrate representative clay topsoils and vegetation cover levels at BWM.

Stockpiled clay soils are often sodic and occasionally saline. In comparison to the other available soils, clay soils would be the preferred option for revegetation on sections of low erosion risk, such as low gradient areas on the tops of spoil dumps, where higher quality vegetation establishment and performance is required. If placed on steeper-gradient outer batter slopes, management of erosion risk during the period of vegetation establishment would be critical for rehabilitation success, and establishment of appropriate levels of persistent vegetation groundcover will be essential.

The main requirement for this soil is to ensure that its chemical fertility is managed to ensure vigorous vegetation growth in the initial stage of rehabilitation and maintain suitable levels of surface groundcover in the longer term. Any sodicity issues will also need to be addressed by incorporating gypsum prior to rehabilitation.



**Figure 6:** Soil material excavated at sampling site 410973d.



**Figure 7:** Soil profile at sampling site 410950c.



**Figure 8:** Soil material at stockpile 410976.



**Figure 9:** Vegetation cover on topsoil stockpile 410950.

### *4.1.3 Gravelly clay topsoils*

Gravelly clay topsoils account for 15% of samples assessed across BWM topsoil stockpiles and are scattered around the southern portion of the mine. Generally, these soils have relatively similar properties to the clay topsoils, except for a higher gravel content. The soils are generally dark brown to reddish brown with some pale grey, yellow or red inclusions and occasional mottling. Textures range from light clay to medium heavy clay. The content of coarse fragments ranges from 20 – 50% with gravel and cobbles often present up to 200 mm in diameter. Like the clays, these soils are susceptible to slaking, thereby increasing the risk of erosion. However, this risk may be reduced by the higher rock content. Figures 10 – 13 illustrate representative clay topsoils and vegetation cover levels at BWM.

Stockpiled gravelly clay soils are often sodic and occasionally saline. In comparison to the other available soils, gravelly clay soils would be the preferred option for revegetation on batter slopes if the chemical limitations are addressed. Establishment of

appropriate levels of persistent vegetation groundcover will still be essential for long-term stability.

The main requirement for this soil is to ensure that its chemical fertility is managed to ensure vigorous vegetation growth in the initial stage of rehabilitation and maintain suitable levels of surface groundcover in the longer term. Any sodicity issues will also need to be addressed by incorporating gypsum prior to rehabilitation.



**Figure 10:** Soil material at stockpile 411080 (sampling site A).



**Figure 11:** Soil profile at stockpile 411080 (sampling site B).



**Figure 12:** Soil material at stockpile 410753.



**Figure 13:** Vegetation cover on topsoil stockpile 411080.

### *4.1.4 Stockpiles with limitations*

Stockpiles 57, 166, 157, 191, 259 and 267 have elevated salts throughout the stockpile, particularly chloride-based salts. Groundcover observations (Table B2, Appendix B) indicate that high vegetation cover was present across the stockpiles at the time of sampling. The salts' concentrations are likely to affect seed germination rates, but once established, regional vegetation appears to be tolerant of salinity. If the stockpiled material is required for use as a growth medium, it is recommended that vegetation establishment initially favours species that tolerate saline soil conditions such as Rhodes grass (*Chloris gayana*).

## 4.2 Spoil materials

From the previous assessments detailed in Section 3.3, spoil material characteristics were found to be heterogeneous within each spoil type and across sampling areas. For this reason, spoil materials are categorised into three management groups that have broad similarities:

- Fresh Permian materials;
- Weathered Permian materials; and
- Tertiary materials.

A summary of key chemical and physical properties is presented in Table 8. Each spoil management group is described in further detail in the following sections.

**Table 8:** Summary of key chemical and physical properties for spoils at BWM.

| Analysis | Fresh Permian | Weathered Permian | Tertiary |
|---|---|---|---|
| Chemical Properties | | | |
| $pH_w$ | Strongly alkaline (8.4 – 9.8, but can be highly acidic) | Strongly acidic to strongly alkaline (5 – 9.4, can be <5) | Strongly acidic to strongly alkaline (5 – 9.4, more often strongly acidic) |
| $EC_{1:5}$ (dS/m) | Low to extreme (0.19 – 2.3) | Low to extreme (0.1 – 3.3) | Low to extreme (0.35 – 2.2) |
| Estimated Acid Neutralising Capacity (ANC)* | Reasonable | Reasonable | N/A |
| ECEC | Low – adequate | Low – adequate | Adequate |
| ESP (%) | Non–sodic to strongly sodic (3 – 30) | Non–sodic to strongly sodic (3 – 33) | Sodic to strongly sodic (14 – 30) |
| Ca/Mg (ratio) | Very low to low Ca, (0.3 – 1.9) | Very low to low Ca (0.3 – 1.4) | Very low to low Ca (0.4 – 2.1) |
| Fertility | Low to moderate | Low to moderate | Low |
| Physical Properties | | | |
| Clay content (%) | 20 – 40 | 15 – 45 | >35 |
| Rock content (%) | Up to 74% | 30 – 60% | 10 – 20 |
| Permeability | Moderate | Moderate | Low |
| Dispersion potential | Moderate to high | Moderate to high | High to extreme |
| Dispersion risk | Moderate to high | Moderate to high | Very high |

* ANC estimates are taken from the *BMA Coal Blackwater Mine Overburden Quality* (GTES Pty Ltd, 2007) assessment.

### *4.2.1 Fresh Permian materials*

Permian materials at BWM can vary depending on the degree of weathered inclusions. Generally, fresh Permian materials are rocky and consist primarily of sandstone and siltstone, with clay content in the fine fraction ranging from 20–40%, and the coarse rock fraction being up to 75% of the mass of the material. Water holding capacity and permeability are variable and depend on the clay content along with the volume and composition of rock present. It is generally grey in colour but may vary to pale brown

after some weathering. The material ranges from moderately to highly dispersive but this can occasionally be masked by the presence of saline lenses. The material is considered to have reasonable ANC potential. Figures 14 and 15 are representative of fresh Permian spoil at BWM.

Of the spoil management groups, fresh Permian materials are considered most suitable for placement close to the final rehabilitated surface for use as a secondary growth media. Due to the heterogeneity, discrete testing should be conducted prior to rehabilitation. Competent (durable), fresh Permian sandstone has potential to be used as a rock armour to greatly increase batter slope resistance to erosion and to stabilise steeper areas.



**Figure 14:** Fresh Permian sandstone material present at the mine. Large-sized competent rock is present throughout the stockpile.



**Figure 15:** Rocky fresh Permian material with weathered Permian inclusion that was sampled during erodibility studies.

### *4.2.2 Weathered Permian materials*

Weathered Permian materials are the dominant spoil material at BWM and are highly variable in their characteristics depending on the strata location, presence of carbonaceous inclusions and degree of weathering. Generally, weathered Permian materials have a lower and finer rock content than fresh Permian. The rock consists primarily of fragile mudstone and sandstone, with clay content in the fine fraction ranging from 15–45% and the coarse rock fraction being 30–60% of the mass of the material. Similar to fresh Permian, the water holding capacity and permeability are variable and depend on the clay content along with the volume and composition of rock present. Data obtained from monitoring programs indicates this material can be susceptible to capillary rise of salts if infiltration is limited (GTES 2007). It is generally pale brown to brown in colour, but colour can vary. The material ranges from moderately to highly dispersive but this can occasionally be masked by the presence of salts. It is considered to have reasonable ANC potential. Figures 16 and 17 are representative of fresh Permian spoil at BWM.

Weathered Permian materials are considered suitable as a secondary growth media but should be capped with a quality topsoil material to prevent exposure to the final rehabilitated surface. If exposed, this material will be susceptible to erosion due to the tendency to rapidly weather and disperse. For material with elevated salts, it is preferable to mix with more permeable materials to promote infiltration and leaching of salts. If more permeable material isn't available, placement should be limited to slopes less than 10%. Due to the heterogeneity, discrete testing should be conducted prior to rehabilitation.



**Figure 16:** Weathered Permian pre-strip material present at the mine. Weathered and partially weathered rock is present across the area.



**Figure 17:** Stockpiled weathered Permian material present at the mine. The material is coarsely grained with variable weathering throughout the profile.

### *4.2.3 Tertiary materials*

Tertiary materials are a highly weathered material containing small portions of fragile (low durability) rock. Generally, it has a clay content above 35%, resulting in moderate to high water holding capacity. It is typically pale orange in colour. The materials are often highly saline and strongly sodic, making it prone to a hard setting surface (Figure 18). Compared to Permian materials, the weathered Tertiary material is more susceptible to slaking and dispersion.

Placement of this material close to the final rehabilitated surface is not recommended on steeper gradient slopes (>15%) due to its susceptibility to erosion (including tunnel erosion) and potential toxicities to plant growth. However, targeted testing may identify suitable Tertiary materials that could potentially be used to form a marginal secondary growth medium where required. Monitoring data from lower gradient (≤15%) slopes show that tertiary materials can be used as secondary growth media to support grazing and woodland PMLUs (Lyngco 2025a, 2025b).

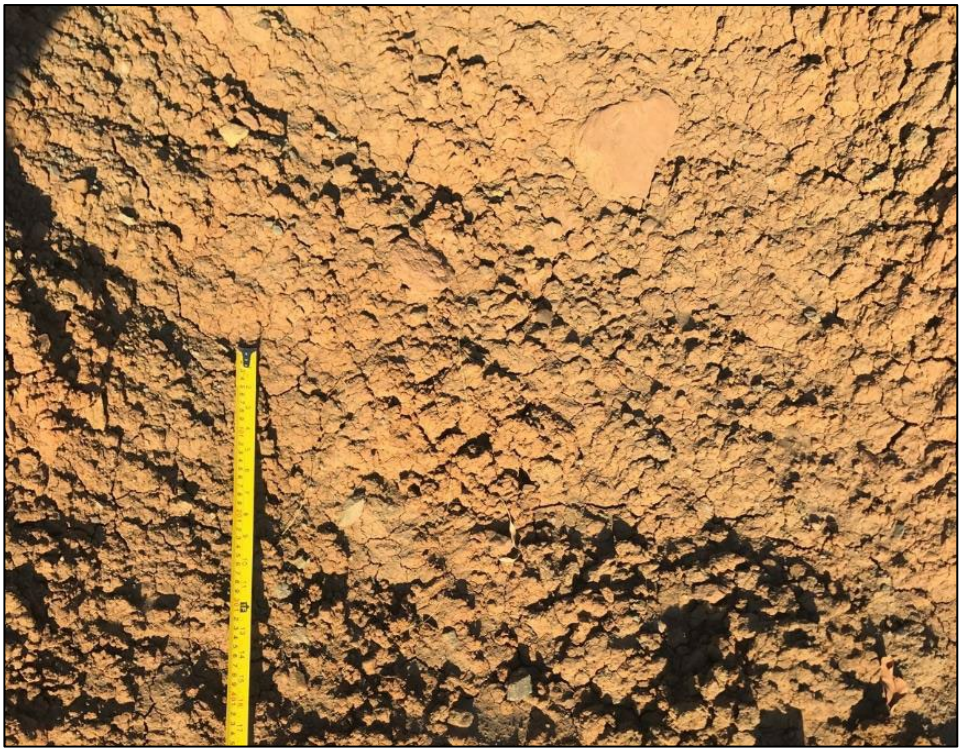


**Figure 18:** Hard setting Tertiary spoil stockpiled at the mine.

# 5 GROWTH MEDIA SUITABILITY AND AMELIORATION

The materials encountered have been classified according to their ability to support plant growth, as either *primary* or *secondary* growth media.

## 5.1 Primary growth media

Primary growth media infers the ability of materials to be used as a topsoil or topsoil surrogate. It is the upper-most layer placed over the rehabilitated area. It can be applied at various thicknesses depending on the PMLU and consists of surface soil (topsoil) materials recovered prior to mining and applied over the area, or a growth medium developed from subsoils or spoil materials, ameliorated to a standard suitable to support sustainable plant growth. It is typically higher in organic matter and macro- and micro-nutrients and has low to negligible limitations to plant growth. Its primary purpose is to provide nutrients and a stable surface for vegetation establishment.

If sufficient suitable primary growth media is not available, an alternative growth media may be derived by amelioration of suitable subsoils or spoil materials. Amelioration products and application rates for the primary growth media should be assessed by an appropriately qualified person prior to rehabilitation, and to also ensure the desired PMLU and vegetation is considered. Amelioration must address both the physical and chemical suitability of the material.

## 5.2 Secondary growth media

Secondary growth media infers the ability of materials to be used as a subsoil or subsoil surrogate. Typically, secondary growth media layers are capped with primary growth media. In the absence of subsoil, it may be a spoil material, or an intermediate layer of ameliorated spoil situated above un-ameliorated spoil material.

The main purpose of the secondary growth medium is to increase the soil water storage capacity in the root zone, and/or meet the soil depth criterion for certain vegetative PMLUs and target vegetation communities.

In some circumstances, secondary growth media may be able to be sufficiently improved by the addition of ameliorants (e.g. gypsum, lime, organic matter) to convert them to a primary growth medium.

## 5.3 Suitability classification

A four-class suitability system is applied in the evaluation of materials as growth media. These classes are defined as follows:

*Class A – Good Quality*

- Negligible limitations to plant growth.
- Good quality material for intended purpose.
- Nil to low levels of ameliorants will be required.

*Class B – Fair Quality*

- Minor limitations to plant growth.
- Reasonable quality material for intended purpose.
- Low to moderate levels of ameliorants may will be required.

*Class C – Marginal Quality*

- Moderate limitations to plant growth.
- Moderate to high levels of ameliorants may be required to improve material quality to support plant growth.

*Class D – Not Suitable*

- Severe limitations to plant growth.
- It will generally be uneconomic or unviable to amend these materials to the degree needed to support plant growth.

The suitability of materials as primary or secondary growth media is presented with recommendations in Table 9.

**Table 9:** Recommended fertiliser and ameliorant treatments for materials and growth media suitability classification.

| Material | Limitations | Amendments | Suitability Class | |
|---|---|---|---|---|
| | | | Primary (1) | Secondary (2) |
| Loam topsoil | • Sometimes strongly acidic<br>• Low ability to retain nutrients<br>• Low N<br>• Often low P, K and TOC<br>• Sometimes low Ca | • Fertiliser and/or compost rates are to be determined by an appropriately qualified person prior to individual stockpiles being used in rehabilitation. | 1A | 2A |
| Clay topsoil | • Sometimes strongly alkaline<br>• Often sodic and sometimes dispersive<br>• Susceptible to slaking<br>• Sometimes low N, P, K, TOC and Ca | • Gypsum: due to heterogeneity between stockpiles, rates should be calculated for individual stockpile prior to use.<br>• Fertiliser and/or compost rates are to be determined by an appropriately qualified person prior to individual stockpiles being used in rehabilitation | 1B | 2A |
| Gravelly clay topsoil | • Sometimes strongly alkaline<br>• Sometimes high chloride<br>• Often sodic and sometimes dispersive<br>• Susceptible to slaking<br>• Low N, K and Ca<br>• Sometimes low P and TOC | • Gypsum: due to heterogeneity between stockpiles, rates should be calculated for individual stockpile prior to use.<br>• Fertiliser and/or compost rates are to be determined by an appropriately qualified person prior to individual stockpiles being used in rehabilitation. | 1B | 2A |
| Fresh Permian materials | • Strongly alkaline<br>• Sometimes high salinity<br>• Often strongly sodic and dispersive<br>• Rock content up to 75%<br>• Often low fertility and ability to retain nutrients | • Gypsum: due to heterogeneity between spoil samples, rates should be calculated for broad spoil areas after placement.<br>• Bury all saline material to a depth greater than 2 m below the surface.<br>• If to be used as a primary growth media further assessment by an appropriately qualified person is required to determine amelioration required. | 1C | 2B |

| Material | Limitations | Amendments | Suitability Class | |
|---|---|---|---|---|
| | | | Primary (1) | Secondary (2) |
| Weathered Permian materials | • Often strongly acidic or strongly alkaline<br>• Sometimes high salinity and potential for capillary rise<br>• Often strongly sodic and dispersive<br>• Often low fertility and ability to retain nutrients<br>• High variability in physical and chemical characteristics | • Gypsum: due to heterogeneity between spoil samples, rates should be calculated for broad spoil areas after placement.<br>• Chemical and physical variation: due to heterogeneity within the material, additional sampling should be completed prior to use in rehabilitation.<br>• Bury all saline material to a depth greater than 2 m below the surface. | 1D | 2B/C |
| Tertiary materials | • Often strongly acidic or strongly alkaline<br>• Sometimes high salinity<br>• Sodic or strongly sodic and dispersive<br>• Low permeability<br>• Low fertility | • Most material is not suitable for placement in the upper soil profile, especially on steeper gradients (>15%).<br>• Where no alternative is available:<br>  ○ Mix with competent rock.<br>  ○ Gypsum: due to heterogeneity between spoil samples, rates should be calculated for broad spoil areas after placement for rehabilitation.<br>• Bury all saline material to a depth greater than 2 m below the surface. | 1D | 2C |

Notes: Class A – Good Quality: Negligible limitations to plant growth; Class B – Fair Quality: Minor limitations to plant growth; Class C – Marginal Quality: Moderate limitations to plant growth; and Class D – Not Suitable: Severe limitations to plant growth.

## 5.4 Fertiliser and ameliorants

Fertiliser and amelioration rates for spoil materials are dependent on the intended PMLU for each rehabilitated area. For example, cattle grazing requires the generation of biomass and as such, nitrogen and phosphorus-based amendments would be recommended for these areas. As a guide to amelioration application for grazing, PMLU should aim to provide:

- Available phosphorus (Colwell) content of the growth media to within a target concentration of 25–40 mg/kg;
- An appreciable source of starter nitrogen;
- Adequate macro- and micronutrients; and
- Gypsum to reduce sodicity and potential for dispersion.

Amelioration recommendation for woodland areas should be assessed on a case-by-case basis and represent the specific requirements of the target vegetation community.

### *5.4.1 Fertiliser*

A balanced NPK fertiliser such as Crop King 55 (N: ~13.5 %, P: ~15 %, K: 12.5 %) and slow-release nitrogen source such as Coated Urea (N: ~46 %) or organic compost is recommended to provide a balanced source of nutrients to plants during rehabilitation. Any composted material should comply with the Australian Standard for Composting (AS4454-2012).

Accurate application rates and fertiliser types based on the required nutrients should be determined by an appropriately qualified person prior to use in rehabilitation.

Fertiliser and mulch/compost should be applied at seeding. It can be broadcast with a spreader or applied hydraulically or pneumatically. Spreaders are typically suitable for slopes with gradients <35%, and hydraulic or pneumatic applications will be required for steeper slopes.

### *5.4.2 Gypsum*

Gypsum application is recommended for sodic/dispersive materials or where calcium is low. It should be applied in a manner that allows for as thorough mixing as is practicable of the surface materials. Gypsum should be applied during the soil preparation stages prior to seeding and fertilising.

Depth of sodicity amelioration depends on erosion risk/land gradient. Generally, for slopes with gradients less than ~35%, incorporate gypsum into the upper 0.3 m depth of sodic materials.

Considering the annual rainfall at BWM is approximately 560 mm, it is expected that (as a 'rule of thumb') gypsum will dissolve at a rate of 0.5–1.0 t/ha/y. Hence, there is benefit in applying gypsum at the time materials are recovered (i.e. stripped) or as soon as is practical in the rehabilitation program to allow the gypsum to be as effective as possible.

# 6 SUMMARY AND RECOMMENDATIONS

This material characterisation report describes and characterises the materials identified on-site for use in rehabilitation using the topsoil stockpile assessment, erodibility studies, previous soil and spoil assessments, and other BWM project-related documents.

## 6.1 Soil stockpiles

Generally, the stockpiled soil is considered to be of adequate quality for use as a primary growth media. Due to the high degree of heterogeneity, the summarised laboratory data should be considered representative of the soils as a whole, and not representative of individual stockpiles. The sampling program is considered adequate to describe these materials into broad soil management groups. Therefore, any stockpile not included in this assessment should be sampled and characterised prior to use in rehabilitation.

The main limitations of the stockpiled soils for use in rehabilitation are low fertility and for clay dominated topsoil, sodicity.

Chemical fertility of the stockpiled soils is often low. A balanced NPK fertiliser or compost should be applied during rehabilitation to provide a starter source of nutrients for initial vegetation growth. Subsequent applications of fertiliser, particularly nitrogen, may be required to maintain adequate fertility levels and ensure vegetation is established in the long-term.

Amelioration of sodicity requires the thorough incorporation of gypsum. Due to the high degree of heterogeneity of measured sodicity within stockpiles, gypsum rates should be calculated for individual stockpiles prior to use in rehabilitation.

Amelioration products and application rates should be assessed by an appropriately qualified person prior to use for rehabilitation and to complement the desired PMLU.

## 6.2 Spoil materials

Generally, Permian materials, both fresh and weathered, have the highest potential to be used as secondary growth media through varying degrees of amelioration. Where possible, placement of Tertiary materials in the upper layer of the landform should be avoided.

Where primary growth media availability is limited, a topsoil/fresh Permian spoil mix may be adopted to form a primary growth media with potential to support a woodland PMLU, provided adequate amelioration is completed to negate any limiting properties of the spoil. If adopted, the chemical and physical properties and the overall viability of the proposed material should be assessed by a suitably qualified person before being applied to the broader rehabilitation.

All spoils with elevated salts will need to be managed to prevent capillary rise and subsequent accumulation of salts in the primary growth media. Maximising infiltration by limiting slope gradient or mixing with a more permeable material are considered the most practical approaches.

Due to the high degree of heterogeneity in the spoil materials, the summarised laboratory data should only be considered a guide to their suitability. Targeted sampling of spoil

materials planned for use in the upper soil profile (i.e. primary or secondary growth media) should be conducted prior to rehabilitation.

Chemical fertility of all spoil materials is low and would benefit from an application of a balanced NPK fertiliser or compost.

## 6.3 Growth media for PMLU

Physical and chemical properties of the soil and spoil materials available on site meet the requirements to establish the primary PMLUs for rehabilitated areas of cattle grazing and woodland habitat. It is recommended that the growth media for each rehabilitation campaign be assessed by an appropriately qualified person prior to rehabilitation, to identify the required ameliorants and fertilisers.

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# APPENDIX A: MAPS AND FIGURES

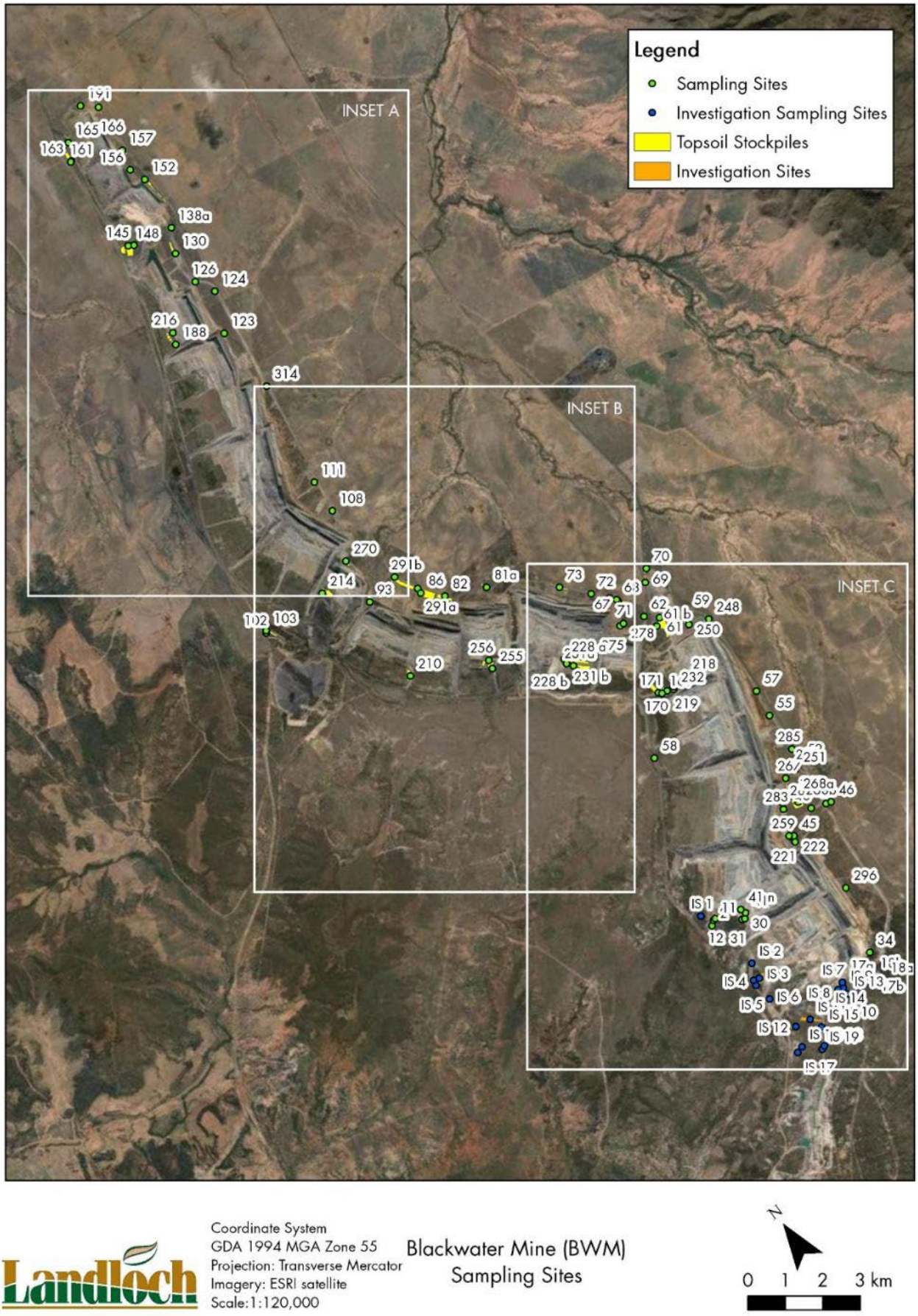



**Figure A1:** BWM topsoil stockpile sampling locations.




**Figure A2:** BWM soil stockpile sampling locations in the northern mine area (Inset A).




**Figure A3:** BWM soil stockpile sampling locations in the middle mine area (Insert B).




**Figure A4:** BWM soil stockpile sampling locations in the southern mine area (Insert C).

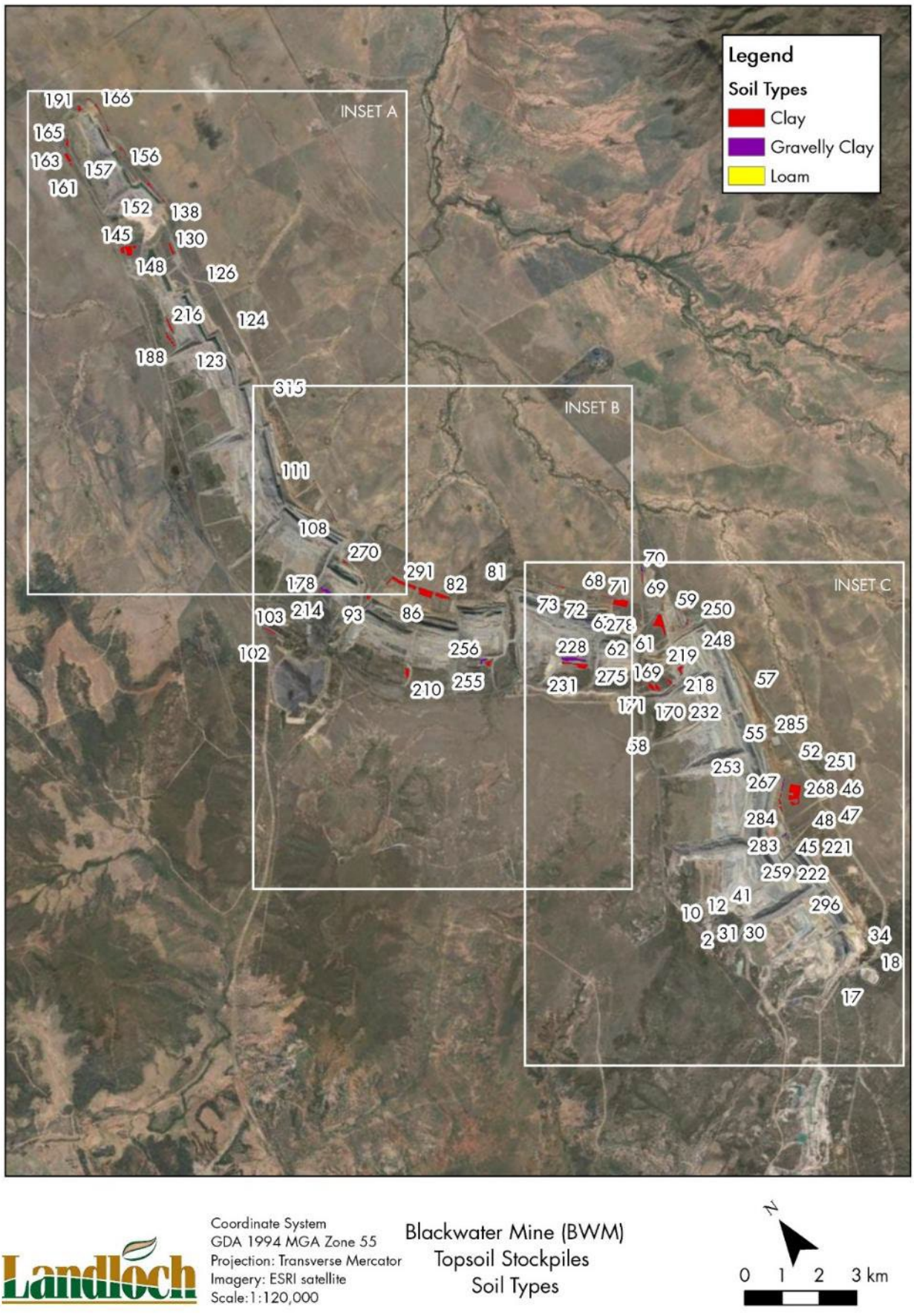



**Figure A5:** Distribution of stockpiled topsoil materials and stockpile identities at BWM.




**Figure A6:** Distribution of stockpiled soil materials and stockpile identities at BWM (Insert A).

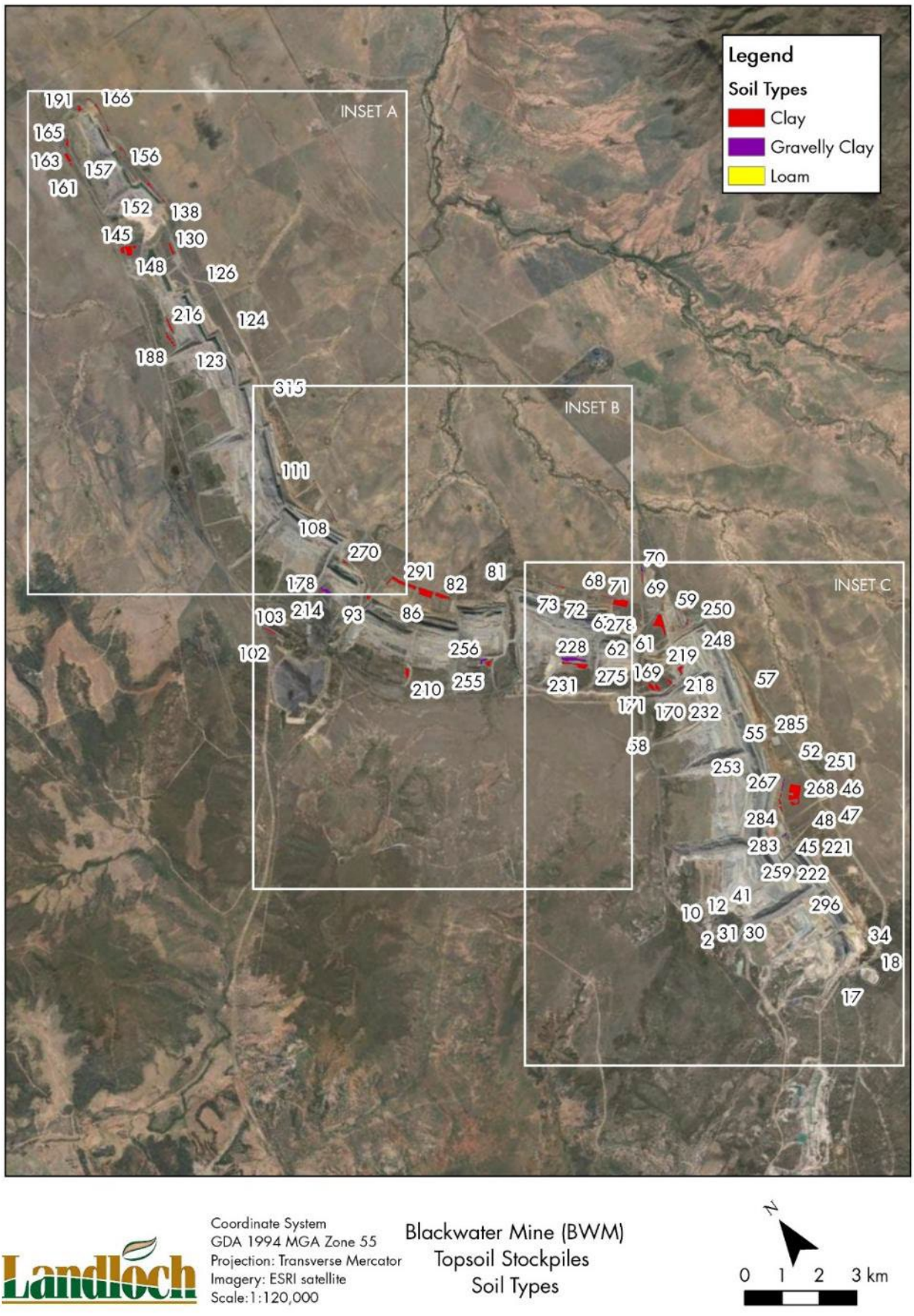



**Figure A7:** Distribution of stockpiled soil materials and stockpile identities at BWM (Insert B).

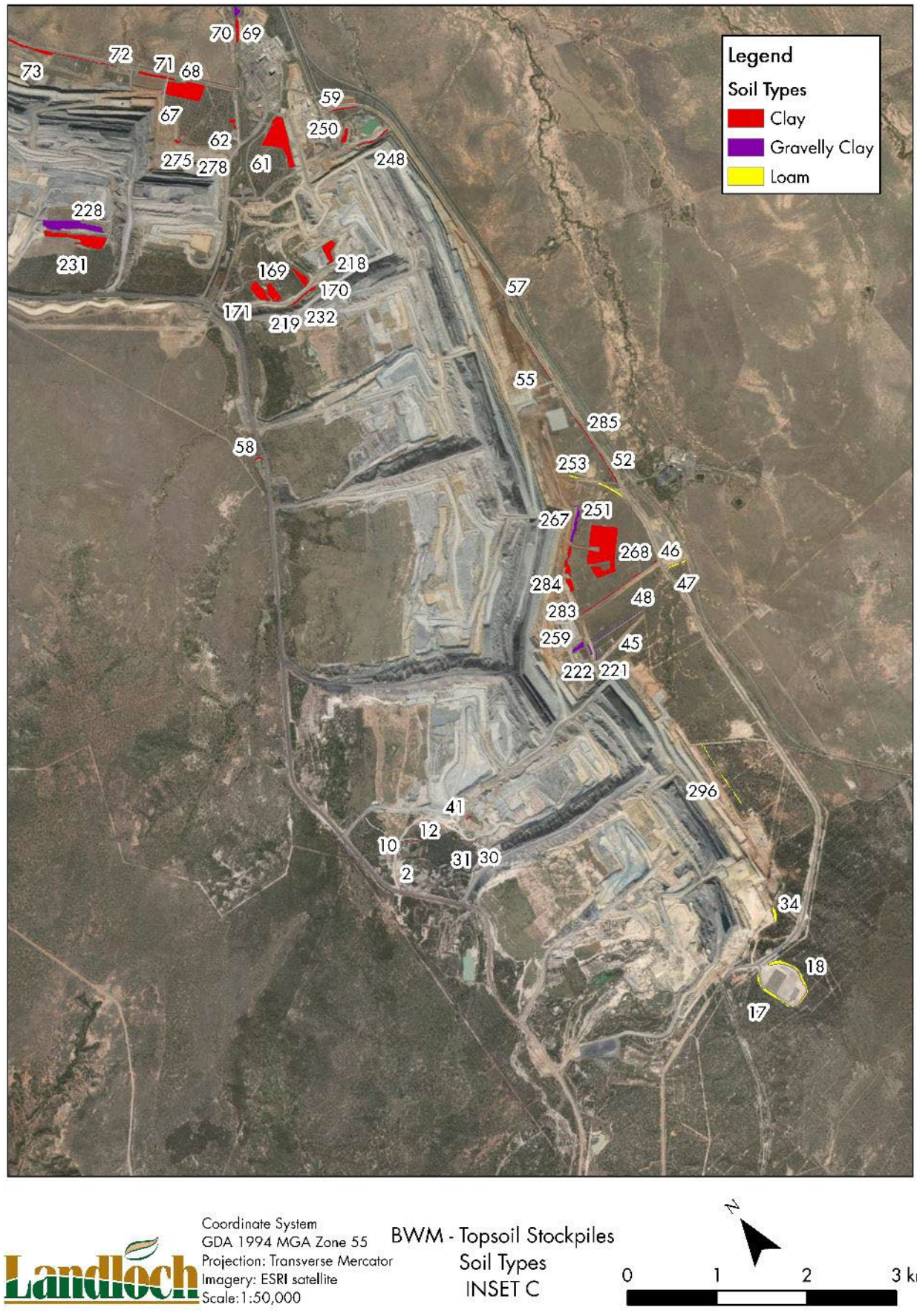



**Figure A8:** Distribution of stockpiled soil materials and stockpile identities at BWM (Insert C).

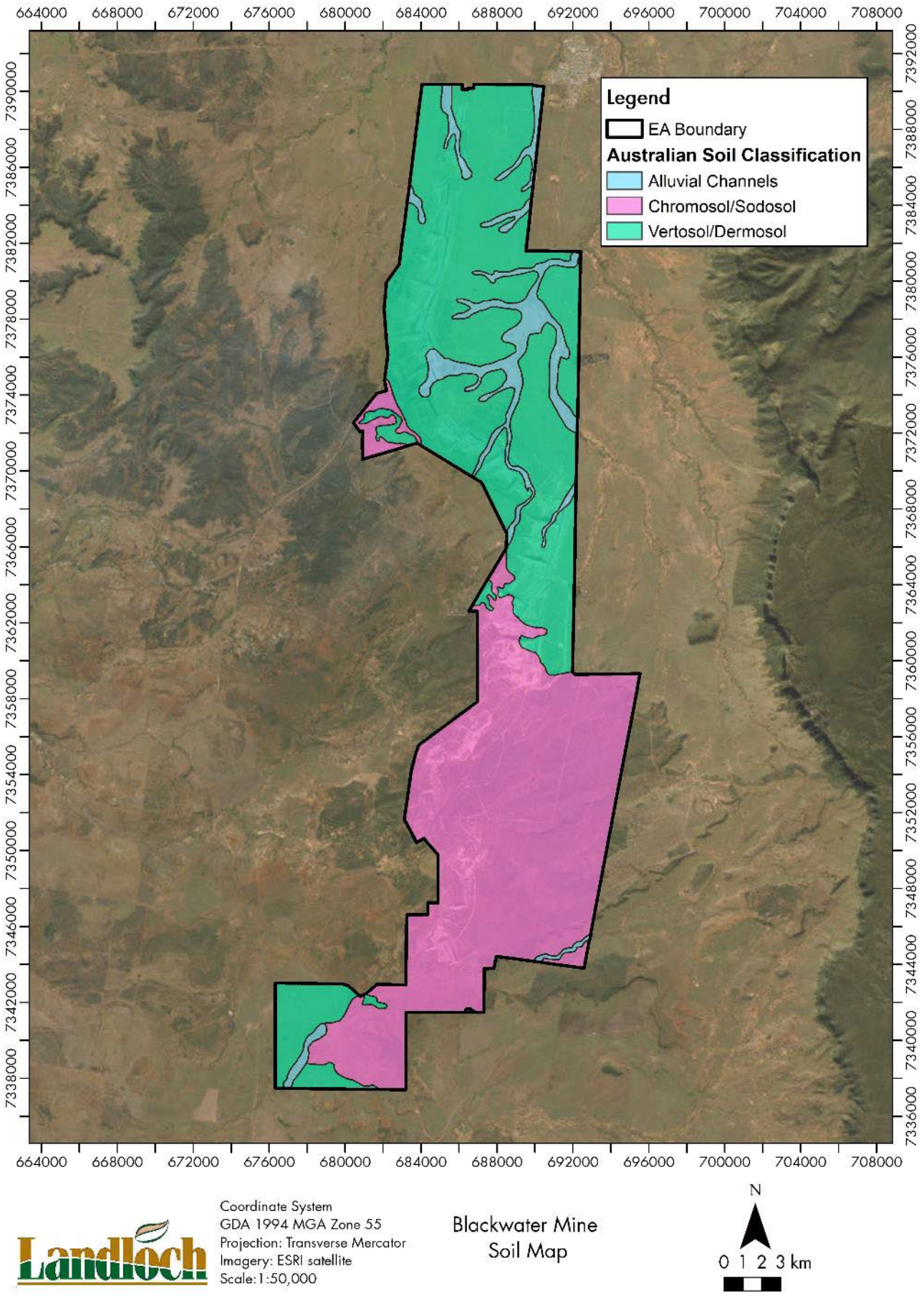



**Figure A9:** ASC soil mapping synthesised from existing soil assessments.

# APPENDIX B: DATA TABLES

**Table B1:** Sampling site locations.

| Site ID | Type | Latitude | Longitude |
|---|---|---|---|
| 166 | Topsoil stockpile | -23.59802818 | 148.8278925 |
| 191 | Topsoil stockpile | -23.59525871 | 148.8241753 |
| 165 | Topsoil stockpile | -23.60091782 | 148.8161545 |
| 163 | Topsoil stockpile | -23.6050148 | 148.8141073 |
| 161 | Topsoil stockpile | -23.60514069 | 148.8138643 |
| 156 | Topsoil stockpile | -23.61475754 | 148.8255319 |
| 157 | Topsoil stockpile | -23.60980225 | 148.8267107 |
| 152 | Topsoil stockpile | -23.61862755 | 148.8272481 |
| 130 | Topsoil stockpile | -23.63753891 | 148.822967 |
| 126 | Topsoil stockpile | -23.64583206 | 148.8230632 |
| 124 | Topsoil stockpile | -23.65038681 | 148.8259282 |
| 123 | Topsoil stockpile | -23.66003227 | 148.821764 |
| 138a | Topsoil stockpile | -23.63183784 | 148.8258795 |
| 314 | Topsoil stockpile | -23.67629051 | 148.8231125 |
| 111 | Topsoil stockpile | -23.70185661 | 148.8192894 |
| 108 | Topsoil stockpile | -23.70999146 | 148.8189732 |
| 270 | Topsoil stockpile | -23.72184181 | 148.8144607 |
| 93 | Topsoil stockpile | -23.73320198 | 148.8136208 |
| 291a | Topsoil stockpile | -23.73703957 | 148.8260059 |
| 291b | Topsoil stockpile | -23.73162842 | 148.822675 |
| 86 | Topsoil stockpile | -23.73835182 | 148.8259969 |
| 81a | Topsoil stockpile | -23.74608803 | 148.8410505 |
| 82 | Topsoil stockpile | -23.74221611 | 148.8307706 |
| 73 | Topsoil stockpile | -23.75597 | 148.8568182 |
| 67 | Topsoil stockpile | -23.76663017 | 148.8674779 |
| 71 | Topsoil stockpile | -23.76489449 | 148.8660728 |
| 69 | Topsoil stockpile | -23.76664925 | 148.876113 |
| 61 | Topsoil stockpile | -23.77558899 | 148.8739726 |
| 61 b | Topsoil stockpile | -23.77689362 | 148.8720813 |
| 296 | Topsoil stockpile | -23.85461235 | 148.8744966 |
| 48 | Topsoil stockpile | -23.83402252 | 148.8787271 |
| 284 | Topsoil stockpile | -23.82904434 | 148.8732071 |
| 268a | Topsoil stockpile | -23.82949066 | 148.8771785 |
| 268b | Topsoil stockpile | -23.83106232 | 148.8767802 |
| 256 | Topsoil stockpile | -23.76095772 | 148.8307947 |
| 17a | Topsoil stockpile | -23.87491608 | 148.8650623 |
| 18a | Topsoil stockpile | -23.87794495 | 148.8689974 |
| 255 | Topsoil stockpile | -23.76305962 | 148.830326 |
| 210 | Topsoil stockpile | -23.75341988 | 148.8115358 |
| 102 | Topsoil stockpile | -23.72528839 | 148.7867002 |
| 103 | Topsoil stockpile | -23.72486877 | 148.7870308 |
| 214 | Topsoil stockpile | -23.72504425 | 148.8046287 |
| 216 | Topsoil stockpile | -23.65295792 | 148.8107479 |
| 188 | Topsoil stockpile | -23.65569878 | 148.8096411 |

| Site ID | Type | Latitude | Longitude |
|---|---|---|---|
| 145 | Topsoil stockpile | -23.63024521 | 148.8152339 |
| 148 | Topsoil stockpile | -23.6295948 | 148.8138974 |
| 228 a | Topsoil stockpile | -23.7708931 | 148.8472299 |
| 228 b | Topsoil stockpile | -23.77192116 | 148.8473667 |
| 231 b | Topsoil stockpile | -23.77213669 | 148.8470965 |
| 70 | Topsoil stockpile | -23.76402855 | 148.8783613 |
| 275 | Topsoil stockpile | -23.77187538 | 148.8642506 |
| 278 | Topsoil stockpile | -23.77187729 | 148.8652825 |
| 68 | Topsoil stockpile | -23.76619911 | 148.8673287 |
| 72 | Topsoil stockpile | -23.76157379 | 148.8626784 |
| 232 | Topsoil stockpile | -23.79174614 | 148.8664496 |
| 62 | Topsoil stockpile | -23.77323532 | 148.8707824 |
| 250 | Topsoil stockpile | -23.78092384 | 148.8793256 |
| 248 | Topsoil stockpile | -23.78253937 | 148.8843923 |
| 57 | Topsoil stockpile | -23.80333519 | 148.8841401 |
| 55 | Topsoil stockpile | -23.80994987 | 148.883361 |
| 285 | Topsoil stockpile | -23.81966019 | 148.8832252 |
| 52 | Topsoil stockpile | -23.82315636 | 148.8831367 |
| 47 | Topsoil stockpile | -23.83518791 | 148.882622 |
| 251 | Topsoil stockpile | -23.8242321 | 148.8810901 |
| 253 | Topsoil stockpile | -23.82267189 | 148.8798111 |
| 267 | Topsoil stockpile | -23.82462883 | 148.8776103 |
| 268c | Topsoil stockpile | -23.82899857 | 148.8765844 |
| 283 | Topsoil stockpile | -23.8304863 | 148.8725547 |
| 221 | Topsoil stockpile | -23.83710098 | 148.8702594 |
| 45 | Topsoil stockpile | -23.83720398 | 148.8708987 |
| 222 | Topsoil stockpile | -23.83860779 | 148.8702701 |
| 59 | Topsoil stockpile | -23.77819061 | 148.8806264 |
| 218 | Topsoil stockpile | -23.79071045 | 148.8708397 |
| 170 | Topsoil stockpile | -23.79125404 | 148.8668312 |
| 219 | Topsoil stockpile | -23.79116058 | 148.8648383 |
| 171 | Topsoil stockpile | -23.79034042 | 148.862655 |
| 169 | Topsoil stockpile | -23.79097176 | 148.8633755 |
| 58 | Topsoil stockpile | -23.80288124 | 148.8522071 |
| 2 | Topsoil stockpile | -23.84400177 | 148.8399913 |
| 11 | Topsoil stockpile | -23.84314728 | 148.841079 |
| 12 | Topsoil stockpile | -23.84300613 | 148.841662 |
| 31 | Topsoil stockpile | -23.8467865 | 148.8473801 |
| 30 | Topsoil stockpile | -23.84702873 | 148.8480939 |
| 41 | Topsoil stockpile | -23.8459816 | 148.8490957 |
| 41 n | Topsoil stockpile | -23.8446579 | 148.8485737 |
| 34 | Topsoil stockpile | -23.87069893 | 148.8701853 |
| 17b | Topsoil stockpile | -23.87491608 | 148.8650623 |
| 18b | Topsoil stockpile | -23.87794495 | 148.8689974 |
| 231a | Topsoil stockpile | -23.77213614 | 148.8470965 |
| 46 | Topsoil stockpile | -23.83518819 | 148.882622 |
| 259 | Topsoil stockpile | -23.79070999 | 148.8708397 |

**Table B2:** Ground observations and surface descriptions.

| Site ID | Groundcover % (veg) | Veg/Litter | Cracks (width) | Cracks (depth) | Stoniness (abundance) | Stoniness (size) |
|---|---|---|---|---|---|---|
| 166 | 60-80% | 80/20 | <5mm | | 10-20% | |
| 191 | 60-80% | 80/20 | 5-10mm | | 2-10% | |
| 165 | 80-100% | 60/40 | 5-10mm | | 2-10% | |
| 163 | 80-100% | 80/20 | <5mm | | <2% | 2-6mm |
| 161 | 80-100% | 80/20 | <5mm | | <2% | 2-6mm |
| 156 | 60-80% | 80/20 | <5mm | | <2% | 2-6mm |
| 157 | 80-100% | 80/20 | <5mm | | <2% | 2-6mm |
| 152 | 80-100% | 80/21 | <5mm | | <2% | |
| 130 | 80-100% | 80/20 | <5mm | | <2% | 2-6mm |
| 126 | 80-100% | 80/20 | <5mm | | <2% | 2-6mm |
| 124 | 80-100% | 80/20 | <5mm | | <2% | 2-6mm |
| 123 | 80-100% | 80/20 | <5mm | | 2-10% | 2-6mm |
| 138a | 40-60% | 60/40 | <5mm | | 20-50% | 2-6mm |
| 314 | 80-100% | 80/20 | <5mm | | 2-10% | 2-6mm |
| 111 | 80-100% | 80/20 | <5mm | | <2% | |
| 108 | 80-100% | 80/20 | <5mm | | 2-10% | 2-6mm |
| 270 | 80-100% | 80/20 | <5mm | | 2-10% | 2-6mm |
| 93 | 80-100% | 80/20 | <5mm | | <2% | 2-6mm |
| 291a | 80-100% | 80/20 | <5mm | | <2% | 2-6mm |
| 291b | 80-100% | 80/21 | <5mm | | <2% | 2-6mm |
| 86 | 60-80% | 80/20 | 5-10mm | 20-50mm | 2-10% | 2-6mm |
| 81a | 60-80% | 80/20 | 5-10mm | 10-20mm | 2-10% | 2-6mm |
| 82 | 80-100% | 80/20 | 5-10mm | 10-20mm | 2-10% | 2-6mm |
| 73 | 80-100% | 80/20 | <5mm | 10-20mm | <2% | 2-6mm |
| 67 | 80-100% | 80/20 | <5mm | | <2% | |
| 71 | 80-100% | 80/20 | <5mm | 10-20mm | <2% | 2-6mm |
| 69 | 80-100% | 80/20 | <5mm | 10-20mm | <2% | 2-6mm |
| 61 | 80-100% | 80/20 | <5mm | 10-20mm | <2% | 2-6mm |
| 61 b | 80-100% | 80/21 | <5mm | 10-20mm | <2% | 2-6mm |
| 296 | 60-80% | 80/20 | <5mm | | 2-10% | |
| 48 | 80-100% | 100/0 | | | | |
| 284 | 80-100% | 100/0 | <5mm | <10mm | 10-20% | <60mm |
| 268a | 80-100% | 100/0 | <5mm | <10mm | 10-20% | <60mm |
| 268b | 80-100% | 100/0 | 5-10mm | <10mm | | <60mm |
| 256 | 80-100% | 100/0 | 5-10mm | <10mm | 10-20% | <60mm |
| 17a | 40-60% | 60/40 | | | 10-20% | <60mm |
| 18a | 40-60% | 60/40 | | | 50-90% | <200mm |
| 255 | 80-100% | 100/0 | | | | |
| 210 | 80-100% | 100/0 | | | | |
| 102 | 80-100% | 100/0 | | | | |
| 103 | 80-100% | 100/0 | | | | |
| 214 | 80-100% | 100/0 | | | | |
| 216 | 80-100% | 100/0 | | | | |
| 188 | 80-100% | 100/0 | | | | |
| 145 | 80-100% | 100/0 | | | | |

| Site ID | Groundcover % (veg) | Veg/Litter | Cracks (width) | Cracks (depth) | Stoniness (abundance) | Stoniness (size) |
|---|---|---|---|---|---|---|
| 148 | 80-100% | 100/0 | 5-10mm | <10mm | | |
| 228 a | 80-100% | 100/0 | | | | |
| 228 b | 80-100% | 100/0 | 5-10mm | <10mm | <2% | 2-6mm |
| 231 b | 80-100% | 100/0 | | | <2% | 2-6mm |
| 70 | 80-100% | 100/0 | | | | |
| 275 | 80-100% | 100/0 | 5-10mm | <10mm | 2-10% | 2-6mm |
| 278 | 80-100% | 100/0 | 5-10mm | <10mm | <2% | <60mm |
| 68 | 80-100% | 100/0 | | | <2% | 2-6mm |
| 72 | 80-100% | 100/0 | <5mm | | | |
| 232 | 80-100% | 100/0 | | | 2-10% | <60mm |
| 62 | 80-100% | 100/0 | 5-10mm | <10mm | 2-10% | <200mm |
| 250 | 80-100% | 100/0 | | | 2-10% | |
| 248 | 80-100% | 100/0 | | | | |
| 57 | 80-100% | 100/0 | 5-10mm | 10-20mm | 20-50% | <200mm |
| 55 | 80-100% | 100/0 | 5-10mm | <10mm | 20-50% | 2-6mm |
| 285 | 80-100% | 100/0 | <5mm | <10mm | <2% | 2-6mm |
| 52 | 80-100% | 100/0 | <5mm | <10mm | 2-10% | 2-6mm |
| 47 | 80-100% | 100/0 | <5mm | <10mm | <2% | 2-6mm |
| 251 | 80-100% | 80/20 | | | 2-10% | <20mm |
| 253 | 80-100% | 100/0 | | | | |
| 267 | 80-100% | 100/0 | 5-10mm | <10mm | 10-20% | 2-6mm |
| 268c | 80-100% | 80/20 | 5-10mm | <10mm | 2-10% | 2-6mm |
| 283 | 80-100% | 100/0 | | | | |
| 221 | 80-100% | 100/0 | <5mm | <10mm | 2-10% | <20mm |
| 45 | 80-100% | 100/0 | | | 10-20% | <60mm |
| 222 | 80-100% | 100/0 | | | 2-10% | <60mm |
| 59 | 80-100% | 100/0 | | | | |
| 218 | 80-100% | 100/0 | | | | |
| 170 | 80-100% | 100/0 | <5mm | <10mm | 20-50% | 2-6mm |
| 219 | 80-100% | 100/0 | 5-10mm | <10mm | 2-10% | 2-6mm |
| 171 | 80-100% | 100/0 | | | | |
| 169 | 80-100% | 100/0 | 5-10mm | <10mm | 2-10% | 2-6mm |
| 58 | 80-100% | 100/0 | | | | |
| 2 | 80-100% | 100/0 | <5mm | <10mm | | <60mm |
| 11 | 80-100% | 100/0 | 5-10mm | <10mm | | |
| 12 | 80-100% | 100/0 | <5mm | <10mm | 2-10% | 2-6mm |
| 31 | 80-100% | 100/0 | | | | |
| 30 | 60-80% | 80/20 | <5mm | <10mm | 20-50% | 2-6mm |
| 41 | 60-80% | 100/0 | | | | |
| 41 n | 80-100% | 100/0 | | | | |
| 34 | 80-100% | 100/0 | | | | |
| 17b | 80-100% | 100/0 | | | | |
| 18b | 80-100% | 100/0 | | | | |
| 231a | 80-100% | 100/0 | | | | |
| 46 | 80-100% | 100/0 | | | | |
| 259 | 80-100% | 100/0 | | | | |

**Table B3:** Morphological description of stockpiled soil materials.

| Site ID | Date | Layer Depth (m) | Texture Group 1o | Texture Field | Colour (rapid) | | Total Coarse Fragment % | Coarse Fragments 1° | | | Coarse Fragments 2° | | | Sample Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Primary | Secondary | | % | Size | Shape | % | Size (mm) | Shape | |
| 166 | 6/03/2023 | 0.5 | CLAY | Light Clay | Brown | Pale Brown | 5-10 | 2-5 | 6-20 | Sub-rounded | 2-5 | 6-20 | Sub-angular | Grab |
| | | 1 | CLAY | Medium Clay | Brown | Orange | 5-10 | 5-10 | 6-20 | Sub-rounded | 2-5 | 6-20 | Sub-angular | Grab |
| | | 2 | CLAY | Medium Clay | Brown | Orange | 5-10 | 5-10 | 6-20 | Sub-rounded | 2-5 | 6-20 | Sub-angular | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 191 | 6/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Brown | Red | 2-5 | 2-5 | 6-20 | Sub-rounded | | | | Grab |
| | | 1 | CLAY | Medium Heavy Clay | Brown | Red | 5-10 | 2-5 | 6-20 | Sub-rounded | | | | Grab |
| | | 2 | CLAY | Medium Heavy Clay | Dark Brown | Red | 2-5 | 2-5 | 6-20 | Sub-rounded | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 165 | 7/03/2023 | 0.5 | CLAY | Medium Clay | Brown | Pale Brown | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | 1 | CLAY | Medium Clay | Brown | Pale Brown | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | 1.8 | CLAY | Medium Clay | Brown | Dark Grey | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 163 | 7/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | 1 | CLAY | Light Medium Clay | Brown | | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | 2 | CLAY | Light Clay | Brown | | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 161 | 7/03/2023 | 0.5 | CLAY | Medium Clay | Black | | 2-5 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 1 | CLAY | Medium Clay | Black | | 2-5 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 2 | CLAY | Medium Clay | Black | | 2-5 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 156 | 7/03/2023 | 0.5 | CLAY | Medium Clay | Brown | | | | | | | | | Grab |
| | | 1 | CLAY | Medium Clay | Brown | | 2-5 | <2 | 6-20 | Sub-rounded | | | | Grab |
| | | 2 | CLAY | Light Medium Clay | Brown | | 2-5 | <2 | 6-20 | Sub-rounded | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 157 | 7/03/2023 | 0.5 | CLAY | Light Medium Clay | Pale Brown | | 2-5 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 1 | CLAY | Light Medium Clay | Pale Brown | | 5-10 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 2 | CLAY | Light Medium Clay | Pale Brown | | 2-5 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 152 | 7/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | | 0 | | | | | | | Grab |
| | | 1 | CLAY | Light Medium Clay | Brown | | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Light Medium Clay | Brown | | <2 | <2 | 6-20 | Sub-rounded | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 130 | 7/03/2023 | 0.5 | CLAY | Light Medium Clay | Pale Brown | | 2-5 | 2-5 | 2-6 | Sub-angular | | | | Grab |
| | | 1 | CLAY | Light Medium Clay | Pale Brown | | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | 1.8 | CLAY | Light Medium Clay | Pale Brown | | <2 | 2-5 | 2-6 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 126 | 7/03/2023 | 0.5 | CLAY | Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | 1 | CLAY | Medium Clay | Dark Brown | Orange | 2-5 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 2 | CLAY | Medium Clay | Dark Brown | Orange | 2-5 | <2 | 6-20 | Sub-rounded | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 124 | 7/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | | 0 | | | | | | | Grab |
| | | 1 | CLAY | Light Medium Clay | Brown | | 2-5 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 2 | CLAY | Light Clay | Brown | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 123 | 8/03/2023 | 0.5 | CLAY | Medium Clay | Brown | Black | 5-10 | 5-10 | 2-6 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | | 0 | | | | | | | Grab |
| | | 3 | CLAY | Light Clay | Brown | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |

| Site ID | Date | Layer Depth (m) | Texture Group 1o | Texture Field | Colour (rapid) | | Total Coarse Fragment % | Coarse Fragments 1° | | | Coarse Fragments 2° | | | Sample Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Primary | Secondary | | % | Size | Shape | % | Size (mm) | Shape | |
| 138 a | 8/03/2023 | 1m a | GRAVELLY CLAY | Light Medium Clay | Pale Grey | Pale Yellow | 30-40 | 10-20 | 20-60 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | 1m b | GRAVELLY CLAY | Light Medium Clay | Pale Grey | Pale Orange | 30-40 | 10-20 | 20-60 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | 1m c | GRAVELLY CLAY | Light Medium Clay | Pale Grey | Pale Orange | 30-40 | 10-20 | 20-60 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 314* | 8/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 1 | CLAY | Light Medium Clay | Brown | | 0 | | | | | | | Grab |
| | | 2 | CLAY | Clay Loam | Brown | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 111 | 8/03/2023 | 0.5 | CLAY | Light Medium Clay | Dark Brown | | <2 | <2 | 6-20 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | 3 | CLAY | Light Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 108 | 8/03/2023 | 0.5 | CLAY | Light Medium Clay | Dark Grey | Red | <2 | <2 | 6-20 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Dark Brown | Red | 0 | | | | | | | Grab |
| | | 3 | CLAY | Light Clay | Pale Yellow | Pale Brown | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 270 | 8/03/2023 | 0.5 | CLAY | Light Medium Clay | Black | Red | 5-10 | 5-10 | 60-200 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Black | | 0 | | | | | | | Grab |
| | | 3 | CLAY | Medium Clay | Black | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 93 | 8/03/2023 | 0.5 | CLAY | Light Medium Clay | Dark Grey | Red | 2-5 | 2-5 | 20-60 | Sub-angular | | | | Grab |
| | | 1 | CLAY | Light Medium Clay | Dark Brown | Red | 0 | | | | | | | Grab |
| | | 2 | CLAY | Medium Clay | Dark Brown | Red | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 291 | 8/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | Pale Red | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Brown | Dark Grey | 0 | | | | | | | Grab |
| | | 3 | CLAY | Medium Clay | Brown | Dark Grey | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 291 (b) | 8/03/2023 | 0.5 | CLAY | Medium Clay | Brown | Dark Grey | 5-10 | 5-10 | 6-20 | Sub-rounded | | | | Grab |
| | | 1 | CLAY | Medium Clay | Brown | Pale Red | 5-10 | 5-10 | 6-20 | Sub-angular | | | | Grab |
| | | 2 | CLAY | Medium Clay | Brown | Pale Grey | 10-20 | 10-20 | 20-60 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 86 | 8/03/2023 | 0.5 | CLAY | Light Medium Clay | Dark Brown | | 5-10 | 5-10 | 6-20 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | 3 | CLAY | Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 81 | 9/03/2023 | 1m a | CLAY | Light Clay | Brown | | 2-5 | 5-10 | 6-20 | Sub-rounded | | | | Grab |
| | | 1m b | CLAY | Clay Loam Sandy | Brown | | 2-5 | 5-10 | 6-20 | Sub-angular | | | | Grab |
| | | 1m c | CLAY | Clay Loam | Brown | | 2-5 | 5-10 | 6-20 | Sub-rounded | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 82 | 9/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | Pale Orange | 2-5 | 2-5 | 2-6 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | Pale Orange | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Light Medium Clay | Brown | Pale Orange | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 73 | 9/03/2023 | 0.5 | CLAY | Light Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | 3 | CLAY | Light Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |

| Site ID | Date | Layer Depth (m) | Texture Group 1o | Texture Field | Colour (rapid) | | Total Coarse Fragment % | Coarse Fragments 1° | | | Coarse Fragments 2° | | | Sample Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Primary | Secondary | | % | Size | Shape | % | Size (mm) | Shape | |
| 67 | 9/03/2023 | 0.5 | CLAY | Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | | <2 | <2 | 6-20 | Sub-rounded | | | | Grab |
| | | 3 | CLAY | Light Medium Clay | Brown | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 71 | 9/03/2023 | 0.5 | CLAY | Medium Clay | Brown | Pale Orange | 2-5 | 2-5 | 6-20 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Brown | Pale Orange | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Medium Clay | Brown | Pale Orange | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 69 | 9/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | Pale Orange | 2-5 | 2-5 | 6-20 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | Pale Orange | 2-5 | 2-5 | 6-20 | Sub-rounded | | | | Grab |
| | | 3 | CLAY | Medium Clay | Brown | Pale Orange | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 61 | 9/03/2023 | 0.5 | CLAY | Light Clay | Brown | | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | | 0 | | | | | | | Grab |
| | | 3 | CLAY | Light Medium Clay | Brown | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 61 (b) | 9/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | Dark Grey | 2-5 | 2-5 | 6-20 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | | 0 | | | | | | | Grab |
| | | 3 | CLAY | Light Clay | Brown | | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 18a | 14/03/2023 | 0.5 | LOAM | Sandy Clay Loam | Grey | Brown | 30-40 | 30-40 | 20-60 | Sub-rounded | | | | Grab |
| | | 1.5 | LOAM | Sandy Clay Loam | Grey | Brown | 30-40 | 30-40 | 20-60 | Sub-rounded | | | | Grab |
| | | composite | LOAM | | | | 0 | | | | | | | Composite |
| | | | LOAM | | | | | | | | | | | |
| 18b | 14/03/2023 | 0.5 | LOAM | Sandy Clay Loam | Grey | Brown | 30-40 | 30-40 | 20-60 | Sub-rounded | | | | Grab |
| | | 1.5 | LOAM | Sandy Clay Loam | Grey | Brown | 30-40 | 30-40 | 20-60 | Sub-rounded | | | | Grab |
| | | composite | LOAM | | | | | | | | | | | Composite |
| | | | LOAM | | | | | | | | | | | |
| 17a | 14/03/2023 | 0.5 | LOAM | Sandy Loam | Grey | Brown | 10-20 | 10-20 | 20-60 | Sub-rounded | | | | Grab |
| | | 1.5 | LOAM | Sandy Loam | Grey | Brown | 10-20 | 10-20 | 20-60 | Sub-rounded | | | | Grab |
| | | composite | LOAM | | | | | | | | | | | Composite |
| | | | LOAM | | | | | | | | | | | |
| 17b | 14/03/2023 | 0.5 | LOAM | Sandy Loam | Grey | Brown | 10-20 | 10-20 | 20-60 | Sub-rounded | | | | Grab |
| | | 1.5 | LOAM | Sandy Loam | Grey | Brown | 10-20 | 10-20 | 20-60 | Sub-rounded | | | | Grab |
| | | composite | LOAM | | | | | | | | | | | Composite |
| | | | LOAM | | | | | | | | | | | |
| 296 | 14/03/2023 | 0.5 | LOAM | Clayey Sand | Red | Brown | 30-40 | 30-40 | 20-60 | Sub-rounded | | | | Grab |
| | | 1.5 | LOAM | Sandy Loam | Pale Red | Brown | 30-40 | 30-40 | 20-60 | Sub-rounded | | | | Grab |
| | | 2.5 | LOAM | Sandy Clay Loam | Pale Red | Brown | 30-40 | 30-40 | 20-60 | Sub-rounded | | | | Grab |
| | | composite | LOAM | | | | | | | | | | | Composite |
| 48 | 14/03/2023 | 0.5 | CLAY | Light Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Light Clay | Brown | Pale Red | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Medium Clay | Brown | Red | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 284 | 14/03/2023 | 0.5 | CLAY | Light Clay | Red | Brown | 10-20 | 5-10 | 20-60 | Sub-rounded | 5-10 | 6-20 | Sub-rounded | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Pale Red | Brown | 10-20 | 5-10 | 20-60 | Sub-rounded | 5-10 | 6-20 | Sub-rounded | Grab |
| | | 2.5 | CLAY | Medium Clay | Pale Red | Brown | 5-10 | 5-10 | 20-60 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | composite | CLAY | | | | | 0 | | | | | | Composite |

| Site ID | Date | Layer Depth (m) | Texture Group 1o | Texture Field | Colour (rapid) | | Total Coarse Fragment % | Coarse Fragments 1° | | | Coarse Fragments 2° | | | Sample Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Primary | Secondary | | % | Size | Shape | % | Size (mm) | Shape | |
| 268a | 14/03/2023 | 0.5 | GRAVELLY CLAY | Light Medium Clay | Red | Brown | 20-30 | 5-10 | 60-200 | Sub-angular | 10-20 | 6-20 | Sub-rounded | Grab |
| | | 1.5 | GRAVELLY CLAY | Light Medium Clay | Pale Red | Brown | 20-30 | 10-20 | 60-200 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | 2.5 | GRAVELLY CLAY | Light Medium Clay | Pale Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 268b | 14/03/2023 | 0.5 | GRAVELLY CLAY | Medium Heavy Clay | Red | Brown | 30-40 | 20-30 | 6-20 | Sub-rounded | 10-20 | 60-200 | Sub-angular | Grab |
| | | 1.5 | GRAVELLY CLAY | Medium Heavy Clay | Pale Red | Brown | 40-60 | 30-40 | 60-200 | Sub-angular | 5-10 | 20-60 | Sub-angular | Grab |
| | | 2.5 | GRAVELLY CLAY | Medium Heavy Clay | Pale Red | Brown | 30-40 | 20-30 | 60-200 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 256 | 15/03/2023 | 0.5 | GRAVELLY CLAY | Light Clay | Red | Brown | 20-30 | 10-20 | 20-60 | Sub-rounded | 10-20 | 6-20 | Sub-angular | Grab |
| | | 1.5 | GRAVELLY CLAY | Light Clay | Pale Red | Brown | 20-30 | 10-20 | 20-60 | Sub-rounded | 10-20 | 6-20 | Sub-angular | Grab |
| | | 2.5 | GRAVELLY CLAY | Medium Clay | Pale Red | Brown | 20-30 | 10-20 | 20-60 | Sub-rounded | 10-20 | 2-6 | Sub-angular | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 255 | 15/03/2023 | 0.5 | CLAY | Medium Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 1 | CLAY | Medium Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Red | Brown | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 210 | 16/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Grey | Brown | 2-5 | 2-5 | 20-60 | Sub-angular | | | Sub-rounded | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Grey | Brown | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Grey | Brown | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 102 | 16/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 103 | 16/03/2023 | 0.5 | CLAY | Light Medium Clay | Red | Brown | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Light Clay | Pale Red | Brown | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Silty Loam | Pale Yellow | Brown | 40-60 | 30-40 | 60-200 | Sub-angular | 20-30 | 20-60 | Sub-angular | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 214 | 16/03/2023 | 0.5 | GRAVELLY CLAY | Medium Clay | Red | Brown | 10-20 | 10-20 | 20-60 | Sub-angular | | | | Grab |
| | | 1.5 | GRAVELLY CLAY | Medium Clay | Pale Red | Brown | 20-30 | 5-10 | 60-200 | Sub-angular | 10-20 | 6-20 | Sub-angular | Grab |
| | | 2.5 | GRAVELLY CLAY | Medium Clay | Pale Red | Brown | 40-60 | 20-30 | 60-200 | Sub-angular | 20-30 | 6-20 | Sub-angular | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 216 | 16/03/2023 | 0.5 | CLAY | Medium Clay | Red | Brown | 10-20 | 10-20 | 6-20 | Sub-angular | | | | Grab |
| | | 1,5 | CLAY | Medium Clay | Red | Brown | 20-30 | 20-30 | 6-20 | Sub-angular | | | Sub-rounded | Grab |
| | | 2.5 | CLAY | Medium Clay | Red | Brown | 5-10 | 5-10 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 188 | 16/03/2023 | 0.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Light Clay | Red | Brown | 5-10 | 2-5 | 20-60 | Sub-rounded | 2-5 | 2-6 | Sub-rounded | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 145 | 17/03/2023 | 1m a | CLAY | Medium Clay | Grey | Brown | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 1m b | CLAY | Medium Clay | Grey | Brown | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 1m c | CLAY | Medium Clay | Grey | Brown | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |

| Site ID | Date | Layer Depth (m) | Texture Group 1o | Texture Field | Colour (rapid) | | Total Coarse Fragment % | Coarse Fragments 1° | | | Coarse Fragments 2° | | | Sample Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Primary | Secondary | | % | Size | Shape | % | Size (mm) | Shape | |
| 148 | 17/03/2023 | 1m a | CLAY | Light Medium Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 1m b | CLAY | Light Medium Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 1m c | CLAY | Light Medium Clay | Red | Brown | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 228a | 17/03/2023 | 0.5 | GRAVELLY CLAY | Light Clay | Red | Brown | 10-20 | 5-10 | 20-60 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | 1.5 | GRAVELLY CLAY | Light Clay | Red | Brown | 10-20 | 5-10 | 20-60 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | 2/01/1900 | GRAVELLY CLAY | Light Medium Clay | Red | Brown | 10-20 | 5-10 | 20-60 | Sub-angular | 5-10 | 6-20 | Sub-rounded | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 228 b | 17/03/2023 | 0.5 | GRAVELLY CLAY | Light Medium Clay | Red | Brown | 30-40 | 5-10 | 20-60 | Sub-angular | 20-30 | 6-20 | Sub-angular | Grab |
| | | 1.5 | GRAVELLY CLAY | Medium Clay | Pale Red | Brown | 40-60 | 20-30 | 60-200 | Sub-angular | 20-30 | 20-60 | Sub-angular | Grab |
| | | 2.5 | GRAVELLY CLAY | Medium Clay | Pale Red | Brown | 5-10 | 5-10 | 6-20 | Sub-angular | | | | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 231 a | 17/03/2023 | 0.5 | CLAY | Light Medium Clay | Red | Brown | 5-10 | 5-10 | 6-20 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Red | Brown | 5-10 | 5-10 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Light Medium Clay | Red | Brown | 5-10 | 5-10 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 231 b | 17/03/2023 | 0.5 | CLAY | Light Clay | Red | Brown | 2-5 | <2 | 20-60 | Sub-angular | <2 | 6-20 | Sub-angular | Grab |
| | | 1.5 | CLAY | Light Clay | Red | Brown | 2-5 | <2 | 20-60 | Sub-angular | <2 | 6-20 | Sub-angular | Grab |
| | | 2 (on bag - 2-2.5r | CLAY | Light Clay | Red | Brown | 2-5 | <2 | 20-60 | Sub-angular | <2 | 6-20 | Sub-angular | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 70 | 18/03/2023 | 0.5 | GRAVELLY CLAY | Medium Clay | Dark Brown | | 20-30 | 5-10 | 60-200 | Sub-angular | 20-30 | 20-60 | Sub-angular | Grab |
| | | 1.5 | GRAVELLY CLAY | Medium Clay | Dark Brown | | 20-30 | 5-10 | 60-200 | Sub-angular | 20-30 | 20-60 | Sub-angular | Grab |
| | | 2.5 | GRAVELLY CLAY | Medium Clay | Dark Brown | | 20-30 | 5-10 | 60-200 | Sub-angular | 20-30 | 20-60 | Sub-angular | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 275 | 18/03/2023 | 0.5 | CLAY | Light Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | Pale Red | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Light Medium Clay | Brown | Pale Red | 0 | | | | | | | Grab |
| | | composite | CLAY | | Dark Brown | | | | | | | | | Composite |
| 278 | 18/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Dark Brown | Red | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Brown | Red | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Brown | Red | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 68 | 18/03/2023 | 0.5 | CLAY | Light Medium Clay | Dark Brown | | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Clayey Sand | Brown | Pale Red | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Clayey Sand | Brown | Pale Red | 2-5 | 2-5 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 72 | 18/03/2023 | 0.5 | CLAY | Medium Clay | Brown | Red | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | Red | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Light Medium Clay | Brown | Red | 2-5 | 2-5 | 2-6 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 232 | 18/03/2023 | 0.5 | CLAY | Medium Clay | Brown | Red | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Brown | Red | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Clay | Brown | Red | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 62 | 18/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Dark Brown | Red | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Brown | Red | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Brown | Red | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |

| Site ID | Date | Layer Depth (m) | Texture Group 1o | Texture Field | Colour (rapid) | | Total Coarse Fragment % | Coarse Fragments 1° | | | Coarse Fragments 2° | | | Sample Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Primary | Secondary | | % | Size | Shape | % | Size (mm) | Shape | |
| 250 | 18/03/2023 | 0.5 | CLAY | Medium Clay | Dark Brown | Red | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Brown | Red | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Clay | Brown | Red | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 248 | 18/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | Red | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | Red | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Light Medium Clay | Brown | Red | 5-10 | 2-5 | 20-60 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 57 | 18/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Dark Brown | Dark Grey | 10-20 | 2-5 | 60-200 | Sub-angular | 5-10 | 2-6 | Sub-angular | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Dark Brown | Dark Grey | 10-20 | 2-5 | 60-200 | Sub-angular | 5-10 | 2-6 | Sub-angular | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Dark Brown | Dark Grey | 10-20 | 2-5 | 60-200 | Sub-angular | 5-10 | 2-6 | Sub-angular | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 55 | 19/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Dark Grey | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Dark Grey | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Dark Grey | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 285 | 19/03/2023 | 0.5 | CLAY | Light Medium Clay | Red | Brown | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Red | Brown | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 2.5 | CLAY | Light Medium Clay | Red | Brown | <2 | <2 | 6-20 | Sub-rounded | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 52 | 19/03/2023 | 0.5 | CLAY | Light Medium Clay | Brown | Red | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Brown | Red | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Light Medium Clay | Brown | Red | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 47 | 19/03/2023 | 0.5 | LOAM | Clayey Sand | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 1.5 | LOAM | Clayey Sand | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 2.5 | LOAM | Sandy Clay Loam | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | composite | LOAM | | | | | | | | | | | Composite |
| 46 | 19/03/2023 | 0.5 | LOAM | Clayey Sand | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 1.5 | LOAM | Light Clay | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 2.5 | LOAM | Light Clay | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | composite | LOAM | | | | | | | | | | | Composite |
| 251 | 19/03/2023 | 0.5 | LOAM | Silty Loam | Pale Red | Brown | 2-5 | 2-5 | 2-6 | Sub-rounded | | | | Grab |
| | | 1.5 | LOAM | Silty Loam | Pale Red | Brown | 2-5 | 2-5 | 2-6 | Sub-rounded | | | | Grab |
| | | 2.5 | LOAM | Silty Loam | Pale Red | Brown | 2-5 | 2-5 | 2-6 | Sub-rounded | | | | Grab |
| | | composite | LOAM | Silty Loam | | | | | | | | | | Composite |
| 253 | 19/03/2023 | 0.5 | LOAM | Silty Clay Loam | Red | Brown | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 1.5 | LOAM | Silty Clay Loam | Red | Brown | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 2.5 | LOAM | Silty Clay Loam | Red | Brown | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | composite | LOAM | | | | | | | | | | | Composite |
| 267 | 19/03/2023 | 0.5 | GRAVELLY CLAY | Medium Heavy Clay | Red | Brown | 40-60 | 40-60 | 20-60 | Sub-rounded | | | | Grab |
| | | 1.5 | GRAVELLY CLAY | Medium Heavy Clay | Red | Brown | 40-60 | 40-60 | 20-60 | Sub-rounded | | | | Grab |
| | | 2.5 | GRAVELLY CLAY | Medium Heavy Clay | Red | Brown | 40-60 | 40-60 | 20-60 | Sub-rounded | | | | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 268c | 19/03/2023 | 0.5 | CLAY | Medium Clay | Red | Brown | <2 | <2 | 2-6 | Sub-rounded | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Red | Brown | 5-10 | 5-10 | 6-20 | Sub-rounded | | | | Grab |
| | | 2.5 | CLAY | Medium Clay | Red | Brown | 2-5 | 2-5 | 2-6 | Sub-rounded | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |

| Site ID | Date | Layer Depth (m) | Texture Group 1o | Texture Field | Colour (rapid) | | Total Coarse Fragment % | Coarse Fragments 1° | | | Coarse Fragments 2° | | | Sample Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Primary | Secondary | | % | Size | Shape | % | Size (mm) | Shape | |
| 283 | 19/03/2023 | 0.5 | CLAY | Medium Clay | Red | Brown | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Red | Brown | 5-10 | 2-5 | 60-200 | Sub-angular | 2-5 | 2-6 | Sub-angular | Grab |
| | | 2.5 | CLAY | Medium Clay | Red | Brown | 5-10 | 2-5 | 20-60 | Sub-angular | 2-5 | 2-6 | Sub-angular | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 221 | 19/03/2023 | 0.5 | GRAVELLY CLAY | Clayey Sand | Grey | Brown | 40-60 | 30-40 | 60-200 | Sub-angular | 10-20 | 6-20 | Sub-angular | Grab |
| | | 1.5 | GRAVELLY CLAY | Light Clay | Grey | Brown | 40-60 | 30-40 | 60-200 | Sub-angular | 10-20 | 6-20 | Sub-angular | Grab |
| | | 2.5 | GRAVELLY CLAY | Light Clay | Pale Red | Pale Grey | 40-60 | 30-40 | 60-200 | Sub-angular | 10-20 | 6-20 | Sub-angular | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 45 | 19/03/2023 | 0.5 | GRAVELLY CLAY | Light Medium Clay | Pale Red | Pale Red | 40-60 | 20-30 | 60-200 | Sub-angular | 20-30 | 20-60 | Sub-angular | Grab |
| | | 1.5 | GRAVELLY CLAY | Light Medium Clay | Pale Red | Pale Red | 40-60 | 20-30 | 60-200 | Sub-angular | 20-30 | 20-60 | Sub-angular | Grab |
| | | 2.5 | GRAVELLY CLAY | Light Medium Clay | Pale Red | Pale Red | 40-60 | 20-30 | 60-200 | Sub-angular | 20-30 | 20-60 | Sub-angular | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 222 | 19/03/2023 | 0.5 | GRAVELLY CLAY | Medium Clay | Red | Brown | 40-60 | 30-40 | 60-200 | Sub-angular | 10-20 | 20-60 | Sub-angular | Grab |
| | | 1.5 | GRAVELLY CLAY | Medium Clay | Red | Brown | 40-60 | 30-40 | 60-200 | Sub-angular | 10-20 | 20-60 | Sub-angular | Grab |
| | | 2.5 | GRAVELLY CLAY | Medium Clay | Red | Brown | 40-60 | 30-40 | 60-200 | Sub-angular | 10-20 | 20-60 | Sub-angular | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 259 | 19/03/2023 | 0.5 | GRAVELLY CLAY | Medium Heavy Clay | Red | Brown | 40-60 | 30-40 | 60-200 | Sub-angular | 10-20 | 6-20 | Sub-angular | Grab |
| | | 1 | GRAVELLY CLAY | Medium Heavy Clay | Red | Brown | 40-60 | 30-40 | 60-200 | Sub-angular | 10-20 | 6-20 | Sub-angular | Grab |
| | | 2 | GRAVELLY CLAY | Medium Heavy Clay | Red | Yellow | 40-60 | 30-40 | 60-200 | Sub-angular | 10-20 | 6-20 | Sub-angular | Grab |
| | | composite | GRAVELLY CLAY | | | | | | | | | | | Composite |
| 59 | 20/03/2023 | 1ma | CLAY | Light Medium Clay | Brown | Red | 0 | | | | | | | Grab |
| | | 1 m b | CLAY | Light Medium Clay | Brown | Red | 0 | | | | | | | Grab |
| | | 1 m c | CLAY | Light Medium Clay | Red | Brown | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 218 | 20/03/2023 | 0.5 | CLAY | Light Clay | Red | Brown | <2 | <2 | 2-6 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 170 | 20/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Brown | Red | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Brown | Red | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Brown | Red | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 219 | 20/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Brown | Grey | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Brown | Grey | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Brown | Grey | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 171 | 20/03/2023 | 0.5 | CLAY | Medium Clay | Brown | Red | 5-10 | <2 | 200-600 | Sub-angular | 5-10 | 20-60 | Sub-angular | Grab |
| | | 1.5 | CLAY | Medium Clay | Brown | Red | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Clay | Brown | Red | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 169 | 20/03/2023 | 0.5 | CLAY | Medium Clay | Brown | Grey | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Brown | Grey | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Brown | Grey | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 58 | 20/03/2023 | 0.5 | CLAY | Medium Clay | Brown | Grey | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Clay | Brown | Grey | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Clay | Brown | Grey | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |

| Site ID | Date | Layer Depth (m) | Texture Group 1o | Texture Field | Colour (rapid) | | Total Coarse Fragment % | Coarse Fragments 1° | | | Coarse Fragments 2° | | | Sample Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Primary | Secondary | | % | Size | Shape | % | Size (mm) | Shape | |
| 2 | 20/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Red | Brown | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 11 | 20/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Red | Brown | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Red | Brown | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Red | Brown | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 12 | 20/03/2023 | 0.5 | CLAY | Medium Heavy Clay | Red | Brown | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Medium Heavy Clay | Red | Brown | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Medium Heavy Clay | Red | Brown | <2 | <2 | 6-20 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 31 | 20/03/2023 | 0.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | c | CLAY | | | | | | | | | | | Composite |
| 30 | 20/03/2023 | 0.5 | CLAY | Light Medium Clay | Red | Brown | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Light Medium Clay | Red | Brown | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | 2.5 | CLAY | Light Medium Clay | Red | Brown | 5-10 | 5-10 | 20-60 | Sub-angular | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 41 | 20/03/2023 | 0.5 | CLAY | Light Clay | Red | Brown | <2 | <2 | 20-60 | Sub-angular | | | | Grab |
| | | 1.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 41 N | 20/03/2023 | 0.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 1.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | 2.5 | CLAY | Light Clay | Red | Brown | 0 | | | | | | | Grab |
| | | composite | CLAY | | | | | | | | | | | Composite |
| 34 | 20/03/2023 | 0.5 | LOAM | Sandy Loam | Pale Grey | | 20-30 | 10-20 | 60-200 | Sub-angular | 5-10 | 6-20 | Sub-angular | Grab |
| | | 1.5 | LOAM | Sandy Loam | Pale Grey | | 20-30 | 10-20 | 2-6 | Sub-angular | 5-10 | 6-20 | Sub-angular | Grab |
| | | 2.5 | LOAM | Sandy Loam | Pale Grey | | 20-30 | 10-20 | 2-6 | Sub-angular | 5-10 | 6-20 | Sub-angular | Grab |
| | | composite | LOAM | | | | | | | | | | | Composite |

**Table B4:** Laboratory analysis data for loam topsoils. Part 1 of 3.

| Table B4. Laboratory Results Loams | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-119 | | 230959-122 | | 230959-125 | | 230959-128 | | 230959-132 | |
| | **Sample ID** | 18a | | 18b | | 17a | | 17b | | 296 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | SCL | | SCL | | SL | | SL | | SCL | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 4.79 | *VH.Acid* | 4.66 | *VH.Acid* | 4.97 | *VH.Acid* | 5.09 | *VH.Acid* | 5.25 | *H.Acid* |
| **Electrical Conductivity** | dS/m | 0.08 | *VL.Sal* | 0.07 | *VL.Sal* | 0.05 | *VL.Sal* | 0.05 | *VL.Sal* | 0.1 | *L.Sal* |
| **Chloride** | mg/kg | 55.9 | *VL.Sal* | 38.6 | *VL.Sal* | 16.5 | *VL.Sal* | 43.6 | *VL.Sal* | 50.3 | *VL.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1570.0 | *M* | 1310.0 | *L* | 843.0 | *L* | 700.0 | *L* | 790.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 92.9 | * | <40.0 | * | 70.5 | * | 104.0 | * | 102.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 16.5 | *M* | 18.3 | *M* | 30.5 | *H* | 21.9 | *H* | 10.7 | *L* |
| **Potassium - Colwell ext** | mg/kg | 135.00 | *L* | 147.00 | *L* | 96.00 | *L* | 147.00 | *L* | 124.00 | *L* |
| **Sulphur - KCl** | mg/kg | 11.9 | *M* | 10.7 | *M* | 6.7 | *L* | 9.8 | *M* | 10.4 | *M* |
| **Organic Carbon** | % | 2.44 | *H* | 1.94 | *H* | 1.11 | *M* | 1.01 | *M* | 1.03 | *M* |
| **Copper** | mg/kg | 0.21 | *L* | <0.20 | *L* | <0.20 | *L* | <0.20 | *L* | 0.29 | *L* |
| **Iron** | mg/kg | 171.00 | * | 148.00 | * | 77.30 | * | 54.10 | * | 96.80 | * |
| **Manganese** | mg/kg | 5.22 | *M* | 3.22 | *M* | 5.00 | *M* | 5.26 | *M* | 3.88 | *M* |
| **Zinc** | mg/kg | 0.48 | *L* | 0.22 | *L* | 0.22 | *L* | 0.20 | *L* | 0.24 | *L* |
| **Boron** | mg/kg | 0.42 | *VL* | 0.38 | *VL* | 0.40 | *VL* | 0.34 | *VL* | 0.40 | *VL* |
| **Cation Extraction Method** | Rayment& Lyons | 15A1 | * | 15A1 | * | 15A1 | * | 15A1 | * | 15A1 | * |
| **Cation Exchange Capacity** | meq/100g | 4.3 | *VL* | 3.5 | *VL* | 2.3 | *VL* | 3.1 | *VL* | 3.8 | *VL* |
| **Ex Calcium Percent** | % | 33.33 | *L* | 10.94 | *L* | 54.13 | *L* | 50.93 | *L* | 57.43 | *L* |
| **Ex Magnesium Percent** | % | 8.01 | *L* | 2.40 | *L* | 8.66 | *L* | 15.17 | *H* | 23.27 | *H* |
| **Ex Potassium Percent** | % | 3.36 | *Normal* | 2.10 | *Normal* | 6.78 | *H* | 12.44 | *H* | 5.02 | *H* |
| **Ex Sodium Percent** | % | 1.1 | *N.Sodic* | 1.3 | *N.Sodic* | 1.9 | *N.Sodic* | 4.0 | *N.Sodic* | 4.7 | *N.Sodic* |
| **Ex Aluminium Percent** | % | 54.20 | *VH* | 83.30 | *VH* | 28.55 | *H* | 17.42 | *M* | 9.57 | *L* |
| **Exchangeable Calcium** | mg/kg | 287 | *H* | 75.9 | *Normal* | 249 | *H* | 319 | *H* | 436 | *H* |
| **Exchangeable Magnesium** | mg/kg | 41.4 | *H* | 10 | *Normal* | 23.9 | *H* | 57 | *H* | 106 | *H* |
| **Exchangeable Potassium** | mg/kg | 56.4 | *H* | 28.4 | *H* | 60.8 | *H* | 152 | *H* | 74.3 | *H* |
| **Exchangeable Sodium** | mg/kg | 10.9 | *Sodic* | 10 | *Sodic* | 10 | *Sodic* | 29.1 | *H.Sodic* | 41.1 | *H.Sodic* |
| **Exchangeable Aluminium** | mg/kg | 210.00 | *FALSE* | 260.00 | *FALSE* | 59.10 | *VH* | 49.10 | *VH* | 32.70 | *H* |
| **Exchangeable Calcium** | meq/100g | 1.44 | *VL* | 0.38 | *VL* | 1.25 | *VL* | 1.60 | *VL* | 2.18 | *L* |
| **Exchangeable Magnesium** | meq/100g | 0.35 | *L* | 0.08 | *VL* | 0.20 | *VL* | 0.48 | *L* | 0.88 | *L* |
| **Exchangeable Potassium** | meq/100g | 0.14 | *VL* | 0.07 | *VL* | 0.16 | *VL* | 0.39 | *M* | 0.19 | *VL* |
| **Exchangeable Sodium** | meq/100g | 0.05 | *VL* | 0.04 | *VL* | 0.04 | *VL* | 0.13 | *L* | 0.18 | *L* |
| **Exchangeable Aluminium** | meq/100g | 2.33 | *E* | 2.89 | *E* | 0.66 | *E* | 0.55 | *E* | 0.36 | *E* |
| **Calcium/Magnesium Ratio** | - | 4.2 | *Balanced* | 4.6 | *Balanced* | 6.3 | *Balanced* | 3.4 | *Low Ca* | 2.5 | *Low Ca* |
| **Emerson Aggregate** | Class | 5 | *Slaking* | 5 | *Slaking* | 5 | *Slaking* | 3b | *Slight Disp* | 5 | *Slaking* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B4:** Laboratory analysis data for loam topsoils. Part 2 of 3.

| TABLE B4. Laboratory Results Loams | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-264 | | 230959-268 | | 230959-272 | | 230959-276 | | 230959-364 | |
| | **Sample ID** | 47 | | 46 | | 251 | | 253 | | 34 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | LMC | | LMC | | LMC | | LMC | | SL | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 6.76 | *Neutral* | 7.67 | *L.Alk* | 7.44 | *L.Alk* | 7.68 | *L.Alk* | 5.45 | *H.Acid* |
| **Electrical Conductivity** | dS/m | 0.17 | *L.Sal* | 0.32 | *M.Sal* | 0.22 | *M.Sal* | 0.18 | *L.Sal* | 0.04 | *VL.Sal* |
| **Chloride** | mg/kg | 28.8 | *VL.Sal* | 44.0 | *VL.Sal* | 64.9 | *VL.Sal* | 164.0 | *L.Sal* | 20.3 | *VL.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1245.0 | *L* | 1450.0 | *L* | 1240.0 | *L* | 888.0 | *L* | 627.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 380.0 | * | 401.0 | * | 286.0 | * | 131.0 | * | 63.7 | * |
| **Phosphorus - Colwell extr** | mg/kg | 13.6 | *L* | 21.9 | *L* | 14.2 | *L* | 9.35 | *L* | <5.00 | *L* |
| **Potassium - Colwell ext** | mg/kg | 215.00 | *M* | 255.00 | *M* | 232.00 | *M* | 138.00 | *L* | 124.00 | *L* |
| **Sulphur - KCl** | mg/kg | 11.2 | *M* | 19.5 | *H* | 15.9 | *H* | 21.3 | *VH* | 7.8 | *L* |
| **Organic Carbon** | % | 1.22 | *M* | 1.21 | *M* | 1.12 | *M* | 0.82 | *L* | 0.69 | *L* |
| **Copper** | mg/kg | 0.73 | *M* | 0.75 | *M* | 0.67 | *M* | 0.59 | *M* | <0.20 | * |
| **Iron** | mg/kg | 13.60 | * | 11.10 | * | 7.98 | * | 8.28 | * | 46.90 | * |
| **Manganese** | mg/kg | 12.30 | *M* | 6.95 | *M* | 7.43 | *M* | 7.40 | *M* | 2.34 | *M* |
| **Zinc** | mg/kg | 0.60 | *M* | 0.88 | *M* | 0.58 | *L* | 0.40 | *L* | 1.91 | *M* |
| **Boron** | mg/kg | 0.89 | *L* | 1.05 | *M* | 1.01 | *M* | 1.03 | *M* | 0.23 | *VL* |
| **Cation Extraction Method** | Rayment& Lyons | 15A1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15A1 | * |
| **Cation Exchange Capacity** | meq/100g | 10.4 | *L* | 8.8 | *L* | 8.1 | *L* | 6.3 | *L* | 3.2 | *VL* |
| **Ex Calcium Percent** | % | 75.86 | *Normal* | 73.06 | *Normal* | 74.32 | *Normal* | 72.18 | *Normal* | 66.52 | *Normal* |
| **Ex Magnesium Percent** | % | 19.27 | *H* | 20.03 | *H* | 18.42 | *H* | 18.72 | *H* | 24.62 | *H* |
| **Ex Potassium Percent** | % | 3.91 | *Normal* | 6.05 | *H* | 5.60 | *H* | 4.82 | *Normal* | 3.77 | *Normal* |
| **Ex Sodium Percent** | % | 0.7 | *N.Sodic* | 0.62 | *N.Sodic* | 1.38 | *N.Sodic* | 3.92 | *N.Sodic* | 2.8 | *N.Sodic* |
| **Ex Aluminium Percent** | % | 0.21 | *VL* | 0.25 | *VL* | 0.28 | *VL* | 0.35 | *VL* | 2.26 | *VL* |
| **Exchangeable Calcium** | mg/kg | 1581 | *H* | 1289 | *H* | 1197 | *H* | 906 | *H* | 422 | *H* |
| **Exchangeable Magnesium** | mg/kg | 241 | *H* | 212 | *H* | 178 | *H* | 141 | *H* | 93.7 | *H* |
| **Exchangeable Potassium** | mg/kg | 159 | *H* | 208 | *H* | 176 | *H* | 118 | *H* | 46.6 | *H* |
| **Exchangeable Sodium** | mg/kg | 17.9 | *H.Sodic* | 12.6 | *Sodic* | 25.5 | *H.Sodic* | 56.6 | *H.Sodic* | 20.7 | *H.Sodic* |
| **Exchangeable Aluminium** | mg/kg | 2.00 | *VL* | 2 | * | 2 | * | 2 | * | 6.45 | * |
| **Exchangeable Calcium** | meq/100g | 7.91 | *M* | 6.45 | *M* | 5.99 | *M* | 4.53 | *L* | 2.11 | *L* |
| **Exchangeable Magnesium** | meq/100g | 2.01 | *M* | 1.77 | *M* | 1.48 | *M* | 1.18 | *M* | 0.78 | *L* |
| **Exchangeable Potassium** | meq/100g | 0.41 | *M* | 0.53 | *M* | 0.45 | *M* | 0.30 | *M* | 0.12 | *VL* |
| **Exchangeable Sodium** | meq/100g | 0.08 | *VL* | 0.05 | *VL* | 0.11 | *L* | 0.25 | *L* | 0.09 | *VL* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.07 | *E* |
| **Calcium/Magnesium Ratio** | - | 3.9 | *Low Ca* | 3.6 | *Low Ca* | 4.0 | *Balanced* | 3.9 | *Low Ca* | 2.7 | *Low Ca* |
| **Emerson Aggregate** | Class | 5 | *Slaking* | 5 | *Slaking* | 5 | *Slaking* | 5 | *Slaking* | 3b | *Slight Disp* |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B4:** Laboratory analysis data for loam topsoils. Part 3 of 3.

| TABLE B4. Laboratory Results Loams | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab No | Mean | | LCL | UCL | Std Dev | Count | CI 95% | 10%ile | | 90%ile | | Min | Max |
| | Sample ID | | | 95% | 95% | | | (+/-) | | | | | | |
| | Sample Depth | | | | | | | | | | | | | |
| | Field Texture | | | | | | | | | | | | | |
| Analyses | Unit | | | | | | | | | | | | | |
| pH - Water | pH units | 6.0 | M.acid | 5.2 | 6.8 | 1.3 | 10 | 0.8 | 4.8 | VH.Acid | 7.7 | L.Alk | 4.7 | 7.7 |
| Electrical Conductivity | dS/m | 0.1 | L.Sal | 0.07 | 0.19 | 0.1 | 10 | 0.06 | 0.0 | VL.Sal | 0.2 | M.Sal | 0.0 | 0.3 |
| Chloride | mg/kg | 52.7 | VL.Sal | 27 | 79 | 42.0 | 10 | 26 | 19.9 | VL.Sal | 74.8 | VL.Sal | 16.5 | 164.0 |
| Total Nitrogen - Kjeldahl | mg/kg | 1066.3 | L | 859 | 1274 | 334.6 | 10 | 207 | 692.7 | L | 1462.0 | L | 627.0 | 1570.0 |
| Total Phosphorus - Nitric/Perchloric | mg/kg | 181.2 | * | 93 | 270 | 135.8 | 9 | 89 | 69.1 | * | 384.2 | * | 63.7 | 401.0 |
| Phosphorus - Colwell extr | mg/kg | 17.4 | * | 13 | 22 | 6.6 | 9 | 4 | 10.4 | * | 23.6 | * | 9.4 | 30.5 |
| Potassium - Colwell ext | mg/kg | 161.3 | * | 128 | 194 | 53.1 | 10 | 33 | 121.2 | * | 234.3 | * | 96.0 | 255.0 |
| Sulphur - KCl | mg/kg | 12.5 | H | 9.52 | 15.52 | 4.8 | 10 | 3.00 | 7.7 | L | 19.7 | H | 6.7 | 21.3 |
| Organic Carbon | % | 1.3 | M | 0.93 | 1.59 | 0.5 | 10 | 0.33 | 0.8 | L | 2.0 | H | 0.7 | 2.4 |
| Copper | mg/kg | 0.5 | M | 0.35 | 0.73 | 0.2 | 6 | 0.19 | 0.3 | L | 0.7 | M | 0.2 | 0.8 |
| Iron | mg/kg | 63.5 | * | 27 | 100 | 59.4 | 10 | 37 | 8.3 | * | 150.3 | * | 8.0 | 171.0 |
| Manganese | mg/kg | 5.9 | M | 4.14 | 7.66 | 2.8 | 10 | 1.76 | 3.1 | M | 7.9 | M | 2.3 | 12.3 |
| Zinc | mg/kg | 0.6 | M | 0.25 | 0.89 | 0.5 | 10 | 0.32 | 0.2 | L | 1.0 | M | 0.2 | 1.9 |
| Boron | mg/kg | 0.6 | L | 0.41 | 0.82 | 0.3 | 10 | 0.21 | 0.3 | VL | 1.0 | M | 0.2 | 1.1 |
| Cation Extraction Method | Rayment& Lyons | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Cation Exchange Capacity | meq/100g | 5.4 | VL | 3.6 | 7.1 | 2.8 | 10 | 1.8 | 3.0 | VL | 9.0 | L | 2.3 | 10.4 |
| Ex Calcium Percent | % | 56.9 | L | 43.9 | 69.9 | 21.0 | 10 | 13.0 | 31.1 | L | 74.5 | Normal | 10.9 | 75.9 |
| Ex Magnesium Percent | % | 15.9 | H | 11.4 | 20.3 | 7.2 | 10 | 4.5 | 7.5 | L | 23.4 | H | 2.4 | 24.6 |
| Ex Potassium Percent | % | 5.4 | H | 3.6 | 7.1 | 2.8 | 10 | 1.8 | 3.2 | Normal | 7.3 | H | 2.1 | 12.4 |
| Ex Sodium Percent | % | 2.2 | N.Sodic | 1.3 | 3.2 | 1.5 | 10 | 0.9 | 0.7 | N.Sodic | 4.1 | N.Sodic | 0.6 | 4.7 |
| Ex Aluminium Percent | % | 19.6 | M | 2.1 | 37.2 | 28.4 | 10 | 17.6 | 0.2 | VL | 57.1 | VH | 0.2 | 83.3 |
| Exchangeable Calcium | mg/kg | 676.2 | H | 352.0 | 1000.4 | 523.1 | 10 | 324.2 | 231.7 | H | 1318.2 | H | 75.9 | 1581.0 |
| Exchangeable Magnesium | mg/kg | 110.4 | H | 60.5 | 160.3 | 80.5 | 10 | 49.9 | 22.5 | H | 214.9 | H | 10.0 | 241.0 |
| Exchangeable Potassium | mg/kg | 108.0 | H | 69.1 | 146.8 | 62.7 | 10 | 38.9 | 44.8 | H | 179.2 | H | 28.4 | 208.0 |
| Exchangeable Sodium | mg/kg | 23.4 | H.Sodic | 13.9 | 33.0 | 15.4 | 10 | 9.5 | 10.0 | H.Sodic | 42.7 | H.Sodic | 10.0 | 56.6 |
| Exchangeable Aluminium | mg/kg | 62.5 | * | 4.2 | 120.8 | 94.1 | 10 | 58.3 | 2.0 | * | 215.0 | * | 2.0 | 260.0 |
| Exchangeable Calcium | meq/100g | 3.4 | L | 1.8 | 5.0 | 2.6 | 10 | 1.6 | 1.2 | VL | 6.6 | M | 0.4 | 7.9 |
| Exchangeable Magnesium | meq/100g | 0.9 | L | 0.5 | 1.3 | 0.7 | 10 | 0.4 | 0.2 | VL | 1.8 | M | 0.1 | 2.0 |
| Exchangeable Potassium | meq/100g | 0.3 | L | 0.2 | 0.4 | 0.2 | 10 | 0.1 | 0.1 | VL | 0.5 | M | 0.1 | 0.5 |
| Exchangeable Sodium | meq/100g | 0.1 | L | 0.1 | 0.1 | 0.1 | 10 | 0.0 | 0.0 | VL | 0.2 | L | 0.0 | 0.2 |
| Exchangeable Aluminium | meq/100g | 0.7 | E | 0.0 | 1.3 | 1.0 | 10 | 0.6 | 0.0 | VH | 2.4 | E | 0.0 | 2.9 |
| Calcium/Magnesium Ratio | - | 3.9 | Low Ca | 3.2 | 4.5 | 1.0 | 10 | 0.6 | 2.7 | Low Ca | 4.7 | Balanced | 2.5 | 6.3 |
| Emerson Aggregate | Class | 5.0 | * | * | * | * | * | * | * | * | * | * | * | * |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay topsoils. Part 1 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-4 | | 230959-8 | | 230959-12 | | 230959-16 | | 230959-20 | | 230959-24 | |
| | **Sample ID** | 166 | | 191 | | 165 | | 163 | | 161 | | 156 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | MC | | MC | | LC | | LC | | LC | | LC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.02 | *M.Alk* | 8.66 | *H.Alk* | 9.08 | *E.Alk* | 8.43 | *M.Alk* | 8.66 | *H.Alk* | 9.05 | *E.Alk* |
| **Electrical Conductivity** | dS/m | 1.29 | *E.Sal* | 0.80 | *VH.Sal* | 0.23 | *M.Sal* | 0.36 | *M.Sal* | 0.40 | *M.Sal* | 0.21 | *M.Sal* |
| **Chloride** | mg/kg | 2019.0 | *E.Sal* | 1024.0 | *H.Sal* | 131.0 | *L.Sal* | 184.0 | *L.Sal* | 442.0 | *M.Sal* | 108.0 | *L.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 645.0 | *L* | 517.0 | *L* | 616.0 | *L* | 1425.0 | *L* | 935.0 | *L* | 919.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 233.0 | | 194.0 | * | 154.0 | * | 260.0 | * | 163.0 | * | 220.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 25.4 | *L* | <5.00 | *L* | 5.2 | *L* | 20.5 | *M* | 10.1 | *L* | 8.0 | *L* |
| **Potassium - Colwell ext** | mg/kg | 158.00 | *L* | 103.00 | *VL* | 184.00 | *M* | 181.00 | *M* | 153.00 | *L* | 119.00 | *VL* |
| **Sulphur - KCl** | mg/kg | 84.6 | *VH* | 88.2 | *VH* | 31.0 | *VH* | 39.2 | *VH* | 33.7 | *VH* | 36.4 | *VH* |
| **Organic Carbon** | % | 0.96 | *L* | 1.10 | *M* | 0.93 | *L* | 1.71 | *M* | 1.14 | *M* | 1.37 | *M* |
| **Copper** | mg/kg | 1.11 | *M* | 1.27 | *M* | 0.59 | *M* | 0.79 | *M* | 0.53 | *M* | 1.05 | *M* |
| **Iron** | mg/kg | 15.50 | * | 8.86 | * | 13.70 | * | 15.00 | * | 11.70 | * | 12.30 | * |
| **Manganese** | mg/kg | 5.06 | *M* | 5.64 | *M* | 3.78 | *M* | 4.92 | *M* | 6.06 | *M* | 5.20 | *M* |
| **Zinc** | mg/kg | 0.20 | *VL* | 0.20 | *VL* | <0.20 | *L* | 0.24 | *VL* | <0.20 | *L* | <0.20 | *L* |
| **Boron** | mg/kg | 2.55 | *H* | 2.55 | *H* | 1.65 | *M* | 1.45 | *M* | 1.58 | *M* | 2.75 | *H* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 17.0 | *M* | 20.5 | * | 19.2 | * | 20.6 | * | 18.1 | * | 18.6 | * |
| **Ex Calcium Percent** | % | 45.97 | *L* | 53.70 | * | 58.63 | * | 72.23 | * | 66.20 | * | 65.01 | * |
| **Ex Magnesium Percent** | % | 36.04 | *H* | 28.84 | * | 29.80 | * | 20.23 | * | 23.98 | * | 22.86 | * |
| **Ex Potassium Percent** | % | 1.87 | *Normal* | 1.10 | * | 0.77 | * | 1.61 | * | 1.41 | * | 1.45 | * |
| **Ex Sodium Percent** | % | 16.00 | *H.Sodic* | 16.26 | *H.Sodic* | 10.69 | *Sodic* | 5.83 | *N.Sodic* | 8.29 | *Sodic* | 10.57 | *Sodic* |
| **Ex Aluminium Percent** | % | 0.13 | *VL* | 0.11 | *VL* | 0.12 | *VL* | 0.11 | *VL* | 0.12 | *VL* | 0.12 | *VL* |
| **Exchangeable Calcium** | mg/kg | 1567 | *H* | 2200 | *H* | 2256 | *H* | 2975 | *H* | 2397 | *H* | 2413 | *H* |
| **Exchangeable Magnesium** | mg/kg | 737 | *H* | 709 | *H* | 688 | *H* | 500 | *H* | 521 | *H* | 509 | *H* |
| **Exchangeable Potassium** | mg/kg | 124 | *H* | 87.7 | *H* | 57.7 | *H* | 129 | *H* | 99.7 | *H* | 105 | *H* |
| **Exchangeable Sodium** | mg/kg | 627 | *FALSE* | 766 | *FALSE* | 473 | *FALSE* | 276 | *FALSE* | 345 | *FALSE* | 451 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2.0 | *VL* | 2.0 | *VL* | 2.0 | *VL* | 2.0 | *VL* | 2.0 | *VL* | 2.0 | *VL* |
| **Exchangeable Calcium** | meq/100g | 7.84 | *M* | 11.00 | *H* | 11.28 | *H* | 14.88 | *H* | 11.99 | *H* | 12.07 | *H* |
| **Exchangeable Magnesium** | meq/100g | 6.14 | *H* | 5.91 | *H* | 5.73 | *H* | 4.17 | *H* | 4.34 | *H* | 4.24 | *H* |
| **Exchangeable Potassium** | meq/100g | 0.32 | *M* | 0.22 | *L* | 0.15 | *VL* | 0.33 | *M* | 0.26 | *L* | 0.27 | *L* |
| **Exchangeable Sodium** | meq/100g | 2.73 | *VH* | 3.33 | *VH* | 2.06 | *VH* | 1.20 | *H* | 1.50 | *H* | 1.96 | *H* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 1.3 | *Low Ca* | 1.9 | *Low Ca* | 2.0 | *Low Ca* | 3.6 | *Low Ca* | 2.8 | *Low Ca* | 2.8 | *Low Ca* |
| **Emerson Aggregate** | Class | 6.0 | *Slaking* | 6.0 | *Slaking* | 4.0 | *Slaking* | 5.0 | *Slaking* | 4.0 | *Slaking* | 4.0 | *Slaking* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay **top**soils. Part 2 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-28 | | 230959-32 | | 230959-36 | | 230959-40 | | 230959-44 | | 230959-48 | |
| | **Sample ID** | 157 | | 152 | | 130 | | 126 | | 124 | | 123 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | LC | | LC | | LC | | HC | | LMC | | ZCL | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.49 | *M.Alk* | 8.54 | *H.Alk* | 8.76 | *H.Alk* | 8.48 | *M.Alk* | 8.59 | *H.Alk* | 8.52 | *H.Alk* |
| **Electrical Conductivity** | dS/m | 0.6 | *H.Sal* | 0.35 | *M.Sal* | 0.39 | *M.Sal* | 0.39 | *M.Sal* | 0.27 | *M.Sal* | 0.23 | *M.Sal* |
| **Chloride** | mg/kg | 658.0 | *H.Sal* | 181.0 | *L.Sal* | 421.0 | *M.Sal* | 395.0 | *M.Sal* | 171.0 | *L.Sal* | 34.8 | *VL.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 747.0 | *L* | 1008.0 | *L* | 894.0 | *L* | 1020.0 | *L* | 1292.0 | *L* | 885.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 263.0 | * | 228.0 | * | 233.0 | * | 199.0 | * | 231.0 | * | 210.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | <5.00 | | 9.04 | *L* | <5.00 | | <5.00 | *L* | 15.6 | *L* | <5.00 | *L* |
| **Potassium - Colwell ext** | mg/kg | 119.00 | *VL* | 123.00 | *L* | 106.00 | *VL* | 165.00 | *L* | 157.00 | *L* | 172.00 | *M* |
| **Sulphur - KCl** | mg/kg | 69.1 | *VH* | 44.6 | *VH* | 42.0 | *VH* | 36.5 | *VH* | 29.3 | *VH* | 22.2 | *VH* |
| **Organic Carbon** | % | 1.15 | *M* | 1.28 | *M* | 1.22 | *M* | 1.54 | *M* | 1.54 | *M* | 1.33 | *M* |
| **Copper** | mg/kg | 0.81 | *M* | 1.21 | *M* | 0.81 | *M* | 0.77 | *M* | 1.09 | *M* | 0.53 | *M* |
| **Iron** | mg/kg | 12.00 | * | 15.10 | * | 14.80 | * | 14.80 | * | 14.70 | * | 13.10 | * |
| **Manganese** | mg/kg | 4.06 | *M* | 8.16 | *M* | 3.92 | *M* | 5.52 | *M* | 6.16 | *M* | 6.86 | *M* |
| **Zinc** | mg/kg | 0.22 | *VL* | 0.20 | *VL* | <0.20 | *L* | <0.20 | *L* | 3.32 | *M* | 0.22 | *VL* |
| **Boron** | mg/kg | 2.80 | *H* | 1.65 | *M* | 2.50 | *H* | 2.30 | *H* | 3.00 | *H* | 1.60 | *M* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 18.2 | * | 20.5 | * | 14.3 | * | 14.3 | * | 16.4 | * | 12.1 | * |
| **Ex Calcium Percent** | % | 57.88 | * | 67.26 | * | 59.79 | * | 63.12 | * | 64.35 | * | 71.73 | * |
| **Ex Magnesium Percent** | % | 27.34 | * | 24.09 | * | 26.61 | * | 26.40 | * | 26.69 | * | 20.34 | * |
| **Ex Potassium Percent** | % | 1.54 | * | 1.18 | * | 1.46 | * | 1.70 | * | 1.88 | * | 2.08 | * |
| **Ex Sodium Percent** | % | 13.12 | *Sodic* | 7.36 | *Sodic* | 11.99 | *Sodic* | 8.62 | *Sodic* | 6.95 | *Sodic* | 5.66 | *N.Sodic* |
| **Ex Aluminium Percent** | % | 0.12 | *VL* | 0.11 | *VL* | 0.16 | *VL* | 0.16 | *VL* | 0.14 | *VL* | 0.18 | *VL* |
| **Exchangeable Calcium** | mg/kg | 2106 | *H* | 2764 | *H* | 1704 | *H* | 1801 | *H* | 2110 | *H* | 1740 | *H* |
| **Exchangeable Magnesium** | mg/kg | 597 | *H* | 594 | *H* | 455 | *H* | 452 | *H* | 525 | *H* | 296 | *H* |
| **Exchangeable Potassium** | mg/kg | 109 | *H* | 94.5 | *H* | 81.2 | *H* | 94.5 | *H* | 120 | *H* | 98.6 | *H* |
| **Exchangeable Sodium** | mg/kg | 549 | *FALSE* | 348 | *FALSE* | 393 | *FALSE* | 283 | *FALSE* | 262 | *FALSE* | 158 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* |
| **Exchangeable Calcium** | meq/100g | 10.53 | *H* | 13.82 | *H* | 8.52 | *M* | 9.01 | *M* | 10.55 | *H* | 8.70 | *M* |
| **Exchangeable Magnesium** | meq/100g | 4.98 | *H* | 4.95 | *H* | 3.79 | *H* | 3.77 | *H* | 4.38 | *H* | 2.47 | *M* |
| **Exchangeable Potassium** | meq/100g | 0.28 | *L* | 0.24 | *L* | 0.21 | *L* | 0.24 | *L* | 0.31 | *M* | 0.25 | *L* |
| **Exchangeable Sodium** | meq/100g | 2.39 | *VH* | 1.51 | *H* | 1.71 | *H* | 1.23 | *H* | 1.14 | *H* | 0.69 | *M* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 2.1 | *Low Ca* | 2.8 | *Low Ca* | 2.2 | *Low Ca* | 2.4 | *Low Ca* | 2.4 | *Low Ca* | 3.5 | *Low Ca* |
| **Emerson Aggregate** | Class | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 5 | *Slaking* | 4 | *Slaking* | 7 | *Stable* |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay topsoils. Part 3 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-56 | | 230959-60 | | 230959-64 | | 230959-68 | | 230959-72 | | 230959-76 | |
| | **Sample ID** | 314 | | 111 | | 108 | | 270 | | 93 | | 291 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | LC | | LC | | LMC | | LC | | LC | | LMC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.61 | *H.Alk* | 8.2 | *M.Alk* | 8.5 | *H.Alk* | 9.02 | *E.Alk* | 8.01 | *M.Alk* | 8.65 | *H.Alk* |
| **Electrical Conductivity** | dS/m | 0.17 | *L.Sal* | 0.32 | *M.Sal* | 0.29 | *M.Sal* | 0.44 | *M.Sal* | 0.44 | *M.Sal* | 0.2 | *M.Sal* |
| **Chloride** | mg/kg | 84.0 | *VL.Sal* | 370.0 | *M.Sal* | 215.0 | *L.Sal* | 454.0 | *M.Sal* | 63.2 | *VL.Sal* | 125.0 | *L.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1165.0 | *L* | 742.0 | *L* | 771.0 | *L* | 830.0 | *L* | 1630.0 | *M* | 1196.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 230.0 | * | 189.0 | * | 135.0 | * | 337.0 | * | 258.0 | * | 194.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | <5.00 | *L* | <5.00 | *L* | <5.00 | *L* | <5.00 | *L* | <5.00 | *L* | 19.4 | *L* |
| **Potassium - Colwell ext** | mg/kg | 176.00 | *L* | 111.00 | *VL* | 123.00 | *L* | 229.00 | *M* | 226.00 | *M* | 218.00 | *M* |
| **Sulphur - KCl** | mg/kg | 19.5 | *H* | 24.9 | *VH* | 21.7 | *VH* | 43.8 | *VH* | 57.3 | *VH* | 24.1 | *VH* |
| **Organic Carbon** | % | 1.69 | *M* | 1.13 | *M* | 1.23 | *M* | 1.38 | *M* | 3.24 | *VH* | 1.73 | *M* |
| **Copper** | mg/kg | 0.73 | *M* | 0.55 | *M* | 0.43 | *M* | 0.97 | *M* | 0.55 | *M* | 0.79 | *M* |
| **Iron** | mg/kg | 13.70 | * | 13.50 | * | 15.60 | * | 14.80 | * | 15.60 | * | 18.10 | * |
| **Manganese** | mg/kg | 6.82 | *M* | 6.48 | *M* | 6.14 | *M* | 5.62 | *M* | 5.76 | *M* | 5.20 | *M* |
| **Zinc** | mg/kg | 0.26 | *VL* | <0.20 | *L* | <0.20 | *L* | <0.20 | *L* | 0.26 | *VL* | 0.20 | *VL* |
| **Boron** | mg/kg | 1.45 | *M* | 1.48 | *M* | 1.85 | *M* | 2.45 | *H* | 1.35 | *M* | 1.60 | *M* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 15.1 | * | 14.7 | * | 25.7 | * | 18.4 | * | 18.5 | * | 19.0 | * |
| **Ex Calcium Percent** | % | 66.37 | * | 67.53 | * | 60.02 | * | 57.33 | * | 80.26 | * | 66.54 | * |
| **Ex Magnesium Percent** | % | 24.30 | * | 22.24 | * | 29.91 | * | 26.05 | * | 15.39 | * | 24.53 | * |
| **Ex Potassium Percent** | % | 2.45 | * | 1.46 | * | 0.83 | * | 1.85 | * | 1.86 | * | 2.21 | * |
| **Ex Sodium Percent** | % | 6.74 | *Sodic* | 8.62 | *Sodic* | 9.15 | *Sodic* | 14.65 | *H.Sodic* | 2.37 | *N.Sodic* | 6.60 | *Sodic* |
| **Ex Aluminium Percent** | % | 0.15 | *VL* | 0.15 | *VL* | 0.09 | *VL* | 0.12 | *VL* | 0.12 | *VL* | 0.12 | *VL* |
| **Exchangeable Calcium** | mg/kg | 2003 | *H* | 1989 | *H* | 3080 | *H* | 2113 | *H* | 2973 | *H* | 2532 | *H* |
| **Exchangeable Magnesium** | mg/kg | 440 | *H* | 393 | *H* | 921 | *H* | 576 | *H* | 342 | *H* | 560 | *H* |
| **Exchangeable Potassium** | mg/kg | 144 | *H* | 84 | *H* | 83.5 | *H* | 133 | *H* | 134 | *H* | 164 | *H* |
| **Exchangeable Sodium** | mg/kg | 234 | *FALSE* | 292 | *FALSE* | 540 | *FALSE* | 621 | *FALSE* | 101 | *FALSE* | 289 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* |
| **Exchangeable Calcium** | meq/100g | 10.02 | *H* | 9.95 | *M* | 15.40 | *H* | 10.57 | *H* | 14.87 | *H* | 12.66 | *H* |
| **Exchangeable Magnesium** | meq/100g | 3.67 | *H* | 3.28 | *H* | 7.68 | *H* | 4.80 | *H* | 2.85 | *M* | 4.67 | *H* |
| **Exchangeable Potassium** | meq/100g | 0.37 | *M* | 0.22 | *L* | 0.21 | *L* | 0.34 | *M* | 0.34 | *M* | 0.42 | *M* |
| **Exchangeable Sodium** | meq/100g | 1.02 | *H* | 1.27 | *H* | 2.35 | *VH* | 2.70 | *VH* | 0.44 | *M* | 1.26 | *H* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 2.7 | *Low Ca* | 3.0 | *Low Ca* | 2.0 | *Low Ca* | 2.2 | *Low Ca* | 5.2 | *Balanced* | 2.7 | *Low Ca* |
| **Emerson Aggregate** | Class | 4 | *Slaking* | 5 | *Slaking* | 5 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 5 | *Slaking* |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay topsoils. Part 4 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-80 | | 230959-84 | | 230959-88 | | 230959-92 | | 230959-96 | | 230959-100 | |
| | **Sample ID** | 291 (b) | | 86 | | 81 | | 82 | | 73 | | 67 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | HC | | CL | | LC | | LC | | LC | | LMC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.93 | *H.Alk* | 8.3 | *M.Alk* | 7.15 | *Neutral* | 8.58 | *H.Alk* | 8.89 | *H.Alk* | 8.72 | *H.Alk* |
| **Electrical Conductivity** | dS/m | 0.44 | *M.Sal* | 0.28 | *M.Sal* | 0.13 | *L.Sal* | 0.29 | *M.Sal* | 0.17 | *L.Sal* | 0.46 | *H.Sal* |
| **Chloride** | mg/kg | 456.0 | *M.Sal* | 58.8 | *VL.Sal* | 73.7 | *VL.Sal* | 280.0 | *L.Sal* | 60.6 | *VL.Sal* | 444.0 | *M.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 710.0 | *L* | 1420.0 | *L* | 784.0 | *L* | 1052.0 | *L* | 816.0 | *L* | 1050.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 213.0 | * | 252.0 | * | 223.0 | * | 247.0 | * | 161.0 | * | 242.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | <5.00 | *L* | 5.76 | *L* | 69.9 | *H* | <5.00 | *L* | <5.00 | *L* | <5.00 | *L* |
| **Potassium - Colwell ext** | mg/kg | 111.00 | *VL* | 241.00 | *M* | 136.00 | *L* | 228.00 | *M* | 110.00 | *VL* | 130.00 | *L* |
| **Sulphur - KCl** | mg/kg | 38.0 | *VH* | 28.0 | *VH* | 13.1 | *H* | 26.8 | *VH* | 24.2 | *VH* | 51.7 | *VH* |
| **Organic Carbon** | % | 1.22 | *M* | 2.19 | *H* | 1.06 | *M* | 1.53 | *M* | 1.21 | *M* | 1.17 | *M* |
| **Copper** | mg/kg | 0.55 | *M* | 0.77 | *M* | 0.91 | *M* | 0.77 | *M* | 0.81 | *M* | 1.1 | *M* |
| **Iron** | mg/kg | 15.20 | * | 19.20 | * | 27.40 | * | 15.50 | * | 14.50 | * | 6.68 | * |
| **Manganese** | mg/kg | 3.74 | *M* | 6.56 | *M* | 10.40 | *M* | 5.99 | *M* | 6.60 | *M* | 5.81 | *M* |
| **Zinc** | mg/kg | <0.20 | *L* | 0.28 | *VL* | 0.34 | *L* | 0.22 | *VL* | <0.20 | *L* | 0.27 | *VL* |
| **Boron** | mg/kg | 3.15 | *H* | 1.60 | *M* | 1.90 | *M* | 1.85 | *M* | 1.65 | *M* | 1.28 | *M* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15A1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 21.0 | * | 18.5 | * | 17.7 | *M* | 18.2 | * | 20.9 | * | 28.9 | * |
| **Ex Calcium Percent** | % | 56.51 | * | 70.67 | * | 60.96 | *L* | 66.19 | * | 64.79 | * | 61.25 | * |
| **Ex Magnesium Percent** | % | 27.00 | * | 22.56 | * | 31.29 | *H* | 23.71 | * | 26.13 | * | 27.72 | * |
| **Ex Potassium Percent** | % | 0.88 | * | 2.33 | * | 1.79 | *Normal* | 1.93 | * | 1.08 | * | 0.90 | * |
| **Ex Sodium Percent** | % | 15.49 | *H.Sodic* | 4.31 | *N.Sodic* | 5.8 | *N.Sodic* | 8.05 | *Sodic* | 7.90 | *Sodic* | 10.05 | *Sodic* |
| **Ex Aluminium Percent** | % | 0.11 | *VL* | 0.12 | *VL* | 0.13 | *VL* | 0.12 | *VL* | 0.11 | *VL* | 0.08 | *VL* |
| **Exchangeable Calcium** | mg/kg | 2379 | *H* | 2610 | *H* | 2163 | *H* | 2410 | *H* | 2711 | *H* | 3539 | *H* |
| **Exchangeable Magnesium** | mg/kg | 682 | *H* | 500 | *H* | 666 | *H* | 518 | *H* | 656 | *H* | 961 | *H* |
| **Exchangeable Potassium** | mg/kg | 72.6 | *H* | 168 | *H* | 124 | *H* | 137 | *H* | 87.8 | *H* | 101 | *H* |
| **Exchangeable Sodium** | mg/kg | 750 | *FALSE* | 183 | *FALSE* | 238 | *FALSE* | 337 | *FALSE* | 380 | *FALSE* | 668 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2.00 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* |
| **Exchangeable Calcium** | meq/100g | 11.90 | *H* | 13.05 | *H* | 10.82 | *H* | 12.05 | *H* | 13.56 | *H* | 17.70 | *H* |
| **Exchangeable Magnesium** | meq/100g | 5.68 | *H* | 4.17 | *H* | 5.55 | *H* | 4.32 | *H* | 5.47 | *H* | 8.01 | *VH* |
| **Exchangeable Potassium** | meq/100g | 0.19 | *VL* | 0.43 | *M* | 0.32 | *M* | 0.35 | *M* | 0.23 | *L* | 0.26 | *L* |
| **Exchangeable Sodium** | meq/100g | 3.26 | *VH* | 0.80 | *H* | 1.03 | *H* | 1.47 | *H* | 1.65 | *H* | 2.90 | *VH* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 2.1 | *Low Ca* | 3.1 | *Low Ca* | 1.9 | *Low Ca* | 2.8 | *Low Ca* | 2.5 | *Low Ca* | 2.2 | *Low Ca* |
| **Emerson Aggregate** | Class | 4 | *Slaking* | 5 | *Slaking* | 3b | *Slight Disp.* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay topsoils. Part 5 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-104 | | 230959-108 | | 230959-112 | | 230959-116 | | 230959-136 | | 230959-140 | |
| | **Sample ID** | 71 | | 69 | | 61 | | 61 (b) | | 48 | | 284 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | LMC | | LMC | | LMC | | LMC | | LMC | | LMC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.43 | *M.Alk* | 8.87 | *H.Alk* | 8.74 | *H.Alk* | 8.75 | *H.Alk* | 6.67 | *Neutral* | 8.09 | *M.Alk* |
| **Electrical Conductivity** | dS/m | 0.19 | *M.Sal* | 0.21 | *M.Sal* | 0.35 | *M.Sal* | 0.36 | *M.Sal* | 0.21 | *M.Sal* | 0.44 | *M.Sal* |
| **Chloride** | mg/kg | 99.5 | *VL.Sal* | 81.1 | *VL.Sal* | 315.0 | *M.Sal* | 343.0 | *M.Sal* | 49.2 | *VL.Sal* | 280.0 | *L.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1260.0 | *L* | 1010.0 | *L* | 1230.0 | *L* | 1330.0 | *L* | 1310.0 | *L* | 1410.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 138.0 | * | 163.0 | * | 213.0 | * | 190.0 | * | 259.0 | * | 340.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | <5.00 | *L* | <5.00 | *L* | 6.26 | *L* | 5.37 | *L* | 18.7 | *L* | 11.1 | *L* |
| **Potassium - Colwell ext** | mg/kg | 118.00 | *VL* | 154.00 | *L* | 148.00 | *L* | 136.00 | *L* | 207.00 | *M* | 192.00 | *M* |
| **Sulphur - KCl** | mg/kg | 7.6 | *L* | 11.0 | *M* | 12.3 | *H* | 11.5 | *M* | 12.0 | *H* | 26.8 | *VH* |
| **Organic Carbon** | % | 1.28 | *M* | 0.95 | *L* | 1.1 | *M* | 1.43 | *M* | 0.92 | *L* | 1.37 | *M* |
| **Copper** | mg/kg | 1.23 | *M* | 0.85 | *M* | 0.89 | *M* | 0.83 | *M* | 0.85 | *M* | 0.95 | *M* |
| **Iron** | mg/kg | 7.70 | * | 5.12 | * | 2.82 | * | 3.94 | * | 17.60 | * | 6.70 | * |
| **Manganese** | mg/kg | 13.80 | *M* | 7.22 | *M* | 5.04 | *M* | 5.16 | *M* | 15.00 | *M* | 7.28 | *M* |
| **Zinc** | mg/kg | 1.60 | *M* | 0.22 | *VL* | <0.20 | *L* | 0.26 | *VL* | 0.42 | *L* | 0.62 | *L* |
| **Boron** | mg/kg | 0.96 | *L* | 0.98 | *L* | 0.64 | *L* | 1.34 | *M* | 1.06 | *M* | 1.36 | *M* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15A1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 28.9 | * | 25.2 | * | 25.4 | * | 25.5 | * | 13.9 | *M* | 19.0 | * |
| **Ex Calcium Percent** | % | 67.80 | * | 66.64 | * | 67.76 | * | 63.59 | * | 59.43 | *L* | 70.95 | * |
| **Ex Magnesium Percent** | % | 26.02 | * | 25.83 | * | 22.21 | * | 24.90 | * | 32.88 | *H* | 20.95 | * |
| **Ex Potassium Percent** | % | 0.86 | * | 0.69 | * | 1.44 | * | 1.26 | * | 2.23 | *Normal* | 2.47 | * |
| **Ex Sodium Percent** | % | 5.25 | *N.Sodic* | 6.75 | *Sodic* | 8.49 | *Sodic* | 10.16 | *Sodic* | 5.3 | *N.Sodic* | 5.51 | * |
| **Ex Aluminium Percent** | % | 0.08 | *VL* | 0.09 | *VL* | 0.09 | *VL* | 0.09 | *VL* | 0.16 | *VL* | 0.12 | *VL* |
| **Exchangeable Calcium** | mg/kg | 3918 | *H* | 3363 | *H* | 3442 | *H* | 3243 | *H* | 1657 | *H* | 2698 | *H* |
| **Exchangeable Magnesium** | mg/kg | 902 | *H* | 782 | *H* | 677 | *H* | 762 | *H* | 550 | *H* | 478 | *H* |
| **Exchangeable Potassium** | mg/kg | 96.4 | *H* | 67.9 | *H* | 143 | *H* | 125 | *H* | 121 | *H* | 183 | *H* |
| **Exchangeable Sodium** | mg/kg | 349 | *FALSE* | 392 | *FALSE* | 496 | *FALSE* | 596 | *FALSE* | 170 | *FALSE* | 241 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2.00 | *VL* | 2 | *VL* |
| **Exchangeable Calcium** | meq/100g | 19.59 | *H* | 16.82 | *H* | 17.21 | *H* | 16.22 | *H* | 8.29 | *M* | 13.49 | *H* |
| **Exchangeable Magnesium** | meq/100g | 7.52 | *H* | 6.52 | *H* | 5.64 | *H* | 6.35 | *H* | 4.58 | *H* | 3.98 | *H* |
| **Exchangeable Potassium** | meq/100g | 0.25 | *L* | 0.17 | *VL* | 0.37 | *M* | 0.32 | *M* | 0.31 | *M* | 0.47 | *M* |
| **Exchangeable Sodium** | meq/100g | 1.52 | *H* | 1.70 | *H* | 2.16 | *VH* | 2.59 | *VH* | 0.74 | *H* | 1.05 | *H* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 2.6 | *Low Ca* | 2.6 | *Low Ca* | 3.1 | *Low Ca* | 2.6 | *Low Ca* | 1.8 | *Low Ca* | 3.4 | *Low Ca* |
| **Emerson Aggregate** | Class | 5 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 5 | *Slaking* | 5 | *Slaking* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay topsoils. Part 6 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-160 | | 230959-164 | | 230959-168 | | 230959-172 | | 230959-180 | | 230959-184 | |
| | **Sample ID** | 255 | | 210 | | 102 | | 103 | | 216 | | 188 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | LMC | | LMC | | LMC | | LC | | MC | | MC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.92 | *H.Alk* | 8.73 | *H.Alk* | 8.73 | *H.Alk* | 9.2 | *E.Alk* | 8.76 | *H.Alk* | 8.58 | *H.Alk* |
| **Electrical Conductivity** | dS/m | 0.15 | *L.Sal* | 0.37 | *M.Sal* | 0.19 | *M.Sal* | 0.13 | *L.Sal* | 0.26 | *M.Sal* | 0.38 | *M.Sal* |
| **Chloride** | mg/kg | 67.5 | *VL.Sal* | 196.0 | *L.Sal* | 83.0 | *VL.Sal* | 13.1 | *VL.Sal* | 81.4 | *VL.Sal* | 257.0 | *L.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1450.0 | *L* | 1330.0 | *L* | 1310.0 | *L* | 922.0 | *L* | 1400.0 | *L* | 1540.0 | *M* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 529.0 | * | 296.0 | * | 357.0 | * | 525.0 | * | 277.0 | * | 231.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 49.3 | *M* | 7.14 | *L* | 11.6 | *L* | 8.47 | *L* | 12 | *L* | 8.91 | *L* |
| **Potassium - Colwell ext** | mg/kg | 173.00 | *L* | 161.00 | *L* | 142.00 | *L* | 130.00 | *L* | 180.00 | *M* | 120.00 | *L* |
| **Sulphur - KCl** | mg/kg | 9.2 | *M* | 80.0 | *VH* | 14.8 | *H* | 11.7 | *M* | 17.0 | *H* | 17.5 | *H* |
| **Organic Carbon** | % | 1.41 | *M* | 1.84 | *H* | 1.56 | *M* | 1.74 | *M* | 1.26 | *M* | 1.66 | *M* |
| **Copper** | mg/kg | 0.97 | *M* | 0.91 | *M* | 0.41 | *M* | 0.67 | *M* | 0.97 | *M* | 1.03 | *M* |
| **Iron** | mg/kg | 11.00 | * | 8.14 | * | 6.02 | * | 3.14 | * | 5.78 | * | 3.66 | * |
| **Manganese** | mg/kg | 6.10 | *M* | 5.20 | *M* | 4.72 | *M* | 3.94 | *M* | 5.48 | *M* | 4.36 | *M* |
| **Zinc** | mg/kg | 0.34 | *L* | <0.20 | *L* | <0.20 | *L* | 0.44 | *L* | 0.46 | *L* | 0.30 | *L* |
| **Boron** | mg/kg | 0.76 | *L* | 1.68 | *M* | 0.76 | *L* | 0.88 | *L* | 1.74 | *M* | 1.92 | *M* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 22.0 | * | 38.6 | * | 27.1 | * | 20.8 | * | 36.4 | * | 36.8 | * |
| **Ex Calcium Percent** | % | 69.77 | * | 71.99 | * | 72.55 | * | 58.47 | * | 71.60 | * | 71.38 | * |
| **Ex Magnesium Percent** | % | 21.80 | * | 18.90 | * | 22.48 | * | 35.64 | * | 21.82 | * | 22.53 | * |
| **Ex Potassium Percent** | % | 1.64 | * | 0.95 | * | 1.11 | * | 0.94 | * | 1.25 | * | 0.80 | * |
| **Ex Sodium Percent** | % | 6.68 | *Sodic* | 8.10 | *Sodic* | 3.78 | *N.Sodic* | 4.84 | *N.Sodic* | 5.27 | *N.Sodic* | 5.23 | *N.Sodic* |
| **Ex Aluminium Percent** | % | 0.10 | *VL* | 0.06 | *VL* | 0.08 | *VL* | 0.11 | *VL* | 0.06 | *VL* | 0.06 | *VL* |
| **Exchangeable Calcium** | mg/kg | 3068 | *H* | 5560 | *H* | 3937 | *H* | 2428 | *H* | 5218 | *H* | 5248 | *H* |
| **Exchangeable Magnesium** | mg/kg | 575 | *H* | 876 | *H* | 732 | *H* | 888 | *H* | 954 | *H* | 994 | *H* |
| **Exchangeable Potassium** | mg/kg | 141 | *H* | 143 | *H* | 117 | *H* | 76.2 | *H* | 177 | *H* | 114 | *H* |
| **Exchangeable Sodium** | mg/kg | 338 | *FALSE* | 719 | *FALSE* | 236 | *FALSE* | 231 | *FALSE* | 442 | *FALSE* | 442 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* |
| **Exchangeable Calcium** | meq/100g | 15.34 | *H* | 27.80 | *VH* | 19.69 | *H* | 12.14 | *H* | 26.09 | *VH* | 26.24 | *VH* |
| **Exchangeable Magnesium** | meq/100g | 4.79 | *H* | 7.30 | *H* | 6.10 | *H* | 7.40 | *H* | 7.95 | *H* | 8.28 | *VH* |
| **Exchangeable Potassium** | meq/100g | 0.36 | *M* | 0.37 | *M* | 0.30 | *M* | 0.20 | *VL* | 0.45 | *M* | 0.29 | *L* |
| **Exchangeable Sodium** | meq/100g | 1.47 | *H* | 3.13 | *VH* | 1.03 | *H* | 1.00 | *H* | 1.92 | *H* | 1.92 | *H* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 3.2 | *Low Ca* | 3.8 | *Low Ca* | 3.2 | *Low Ca* | 1.6 | *Low Ca* | 3.3 | *Low Ca* | 3.2 | *Low Ca* |
| **Emerson Aggregate** | Class | 3b | *Slight Disp.* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay soils. Part 7 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-188 | | 230959-192 | | 230959-204 | | 230959-208 | | 230959-216 | | 230959-220 | |
| | **Sample ID** | 145 | | 148 | | 231a | | 231b | | 275 | | 278 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | MC | | MC | | LMC | | LMC | | LMC | | LMC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.63 | *H.Alk* | 8.83 | *H.Alk* | 8.67 | *H.Alk* | 8.46 | *M.Alk* | 8.74 | *H.Alk* | 8.47 | *M.Alk* |
| **Electrical Conductivity** | dS/m | 0.29 | *M.Sal* | 0.23 | *M.Sal* | 0.35 | *M.Sal* | 0.3 | *M.Sal* | 0.49 | *H.Sal* | 0.22 | *M.Sal* |
| **Chloride** | mg/kg | 153.0 | *L.Sal* | 162.0 | *L.Sal* | 409.0 | *M.Sal* | 214.0 | *L.Sal* | 523.0 | *M.Sal* | 82.6 | *VL.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1670.0 | *M* | 1460.0 | *L* | 2070.0 | *M* | 2290.0 | *M* | 1670.0 | *M* | 2010.0 | *M* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 231.0 | * | 247.0 | * | 243.0 | * | 521.0 | * | 332.0 | * | 274.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 5.32 | *L* | 12 | *L* | 24.6 | *L* | 38.2 | *M* | 20.1 | *L* | 14.2 | *L* |
| **Potassium - Colwell ext** | mg/kg | 177.00 | *L* | 123.00 | *L* | 184.00 | *M* | 263.00 | *M* | 201.00 | *M* | 256.00 | *M* |
| **Sulphur - KCl** | mg/kg | 33.6 | *VH* | 20.7 | *VH* | 15.3 | *H* | 26.9 | *VH* | 30.0 | *VH* | 13.8 | *H* |
| **Organic Carbon** | % | 1.73 | *M* | 1.41 | *M* | 2.27 | *H* | 2.49 | *H* | 1.41 | *M* | 2.04 | *H* |
| **Copper** | mg/kg | 0.82 | *M* | 0.83 | *M* | 0.47 | *M* | 0.43 | *M* | 0.91 | *M* | 0.81 | *M* |
| **Iron** | mg/kg | 6.13 | * | 7.18 | * | 5.73 | * | 5.30 | * | 7.50 | * | 6.65 | * |
| **Manganese** | mg/kg | 7.58 | *M* | 4.70 | *M* | 5.75 | *M* | 5.08 | *M* | 12.10 | *M* | 6.15 | *M* |
| **Zinc** | mg/kg | 0.38 | *L* | 0.28 | *VL* | 0.43 | *L* | 0.45 | *L* | 0.58 | *L* | 0.58 | *L* |
| **Boron** | mg/kg | 1.75 | *M* | 1.84 | *M* | 1.83 | *M* | 1.75 | *M* | 1.59 | *M* | 1.19 | *M* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 31.3 | * | 20.3 | * | 20.7 | * | 16.8 | * | 17.8 | * | 18.3 | * |
| **Ex Calcium Percent** | % | 75.15 | * | 64.06 | * | 68.32 | * | 73.77 | * | 65.00 | * | 70.39 | * |
| **Ex Magnesium Percent** | % | 17.95 | * | 26.68 | * | 20.86 | * | 19.20 | * | 21.40 | * | 23.27 | * |
| **Ex Potassium Percent** | % | 1.51 | * | 1.65 | * | 2.02 | * | 3.39 | * | 2.38 | * | 2.87 | * |
| **Ex Sodium Percent** | % | 5.32 | *N.Sodic* | 7.50 | *Sodic* | 8.70 | *Sodic* | 3.51 | *N.Sodic* | 11.09 | *Sodic* | 3.34 | *N.Sodic* |
| **Ex Aluminium Percent** | % | 0.07 | *VL* | 0.11 | *VL* | 0.11 | *VL* | 0.13 | *VL* | 0.12 | *VL* | 0.12 | *VL* |
| **Exchangeable Calcium** | mg/kg | 4709 | *H* | 2601 | *H* | 2833 | *H* | 2485 | *H* | 2313 | *H* | 2581 | *H* |
| **Exchangeable Magnesium** | mg/kg | 675 | *H* | 650 | *H* | 519 | *H* | 388 | *H* | 457 | *H* | 512 | *H* |
| **Exchangeable Potassium** | mg/kg | 184 | *H* | 131 | *H* | 163 | *H* | 223 | *H* | 165 | *H* | 205 | *H* |
| **Exchangeable Sodium** | mg/kg | 383 | *FALSE* | 350 | *FALSE* | 415 | *FALSE* | 136 | *FALSE* | 454 | *FALSE* | 141 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* |
| **Exchangeable Calcium** | meq/100g | 23.55 | *VH* | 13.01 | *H* | 14.17 | *H* | 12.43 | *H* | 11.57 | *H* | 12.91 | *H* |
| **Exchangeable Magnesium** | meq/100g | 5.63 | *H* | 5.42 | *H* | 4.33 | *H* | 3.23 | *H* | 3.81 | *H* | 4.27 | *H* |
| **Exchangeable Potassium** | meq/100g | 0.47 | *M* | 0.34 | *M* | 0.42 | *M* | 0.57 | *M* | 0.42 | *M* | 0.53 | *M* |
| **Exchangeable Sodium** | meq/100g | 1.67 | *H* | 1.52 | *H* | 1.80 | *H* | 0.59 | *M* | 1.97 | *H* | 0.61 | *M* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 4.2 | *Balanced* | 2.4 | *Low Ca* | 3.3 | *Low Ca* | 3.8 | *Low Ca* | 3.0 | *Low Ca* | 3.0 | *Low Ca* |
| **Emerson Aggregate** | Class | 5 | *Slaking* | 5 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 5 | *Slaking* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay soils. Part 8 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-224 | | 230959-228 | | 230959-232 | | 230959-236 | | 230959-240 | | 230959-244 | |
| | **Sample ID** | 68 | | 72 | | 232 | | 62 | | 250 | | 248 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | LMC | | LMC | | MC | | MC | | MC | | LMC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 9.29 | *E.Alk* | 8.42 | *M.Alk* | 8.45 | *M.Alk* | 9.03 | *E.Alk* | 8.69 | *H.Alk* | 8.84 | *H.Alk* |
| **Electrical Conductivity** | dS/m | 0.32 | *M.Sal* | 0.37 | *M.Sal* | 0.4 | *M.Sal* | 0.48 | *H.Sal* | 0.26 | *M.Sal* | 0.27 | *M.Sal* |
| **Chloride** | mg/kg | 410.0 | *M.Sal* | 175.0 | *L.Sal* | 226.0 | *L.Sal* | 532.0 | *M.Sal* | 72.9 | *VL.Sal* | 200.0 | *L.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 500.0 | *L* | 1540.0 | *M* | 1450.0 | *L* | 920.0 | *L* | 1230.0 | *L* | 1090.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 224.0 | * | 203.0 | * | 201.0 | * | 191.0 | * | 142.0 | * | 149.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 8.1 | *L* | 17.4 | *L* | 13.4 | *L* | 7.14 | *L* | 9.8 | *L* | 19.6 | *L* |
| **Potassium - Colwell ext** | mg/kg | 105.00 | *VL* | 167.00 | *L* | 162.00 | *L* | 132.00 | *L* | 190.00 | *M* | 143.00 | *L* |
| **Sulphur - KCl** | mg/kg | 27.1 | *VH* | 20.0 | *VH* | 31.3 | *VH* | 15.0 | *H* | 14.7 | *H* | 21.2 | *VH* |
| **Organic Carbon** | % | 0.43 | *VL* | 1.28 | *M* | 1.35 | *M* | 0.87 | *L* | 1.26 | *M* | 1.19 | *M* |
| **Copper** | mg/kg | 0.57 | *M* | 0.81 | *M* | 0.87 | *M* | 0.81 | *M* | 0.63 | *M* | 0.69 | *M* |
| **Iron** | mg/kg | 7.55 | * | 5.40 | * | 6.45 | * | 8.43 | * | 7.43 | * | 7.03 | * |
| **Manganese** | mg/kg | 5.58 | *M* | 12.30 | *M* | 4.55 | *M* | 5.30 | *M* | 3.43 | *M* | 4.13 | *M* |
| **Zinc** | mg/kg | <0.20 | *L* | 0.63 | *L* | 0.35 | *L* | 0.28 | *VL* | 0.25 | *VL* | <0.20 | *L* |
| **Boron** | mg/kg | 1.69 | *M* | 1.33 | *M* | 1.69 | *M* | 2.41 | *H* | 2.95 | *H* | 1.99 | *M* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 12.5 | * | 18.6 | * | 18.9 | * | 19.3 | * | 25.3 | * | 19.8 | * |
| **Ex Calcium Percent** | % | 55.12 | * | 65.78 | * | 68.74 | * | 54.07 | * | 67.87 | * | 66.09 | * |
| **Ex Magnesium Percent** | % | 26.79 | * | 26.41 | * | 23.47 | * | 28.24 | * | 24.54 | * | 23.99 | * |
| **Ex Potassium Percent** | % | 2.13 | * | 1.99 | * | 2.19 | * | 1.59 | * | 1.76 | * | 1.88 | * |
| **Ex Sodium Percent** | % | 15.78 | *H.Sodic* | 5.69 | *N.Sodic* | 5.49 | *N.Sodic* | 15.97 | *H.Sodic* | 5.75 | *N.Sodic* | 7.93 | *Sodic* |
| **Ex Aluminium Percent** | % | 0.18 | *VL* | 0.12 | *VL* | 0.12 | *VL* | 0.12 | *VL* | 0.09 | *VL* | 0.11 | *VL* |
| **Exchangeable Calcium** | mg/kg | 1382 | *H* | 2441 | *H* | 2592 | *H* | 2087 | *H* | 3430 | *H* | 2617 | *H* |
| **Exchangeable Magnesium** | mg/kg | 403 | *H* | 588 | *H* | 531 | *H* | 654 | *H* | 744 | *H* | 570 | *H* |
| **Exchangeable Potassium** | mg/kg | 104 | *H* | 144 | *H* | 161 | *H* | 120 | *H* | 173 | *H* | 145 | *H* |
| **Exchangeable Sodium** | mg/kg | 455 | *FALSE* | 243 | *FALSE* | 238 | *FALSE* | 709 | *FALSE* | 334 | *FALSE* | 361 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* |
| **Exchangeable Calcium** | meq/100g | 6.91 | *M* | 12.21 | *H* | 12.96 | *H* | 10.44 | *H* | 17.15 | *H* | 13.09 | *H* |
| **Exchangeable Magnesium** | meq/100g | 3.36 | *H* | 4.90 | *H* | 4.43 | *H* | 5.45 | *H* | 6.20 | *H* | 4.75 | *H* |
| **Exchangeable Potassium** | meq/100g | 0.27 | *L* | 0.37 | *M* | 0.41 | *M* | 0.31 | *M* | 0.44 | *M* | 0.37 | *M* |
| **Exchangeable Sodium** | meq/100g | 1.98 | *H* | 1.06 | *H* | 1.03 | *H* | 3.08 | *VH* | 1.45 | *H* | 1.57 | *H* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 2.1 | *Low Ca* | 2.5 | *Low Ca* | 2.9 | *Low Ca* | 1.9 | *Low Ca* | 2.8 | *Low Ca* | 2.8 | *Low Ca* |
| **Emerson Aggregate** | Class | 3b | *Slight Disp* | 5 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay soils. Part 9 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-248 | | 230959-252 | | 230959-256 | | 230959-260 | | 230959-284 | | 230959-288 | |
| | **Sample ID** | 57 | | 55 | | 285 | | 52 | | 268c | | 283 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | LMC | | LMC | | LMC | | LMC | | LMC | | HC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.9 | *H.Alk* | 9.02 | *E.Alk* | 8.44 | *M.Alk* | 7.99 | *M.Alk* | 8.88 | *H.Alk* | 8.55 | *H.Alk* |
| **Electrical Conductivity** | dS/m | 0.61 | *H.Sal* | 0.33 | *M.Sal* | 0.24 | *M.Sal* | 0.31 | *M.Sal* | 0.37 | *M.Sal* | 0.45 | *H.Sal* |
| **Chloride** | mg/kg | 760.0 | *H.Sal* | 230.0 | *L.Sal* | 62.3 | *VL.Sal* | 53.5 | *VL.Sal* | 365.0 | *M.Sal* | 405.0 | *M.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1070.0 | *L* | 960.0 | *L* | 1690.0 | *M* | 2340.0 | *M* | 1290.0 | *L* | 1370.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 150.0 | * | 103.0 | * | 287.0 | * | 499.0 | * | 147.0 | * | 227.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 6.26 | *L* | <5.00 | *L* | 17.8 | *L* | 125 | *H* | 32.7 | *M* | 13 | *L* |
| **Potassium - Colwell ext** | mg/kg | 142.00 | *L* | 155.00 | *L* | 159.00 | *L* | 1660.00 | *VH* | 154.00 | *L* | 180.00 | *M* |
| **Sulphur - KCl** | mg/kg | 17.6 | *H* | 10.0 | *M* | 11.9 | *M* | 24.3 | *VH* | 7.5 | *L* | 21.5 | *VH* |
| **Organic Carbon** | % | 0.88 | *L* | 0.93 | *L* | 1.73 | *M* | 1.48 | *M* | 1.26 | *M* | 1.23 | *M* |
| **Copper** | mg/kg | 0.99 | *M* | 1.53 | *M* | 0.82 | *M* | 0.86 | *M* | 0.71 | *M* | 0.8 | *M* |
| **Iron** | mg/kg | 7.60 | * | 10.00 | * | 5.60 | * | 24.30 | * | 7.08 | * | 3.88 | * |
| **Manganese** | mg/kg | 7.03 | *M* | 5.20 | *M* | 7.14 | *M* | 8.64 | *M* | 4.15 | *M* | 4.08 | *M* |
| **Zinc** | mg/kg | 0.20 | *VL* | 6.33 | *H* | 0.33 | *L* | 1.84 | *M* | 0.23 | *VL* | 1.82 | *M* |
| **Boron** | mg/kg | 3.49 | *H* | 1.91 | *M* | 1.53 | *M* | 0.73 | *L* | 2.09 | *H* | 0.68 | *L* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 18.5 | * | 22.6 | * | 18.0 | * | 11.6 | * | 21.2 | *M* | 21.9 | *M* |
| **Ex Calcium Percent** | % | 52.82 | * | 60.19 | * | 72.55 | * | 61.52 | * | 57.40 | *L* | 58.37 | *L* |
| **Ex Magnesium Percent** | % | 29.74 | * | 25.26 | * | 21.27 | * | 21.18 | * | 28.22 | *H* | 31.06 | *H* |
| **Ex Potassium Percent** | % | 1.76 | * | 1.52 | * | 2.48 | * | 14.94 | * | 1.68 | *Normal* | 1.98 | *Normal* |
| **Ex Sodium Percent** | % | 15.56 | *H.Sodic* | 12.93 | *Sodic* | 3.58 | *N.Sodic* | 2.17 | *N.Sodic* | 12.59 | *Sodic* | 8.49 | *Sodic* |
| **Ex Aluminium Percent** | % | 0.12 | *VL* | 0.10 | *VL* | 0.12 | *VL* | 0.19 | *VL* | 0.10 | *VL* | 0.10 | *VL* |
| **Exchangeable Calcium** | mg/kg | 1957 | *H* | 2724 | *H* | 2610 | *H* | 1423 | *H* | 2434 | *H* | 2553 | *H* |
| **Exchangeable Magnesium** | mg/kg | 661 | *H* | 686 | *H* | 459 | *H* | 294 | *H* | 718 | *H* | 815 | *H* |
| **Exchangeable Potassium** | mg/kg | 127 | *H* | 134 | *H* | 174 | *H* | 674 | *H* | 139 | *H* | 169 | *H* |
| **Exchangeable Sodium** | mg/kg | 663 | *FALSE* | 673 | *FALSE* | 148 | *FALSE* | 57.6 | *H.Sodic* | 614 | *FALSE* | 427 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | * | 2 | * |
| **Exchangeable Calcium** | meq/100g | 9.79 | *M* | 13.62 | *H* | 13.05 | *H* | 7.12 | *M* | 12.17 | *H* | 12.77 | *H* |
| **Exchangeable Magnesium** | meq/100g | 5.51 | *H* | 5.72 | *H* | 3.83 | *H* | 2.45 | *M* | 5.98 | *H* | 6.79 | *H* |
| **Exchangeable Potassium** | meq/100g | 0.33 | *M* | 0.34 | *M* | 0.45 | *M* | 1.73 | *H* | 0.36 | *M* | 0.43 | *M* |
| **Exchangeable Sodium** | meq/100g | 2.88 | *VH* | 2.93 | *VH* | 0.64 | *M* | 0.25 | *L* | 2.67 | *VH* | 1.86 | *H* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 1.8 | *Low Ca* | 2.4 | *Low Ca* | 3.4 | *Low Ca* | 2.9 | *Low Ca* | 2.0 | *Low Ca* | 1.9 | *Low Ca* |
| **Emerson Aggregate** | Class | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay soils. Part 10 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-308 | | 230959-312 | | 230959-316 | | 230959-320 | | 230959-324 | | 230959-328 | |
| | **Sample ID** | 59 | | 218 | | 170 | | 219 | | 171 | | 169 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | LC | | LC | | LMC | | LC | | LC | | LMC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.44 | *M.Alk* | 8.17 | *M.Alk* | 8.52 | *H.Alk* | 8.6 | *H.Alk* | 8.45 | *M.Alk* | 8.65 | *H.Alk* |
| **Electrical Conductivity** | dS/m | 0.08 | *VL.Sal* | 0.2 | *M.Sal* | 0.31 | *M.Sal* | 0.38 | *M.Sal* | 0.4 | *M.Sal* | 0.26 | *M.Sal* |
| **Chloride** | mg/kg | 33.4 | *VL.Sal* | 78.6 | *VL.Sal* | 268.0 | *L.Sal* | 273.0 | *L.Sal* | 329.0 | *M.Sal* | 75.2 | *VL.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 902.0 | *L* | 1880.0 | *M* | 1310.0 | *L* | 1603.0 | *M* | 2020.0 | *M* | 1600.0 | *M* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 216.0 | * | 234.0 | * | 190.0 | * | 288.0 | * | 289.0 | * | 234.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 5.46 | *L* | 10.3 | *L* | <5.00 | *L* | 10.9 | *L* | 11.9 | *L* | <5.00 | *L* |
| **Potassium - Colwell ext** | mg/kg | 222.00 | *M* | 210.00 | *M* | 91.00 | *VL* | 215.00 | *M* | 392.00 | *H* | 345.00 | *H* |
| **Sulphur - KCl** | mg/kg | 9.3 | *M* | 9.8 | *M* | 18.8 | *H* | 21.9 | *VH* | 49.9 | *VH* | 18.3 | *H* |
| **Organic Carbon** | % | 0.61 | *L* | 1.93 | *H* | 1.36 | *M* | 1.62 | *M* | 2.6 | *H* | 1.55 | *M* |
| **Copper** | mg/kg | 0.78 | *M* | 0.97 | *M* | 0.96 | *M* | 1.02 | *M* | 0.8 | *M* | 0.92 | *M* |
| **Iron** | mg/kg | 3.92 | * | 19.30 | * | 2.82 | * | 3.02 | * | 6.54 | * | 10.80 | * |
| **Manganese** | mg/kg | 10.40 | *M* | 12.60 | *M* | 5.46 | *M* | 4.02 | *M* | 4.08 | *M* | 4.48 | *M* |
| **Zinc** | mg/kg | 1.94 | *M* | 0.74 | *L* | 1.90 | *M* | 1.84 | *M* | 1.82 | *M* | 1.84 | *M* |
| **Boron** | mg/kg | 0.46 | *VL* | 0.60 | *L* | 0.38 | *VL* | 0.71 | *L* | 0.76 | *L* | 1.14 | *M* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 7.2 | *L* | 18.1 | *M* | 19.2 | *M* | 26.5 | *H* | 26.8 | *H* | 23.5 | *M* |
| **Ex Calcium Percent** | % | 78.15 | *Normal* | 69.16 | *Normal* | 66.66 | *Normal* | 67.96 | *Normal* | 70.48 | *Normal* | 66.00 | *Normal* |
| **Ex Magnesium Percent** | % | 11.82 | *Normal* | 23.47 | *H* | 24.78 | *H* | 22.64 | *H* | 20.67 | *H* | 25.90 | *H* |
| **Ex Potassium Percent** | % | 6.49 | *H* | 2.89 | *Normal* | 1.11 | *Normal* | 1.93 | *Normal* | 3.09 | *Normal* | 2.64 | *Normal* |
| **Ex Sodium Percent** | % | 3.23 | *N.Sodic* | 4.35 | *N.Sodic* | 7.34 | *Sodic* | 7.39 | *Sodic* | 5.68 | *N.Sodic* | 5.37 | *N.Sodic* |
| **Ex Aluminium Percent** | % | 0.31 | *VL* | 0.12 | *VL* | 0.12 | *VL* | 0.08 | *VL* | 0.08 | *VL* | 0.09 | *VL* |
| **Exchangeable Calcium** | mg/kg | 1124 | *H* | 2500 | *H* | 2560 | *H* | 3607 | *H* | 3779 | *H* | 3101 | *H* |
| **Exchangeable Magnesium** | mg/kg | 102 | *H* | 509 | *H* | 571 | *H* | 721 | *H* | 665 | *H* | 730 | *H* |
| **Exchangeable Potassium** | mg/kg | 182 | *H* | 204 | *H* | 83 | *H* | 200 | *H* | 323 | *H* | 242 | *H* |
| **Exchangeable Sodium** | mg/kg | 53.5 | *H.Sodic* | 181 | *FALSE* | 324 | *FALSE* | 451 | *FALSE* | 350 | *FALSE* | 290 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | * | 2 | * | 2 | * | 2 | * | 2 | * | 2 | * |
| **Exchangeable Calcium** | meq/100g | 5.62 | *M* | 12.50 | *H* | 12.80 | *H* | 18.04 | *H* | 18.90 | *H* | 15.51 | *H* |
| **Exchangeable Magnesium** | meq/100g | 0.85 | *L* | 4.24 | *H* | 4.76 | *H* | 6.01 | *H* | 5.54 | *H* | 6.08 | *H* |
| **Exchangeable Potassium** | meq/100g | 0.47 | *M* | 0.52 | *M* | 0.21 | *L* | 0.51 | *M* | 0.83 | *H* | 0.62 | *M* |
| **Exchangeable Sodium** | meq/100g | 0.23 | *L* | 0.79 | *H* | 1.41 | *H* | 1.96 | *H* | 1.52 | *H* | 1.26 | *H* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 6.6 | *Balanced* | 2.9 | *Low Ca* | 2.7 | *Low Ca* | 3.0 | *Low Ca* | 3.4 | *Low Ca* | 2.5 | *Low Ca* |
| **Emerson Aggregate** | Class | 5 | *Slaking* | 5 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay topsoils. Part 11 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-332 | | 230959-336 | | 230959-340 | | 230959-344 | | 230959-348 | | 230959-352 | |
| | **Sample ID** | 58 | | 2 | | 11 | | 12 | | 31 | | 30 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | MC | | LMC | | HC | | MC | | LC | | LMC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.57 | *H.Alk* | 8.51 | *H.Alk* | 8.37 | *M.Alk* | 8.59 | *H.Alk* | 7.32 | *Neutral* | 7.38 | *Neutral* |
| **Electrical Conductivity** | dS/m | 0.19 | *M.Sal* | 0.18 | *L.Sal* | 0.2 | *M.Sal* | 0.12 | *L.Sal* | 0.27 | *M.Sal* | 0.41 | *M.Sal* |
| **Chloride** | mg/kg | 70.8 | *VL.Sal* | 177.0 | *L.Sal* | 80.6 | *VL.Sal* | 25.6 | *VL.Sal* | 311.0 | *M.Sal* | 481.0 | *M.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1970.0 | *M* | 1910.0 | *M* | 2090.0 | *M* | 1680.0 | *M* | 1260.0 | *L* | 1780.0 | *M* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 272.0 | * | 332.0 | * | 340.0 | * | 308.0 | * | 523.0 | * | 425.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 13.6 | *L* | 7.61 | *L* | 13.6 | *L* | 35.8 | *M* | 132 | *H* | 21.1 | *L* |
| **Potassium - Colwell ext** | mg/kg | 287.00 | *M* | 232.00 | *M* | 311.00 | *H* | 225.00 | *M* | 293.00 | *M* | 289.00 | *M* |
| **Sulphur - KCl** | mg/kg | 27.4 | *VH* | 12.7 | *H* | 33.8 | *VH* | 7.5 | *L* | 29.7 | *VH* | 9.9 | *M* |
| **Organic Carbon** | % | 2.61 | *H* | 1.64 | *M* | 2.19 | *H* | 1.38 | *M* | 0.89 | *L* | 1.49 | *M* |
| **Copper** | mg/kg | 0.8 | *M* | 0.78 | *M* | 0.84 | *M* | 0.8 | *M* | 0.62 | *M* | 0.64 | *M* |
| **Iron** | mg/kg | 4.44 | * | 5.24 | * | 8.62 | * | 10.10 | * | 8.90 | * | 19.70 | * |
| **Manganese** | mg/kg | 3.92 | *M* | 7.62 | *M* | 10.00 | *M* | 12.20 | *M* | 12.80 | *M* | 23.30 | *M* |
| **Zinc** | mg/kg | 1.88 | *M* | 1.90 | *M* | 1.90 | *M* | 1.92 | *M* | 1.92 | *M* | 1.94 | *M* |
| **Boron** | mg/kg | 0.76 | *L* | 1.02 | *M* | 0.94 | *L* | 1.02 | *M* | 0.66 | *L* | 1.12 | *M* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 20.6 | *M* | 20.4 | *M* | 18.4 | *M* | 22.5 | *M* | 6.8 | *L* | 13.9 | *M* |
| **Ex Calcium Percent** | % | 72.41 | *Normal* | 75.64 | *Normal* | 74.33 | *Normal* | 73.00 | *Normal* | 68.87 | *Normal* | 30.07 | *L* |
| **Ex Magnesium Percent** | % | 21.84 | *H* | 19.66 | *H* | 20.53 | *H* | 22.41 | *H* | 20.71 | *H* | 58.39 | *H* |
| **Ex Potassium Percent** | % | 2.93 | *Normal* | 2.32 | *Normal* | 3.03 | *Normal* | 2.15 | *Normal* | 6.11 | *H* | 3.41 | *Normal* |
| **Ex Sodium Percent** | % | 2.71 | *N.Sodic* | 2.28 | *N.Sodic* | 1.98 | *N.Sodic* | 2.34 | *N.Sodic* | 3.98 | *N.Sodic* | 7.98 | *Sodic* |
| **Ex Aluminium Percent** | % | 0.11 | *VL* | 0.11 | *VL* | 0.12 | *VL* | 0.10 | *VL* | 0.32 | *VL* | 0.16 | *VL* |
| **Exchangeable Calcium** | mg/kg | 2978 | *H* | 3091 | *H* | 2739 | *H* | 3279 | *H* | 942 | *H* | 836 | *H* |
| **Exchangeable Magnesium** | mg/kg | 539 | *H* | 482 | *H* | 454 | *H* | 604 | *H* | 170 | *H* | 974 | *H* |
| **Exchangeable Potassium** | mg/kg | 235 | *H* | 185 | *H* | 218 | *H* | 188 | *H* | 163 | *H* | 185 | *H* |
| **Exchangeable Sodium** | mg/kg | 128 | *FALSE* | 107 | *FALSE* | 83.9 | *H.Sodic* | 121 | *FALSE* | 62.6 | *H.Sodic* | 255 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | * | 2 | * | 2 | * | 2 | * | 2 | * | 2 | * |
| **Exchangeable Calcium** | meq/100g | 14.89 | *H* | 15.46 | *H* | 13.70 | *H* | 16.40 | *H* | 4.71 | *L* | 4.18 | *L* |
| **Exchangeable Magnesium** | meq/100g | 4.49 | *H* | 4.02 | *H* | 3.78 | *H* | 5.03 | *H* | 1.42 | *M* | 8.12 | *VH* |
| **Exchangeable Potassium** | meq/100g | 0.60 | *M* | 0.47 | *M* | 0.56 | *M* | 0.48 | *M* | 0.42 | *M* | 0.47 | *M* |
| **Exchangeable Sodium** | meq/100g | 0.56 | *M* | 0.47 | *M* | 0.36 | *M* | 0.53 | *M* | 0.27 | *L* | 1.11 | *H* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 3.3 | *Low Ca* | 3.8 | *Low Ca* | 3.6 | *Low Ca* | 3.3 | *Low Ca* | 3.3 | *Low Ca* | 0.5 | *Low Ca* |
| **Emerson Aggregate** | Class | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 5 | *Slaking* | 5 | *Slaking* |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B5:** Laboratory analysis data for clay topsoils. Part 12 of 12.

| Table B5. Laboratory Results Clays | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-356 | | 230959-360 | | **Mean** | | **LCL** | **UCL** | **Std Dev** | **Count** | **CI 95%** | **10%ile** | | **90%ile** | | **Min** | **Max** |
| | **Sample ID** | 41 | | 41 N | | | | **95%** | **95%** | | | **(+/-)** | | | | | | |
| | **Sample Depth** | Composite | | Composite | | | | | | | | | | | | | | |
| | **Field Texture** | LC | | LMC | | | | | | | | | | | | | | |
| **Analyses** | **Unit** | - | | - | | | | | | | | | | | | | | |
| **pH - Water** | pH units | 7.71 | *L.Alk* | 8.32 | *M.Alk* | *8.5* | *H.Alk* | *8.4* | *8.6* | *0.5* | *68* | *0.1* | *8.0* | *M.Alk* | *9.0* | *H.Alk* | *6.7* | *9.3* |
| **Electrical Conductivity** | dS/m | 0.13 | *L.Sal* | 0.28 | *M.Sal* | *0.3* | *M.Sal* | *0.28* | *0.37* | *0.2* | *68* | *0.04* | *0.2* | *L.Sal* | *0.5* | *H.Sal* | *0.1* | *1.3* |
| **Chloride** | mg/kg | 83.2 | *VL.Sal* | 118.0 | *L.Sal* | *261.2* | *L.Sal* | *192* | *330* | *290.1* | *68* | *69* | *60.1* | *VL.Sal* | *463.5* | *M.Sal* | *13.1* | *2019.0* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1070.0 | *L* | 1400.0 | *L* | *1289.2* | *L* | *1186* | *1392* | *434.6* | *68* | *103* | *763.8* | *L* | *1928.0* | *M* | *500.0* | *2340.0* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 290.0 | * | 336.0 | * | *256.4* | * | *233* | *279* | *96.4* | *68* | *23* | *152.8* | * | *345.1* | * | *103.0* | *529.0* |
| **Phosphorus - Colwell extr** | mg/kg | 10.9 | *L* | 21.7 | *L* | *20.6* | * | *13* | *28* | *25.5* | *49* | *7* | *6.2* | * | *36.3* | * | *5.2* | *132.0* |
| **Potassium - Colwell ext** | mg/kg | 195.00 | *M* | 245.00 | *M* | *202.1* | * | *157* | *247* | *189.6* | *68* | *45* | *115.9* | * | *270.2* | * | *91.0* | *1660.0* |
| **Sulphur - KCl** | mg/kg | 19.7 | *H* | 16.1 | *H* | *26.6* | *VH* | *22.36* | *30.83* | *17.8* | *68* | *4.23* | *10.0* | *M* | *46.2* | *VH* | *7.5* | *88.2* |
| **Organic Carbon** | % | 0.81 | *L* | 1.43 | *M* | *1.4* | *M* | *1.32* | *1.56* | *0.5* | *68* | *0.12* | *0.9* | *L* | *2.1* | *H* | *0.4* | *3.2* |
| **Copper** | mg/kg | 0.66 | *M* | 0.72 | *M* | *0.8* | *M* | *0.77* | *0.87* | *0.2* | *68* | *0.05* | *0.6* | *M* | *1.1* | *M* | *0.4* | *1.5* |
| **Iron** | mg/kg | 8.32 | * | 6.64 | * | *10.2* | * | *9* | *11* | *5.4* | *68* | *1* | *3.9* | * | *16.2* | * | *2.8* | *27.4* |
| **Manganese** | mg/kg | 12.50 | *M* | 8.32 | *M* | *6.9* | *M* | *6.07* | *7.70* | *3.4* | *68* | *0.82* | *4.0* | *M* | *12.2* | *M* | *3.4* | *23.3* |
| **Zinc** | mg/kg | 1.92 | *M* | 1.92 | *M* | *1.0* | *M* | *0.68* | *1.26* | *1.1* | *53* | *0.29* | *0.2* | *VL* | *1.9* | *M* | *0.2* | *6.3* |
| **Boron** | mg/kg | 0.56 | *L* | 0.44 | *VL* | *1.5* | *M* | *1.37* | *1.72* | *0.7* | *68* | *0.17* | *0.7* | *L* | *2.6* | *H* | *0.4* | *3.5* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **Cation Exchange Capacity** | meq/100g | 5.2 | *VL* | 13.1 | *M* | *20.0* | *M* | *18.6* | *21.5* | *6.2* | *68* | *1.5* | *13.7* | *M* | *26.9* | *H* | *5.2* | *38.6* |
| **Ex Calcium Percent** | % | 68.96 | *Normal* | 65.90 | *Normal* | *65.3* | *Normal* | *63.4* | *67.2* | *7.8* | *68* | *1.9* | *57.1* | *L* | *72.7* | *Normal* | *30.1* | *80.3* |
| **Ex Magnesium Percent** | % | 18.91 | *H* | 26.08 | *H* | *24.8* | *H* | *23.4* | *26.2* | *5.9* | *68* | *1.4* | *20.1* | *H* | *29.8* | *H* | *11.8* | *58.4* |
| **Ex Potassium Percent** | % | 7.31 | *H* | 3.32 | *Normal* | *2.2* | *Normal* | *1.8* | *2.7* | *2.0* | *68* | *0.5* | *0.9* | *L* | *3.2* | *Normal* | *0.7* | *14.9* |
| **Ex Sodium Percent** | % | 4.39 | *N.Sodic* | 4.54 | *N.Sodic* | *7.5* | *Sodic* | *6.6* | *8.4* | *3.8* | *68* | *0.9* | *3.3* | *N.Sodic* | *13.6* | *Sodic* | *2.0* | *16.3* |
| **Ex Aluminium Percent** | % | 0.43 | *VL* | 0.17 | *VL* | *0.1* | *VL* | *0.1* | *0.1* | *0.1* | *68* | *0.0* | *0.1* | *VL* | *0.2* | *VL* | *0.1* | *0.4* |
| **Exchangeable Calcium** | mg/kg | 711 | *H* | 1731 | *H* | *2633.3* | *H* | *2407.5* | *2859.1* | *950.2* | *68* | *225.8* | *1630.0* | *H* | *3658.6* | *H* | *711.0* | *5560.0* |
| **Exchangeable Magnesium** | mg/kg | 117 | *H* | 411 | *H* | *593.3* | *H* | *547.3* | *639.2* | *193.2* | *68* | *45.9* | *391.5* | *H* | *879.6* | *H* | *102.0* | *994.0* |
| **Exchangeable Potassium** | mg/kg | 147 | *H* | 170 | *H* | *150.0* | *H* | *130.8* | *169.1* | *80.5* | *68* | *19.1* | *83.9* | *H* | *204.3* | *H* | *57.7* | *674.0* |
| **Exchangeable Sodium** | mg/kg | 52 | *H.Sodic* | 137 | *FALSE* | *347.3* | *H.Sodic* | *301.9* | *392.6* | *190.7* | *68* | *45.3* | *116.8* | *H.Sodic* | *637.8* | *H.Sodic* | *52.0* | *766.0* |
| **Exchangeable Aluminium** | mg/kg | 2 | * | 2 | * | *2.0* | * | *#NUM!* | *#NUM!* | *0.0* | *68* | *#NUM!* | *2.0* | * | *2.0* | * | *2.0* | *2.0* |
| **Exchangeable Calcium** | meq/100g | 3.56 | *L* | 8.66 | *M* | *13.2* | *H* | *12.0* | *14.3* | *4.8* | *68* | *1.1* | *8.2* | *M* | *18.3* | *H* | *3.6* | *27.8* |
| **Exchangeable Magnesium** | meq/100g | 0.98 | *L* | 3.43 | *H* | *4.9* | *H* | *4.6* | *5.3* | *1.6* | *68* | *0.4* | *3.3* | *H* | *7.3* | *H* | *0.9* | *8.3* |
| **Exchangeable Potassium** | meq/100g | 0.38 | *M* | 0.44 | *M* | *0.4* | *M* | *0.3* | *0.4* | *0.2* | *68* | *0.0* | *0.2* | *L* | *0.5* | *M* | *0.1* | *1.7* |
| **Exchangeable Sodium** | meq/100g | 0.23 | *L* | 0.60 | *M* | *1.5* | *H* | *1.3* | *1.7* | *0.8* | *68* | *0.2* | *0.5* | *M* | *2.8* | *VH* | *0.2* | *3.3* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | *0.0* | *VH* | *0.0* | *0.0* | *0.0* | *68* | *0.0* | *0.0* | *VH* | *0.0* | *VH* | *0.0* | *0.0* |
| **Calcium/Magnesium Ratio** | - | 3.6 | *Low Ca* | 2.5 | *Low Ca* | *2.8* | *Low Ca* | *2.6* | *3.0* | *0.9* | *68* | *0.2* | *1.9* | *Low Ca* | *3.6* | *Low Ca* | *0.5* | *6.6* |
| **Emerson Aggregate** | Class | 5 | *Slaking* | 5 | *Slaking* | *4.4* | * | * | * | * | * | * | * | * | * | * | * | * |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B6:** Laboratory analysis data for gravelly clay topsoils. Part 1 of 3.

| Table B6. Laboratory Results<br>Gravelly clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-52 | | 230959-144 | | 230959-148 | | 230959-156 | | 230959-176 | | 230959-196 | |
| | **Sample ID** | 138a | | 268a | | 268b | | 256 | | 214 | | 228a | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | LC | | LMC | | MC | | LMC | | MC | | MC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 9.04 | *E.Alk* | 7.96 | *M.Alk* | 8.82 | *H.Alk* | 8.46 | *M.Alk* | 8.28 | *M.Alk* | 8.85 | *H.Alk* |
| **Electrical Conductivity** | dS/m | 0.46 | *H.Sal* | 0.23 | *M.Sal* | 0.29 | *M.Sal* | 0.52 | *H.Sal* | 0.73 | *H.Sal* | 0.38 | *M.Sal* |
| **Chloride** | mg/kg | 211.0 | *L.Sal* | 138.0 | *L.Sal* | 206.0 | *L.Sal* | 464.0 | *M.Sal* | 470.0 | *M.Sal* | 387.0 | *M.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 783.0 | *L* | 1270.0 | *L* | 1320.0 | *L* | 1290.0 | *L* | 1340.0 | *L* | 1290.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 488.0 | * | 326.0 | * | 147.0 | * | 400.0 | * | 269.0 | * | 199.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 6.04 | *L* | 10.2 | *L* | 9.8 | *L* | 9.8 | *L* | <5.00 | *L* | 12.9 | *L* |
| **Potassium - Colwell ext** | mg/kg | 95.30 | *VL* | 183.00 | *M* | 135.00 | *L* | 162.00 | *L* | 135.00 | *L* | 126.00 | *L* |
| **Sulphur - KCl** | mg/kg | 122.0 | *VH* | 10.3 | *M* | 8.9 | *M* | 90.7 | *VH* | 130.0 | *VH* | 30.5 | *VH* |
| **Organic Carbon** | % | 1.33 | *M* | 1.14 | *M* | 1.44 | *M* | 1.53 | *M* | 2.22 | *H* | 1.02 | *M* |
| **Copper** | mg/kg | 1.02 | *M* | 0.89 | *M* | 0.83 | *M* | 1.01 | *M* | 0.88 | *M* | 0.76 | *M* |
| **Iron** | mg/kg | 17.40 | * | 11.00 | * | 5.92 | * | 5.90 | * | 4.84 | * | 6.96 | * |
| **Manganese** | mg/kg | 5.07 | *M* | 7.38 | *M* | 6.24 | *M* | 4.74 | *M* | 4.88 | *M* | 6.24 | *M* |
| **Zinc** | mg/kg | 0.66 | *L* | 0.46 | *L* | 0.28 | *VL* | 0.46 | *L* | 0.24 | *VL* | 0.29 | *VL* |
| **Boron** | mg/kg | 2.00 | *H* | 1.20 | *M* | 1.76 | *M* | 1.28 | *M* | 1.38 | *M* | 2.11 | *H* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 14.0 | * | 14.1 | * | 24.1 | * | 29.1 | * | 34.7 | * | 24.7 | * |
| **Ex Calcium Percent** | % | 45.39 | * | 66.15 | * | 60.56 | * | 69.87 | * | 68.44 | * | 60.05 | * |
| **Ex Magnesium Percent** | % | 35.48 | * | 26.39 | * | 28.21 | * | 20.23 | * | 23.18 | * | 28.38 | * |
| **Ex Potassium Percent** | % | 1.32 | * | 2.90 | * | 1.36 | * | 1.43 | * | 1.05 | * | 1.45 | * |
| **Ex Sodium Percent** | % | 17.65 | *H.Sodic* | 4.39 | * | 9.78 | *Sodic* | 8.40 | *Sodic* | 7.26 | *Sodic* | 10.03 | *Sodic* |
| **Ex Aluminium Percent** | % | 0.16 | *VL* | 0.16 | *VL* | 0.09 | *VL* | 0.08 | *VL* | 0.06 | *VL* | 0.09 | *VL* |
| **Exchangeable Calcium** | mg/kg | 1275 | *H* | 1859 | *H* | 2923 | *H* | 4070 | *H* | 4748 | *H* | 2966 | *H* |
| **Exchangeable Magnesium** | mg/kg | 598 | *H* | 445 | *H* | 817 | *H* | 707 | *H* | 965 | *H* | 841 | *H* |
| **Exchangeable Potassium** | mg/kg | 72.1 | *H* | 159 | *H* | 128 | *H* | 162 | *H* | 142 | *H* | 140 | *H* |
| **Exchangeable Sodium** | mg/kg | 570 | *FALSE* | 142 | *FALSE* | 543 | *FALSE* | 563 | *FALSE* | 579 | *FALSE* | 570 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* | 2 | *VL* |
| **Exchangeable Calcium** | meq/100g | 6.38 | *M* | 9.30 | *M* | 14.62 | *H* | 20.35 | *VH* | 23.74 | *VH* | 14.83 | *H* |
| **Exchangeable Magnesium** | meq/100g | 4.98 | *H* | 3.71 | *H* | 6.81 | *H* | 5.89 | *H* | 8.04 | *VH* | 7.01 | *H* |
| **Exchangeable Potassium** | meq/100g | 0.18 | *VL* | 0.41 | *M* | 0.33 | *M* | 0.42 | *M* | 0.36 | *M* | 0.36 | *M* |
| **Exchangeable Sodium** | meq/100g | 2.48 | *VH* | 0.62 | *M* | 2.36 | *VH* | 2.45 | *VH* | 2.52 | *VH* | 2.48 | *VH* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 1.3 | *Low Ca* | 2.5 | *Low Ca* | 2.1 | *Low Ca* | 3.5 | *Low Ca* | 3.0 | *Low Ca* | 2.1 | *Low Ca* |
| **Emerson Aggregate** | Class | 3b | *Slight Disp* | 5 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B6:** Laboratory analysis data for gravelly clay **top**soils. Part 2 of 3.

| Table B6. Laboratory Results Gravelly clays | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lab No** | 230959-200 | | 230959-212 | | 230959-280 | | 230959-292 | | 230959-296 | | 230959-300 | |
| | **Sample ID** | 228b | | 70 | | 267 | | 221 | | 45 | | 222 | |
| | **Sample Depth** | Composite | | Composite | | Composite | | Composite | | Composite | | Composite | |
| | **Field Texture** | MC | | LMC | | LMC | | LC | | LC | | LC | |
| **Analyses** | **Unit** | - | | - | | - | | - | | - | | - | |
| **pH - Water** | pH units | 8.73 | *H.Alk* | 8.42 | *M.Alk* | 8.87 | *H.Alk* | 8.47 | *M.Alk* | 8.09 | *M.Alk* | 8.68 | *H.Alk* |
| **Electrical Conductivity** | dS/m | 0.52 | *H.Sal* | 0.17 | *L.Sal* | 0.52 | *H.Sal* | 0.28 | *M.Sal* | 0.24 | *M.Sal* | 0.22 | *M.Sal* |
| **Chloride** | mg/kg | 513.0 | *M.Sal* | 23.1 | *VL.Sal* | 675.0 | *H.Sal* | 72.5 | *VL.Sal* | 54.4 | *VL.Sal* | 91.4 | *VL.Sal* |
| **Total Nitrogen - Kjeldahl** | mg/kg | 1190.0 | *L* | 1150.0 | *L* | 1090.0 | *L* | 1480.0 | *L* | 1380.0 | *L* | 1430.0 | *L* |
| **Total Phosphorus - Nitric/Perchloric** | mg/kg | 286.0 | * | 298.0 | * | 197.0 | * | 415.0 | * | 462.0 | * | 346.0 | * |
| **Phosphorus - Colwell extr** | mg/kg | 9.35 | *L* | 56.3 | *M* | <5.00 | *L* | 30.9 | *M* | 29.3 | *M* | 14.6 | *L* |
| **Potassium - Colwell ext** | mg/kg | 145.00 | *L* | 160.00 | *L* | 166.00 | *L* | 304.00 | *H* | 169.00 | *L* | 126.00 | *L* |
| **Sulphur - KCl** | mg/kg | 91.5 | *VH* | 31.0 | *VH* | 9.9 | *M* | 14.7 | *H* | 20.4 | *VH* | 17.9 | *H* |
| **Organic Carbon** | % | 1.61 | *M* | 0.84 | *L* | 1.41 | *M* | 1.24 | *M* | 1.19 | *M* | 1.38 | *M* |
| **Copper** | mg/kg | 1.01 | *M* | 1.53 | *M* | 0.71 | *M* | 0.86 | *M* | 0.82 | *M* | 0.66 | *M* |
| **Iron** | mg/kg | 7.23 | * | 22.10 | * | 6.13 | * | 4.96 | * | 5.16 | * | 3.30 | * |
| **Manganese** | mg/kg | 7.23 | *M* | 10.50 | *M* | 6.13 | *M* | 3.90 | *M* | 6.42 | *M* | 3.76 | *M* |
| **Zinc** | mg/kg | 0.48 | *L* | 0.28 | *VL* | 0.65 | *L* | 1.84 | *M* | 1.90 | *M* | 1.88 | *M* |
| **Boron** | mg/kg | 2.09 | *H* | 1.75 | *M* | 2.31 | *H* | 0.94 | *L* | 0.76 | *L* | 3.14 | *H* |
| **Cation Extraction Method** | Rayment& Lyons | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * | 15C1 | * |
| **Cation Exchange Capacity** | meq/100g | 17.7 | * | 13.5 | * | 22.3 | *M* | 15.3 | *M* | 9.1 | *L* | 11.6 | *L* |
| **Ex Calcium Percent** | % | 57.42 | * | 68.07 | * | 53.21 | *L* | 65.86 | *Normal* | 71.95 | *Normal* | 65.47 | *Normal* |
| **Ex Magnesium Percent** | % | 27.93 | * | 26.26 | * | 32.30 | *H* | 25.25 | *H* | 18.92 | *H* | 25.67 | *H* |
| **Ex Potassium Percent** | % | 2.01 | * | 2.36 | * | 1.75 | *Normal* | 2.97 | *Normal* | 4.02 | *Normal* | 2.54 | *Normal* |
| **Ex Sodium Percent** | % | 12.51 | *Sodic* | 3.14 | *N.Sodic* | 12.64 | *Sodic* | 5.78 | *N.Sodic* | 4.86 | *N.Sodic* | 6.13 | *Sodic* |
| **Ex Aluminium Percent** | % | 0.13 | *VL* | 0.17 | *VL* | 0.10 | *VL* | 0.15 | *VL* | 0.24 | *VL* | 0.19 | *VL* |
| **Exchangeable Calcium** | mg/kg | 2032 | *H* | 1832 | *H* | 2375 | *H* | 2013 | *H* | 1312 | *H* | 1522 | *H* |
| **Exchangeable Magnesium** | mg/kg | 593 | *H* | 424 | *H* | 865 | *H* | 463 | *H* | 207 | *H* | 358 | *H* |
| **Exchangeable Potassium** | mg/kg | 139 | *H* | 124 | *H* | 152 | *H* | 177 | *H* | 143 | *H* | 115 | *H* |
| **Exchangeable Sodium** | mg/kg | 509 | *FALSE* | 97.3 | *FALSE* | 649 | *FALSE* | 203 | *FALSE* | 102 | *FALSE* | 164 | *FALSE* |
| **Exchangeable Aluminium** | mg/kg | 2 | *VL* | 2 | *VL* | 2 | * | 2 | * | 2 | * | 2 | * |
| **Exchangeable Calcium** | meq/100g | 10.16 | *H* | 9.16 | *M* | 11.88 | *H* | 10.07 | *H* | 6.56 | *M* | 7.61 | *M* |
| **Exchangeable Magnesium** | meq/100g | 4.94 | *H* | 3.53 | *H* | 7.21 | *H* | 3.86 | *H* | 1.73 | *M* | 2.98 | *M* |
| **Exchangeable Potassium** | meq/100g | 0.36 | *M* | 0.32 | *M* | 0.39 | *M* | 0.45 | *M* | 0.37 | *M* | 0.29 | *L* |
| **Exchangeable Sodium** | meq/100g | 2.21 | *VH* | 0.42 | *M* | 2.82 | *VH* | 0.88 | *H* | 0.44 | *M* | 0.71 | *H* |
| **Exchangeable Aluminium** | meq/100g | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* | 0.02 | *VH* |
| **Calcium/Magnesium Ratio** | - | 2.1 | *Low Ca* | 2.6 | *Low Ca* | 1.6 | *Low Ca* | 2.6 | *Low Ca* | 3.8 | *Low Ca* | 2.6 | *Low Ca* |
| **Emerson Aggregate** | Class | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* | 4 | *Slaking* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |

**Table B6:** Laboratory analysis data for gravelly clay topsoils. Part 3 of 3.

| Table B6. Laboratory Results Gravelly clays | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lab No | 230959-304 | | Mean | | LCL | UCL | Std Dev | Count | CI 95% | 10%ile | | 90%ile | | Min | Max |
| | Sample ID | 259 | | | | 95% | 95% | | | (+/-) | | | | | | |
| | Sample Depth | Composite | | | | | | | | | | | | | | |
| | Field Texture | LMC | | | | | | | | | | | | | | |
| Analyses | Unit | - | | | | | | | | | | | | | | |
| pH - Water | pH units | 8.97 | H.Alk | 8.6 | H.Alk | 8.4 | 8.8 | 0.3 | 13 | 0.2 | 8.1 | M.Alk | 9.0 | H.Alk | 8.0 | 9.0 |
| Electrical Conductivity | dS/m | 1.01 | VH.Sal | 0.4 | M.Sal | 0.30 | 0.56 | 0.2 | 13 | 0.13 | 0.2 | M.Sal | 0.7 | H.Sal | 0.2 | 1.0 |
| Chloride | mg/kg | 1190.0 | H.Sal | 345.8 | M.Sal | 168 | 524 | 327.8 | 13 | 178 | 58.0 | VL.Sal | 642.6 | H.Sal | 23.1 | 1190.0 |
| Total Nitrogen - Kjeldahl | mg/kg | 683.0 | L | 1207.4 | L | 1079 | 1336 | 237.0 | 13 | 129 | 844.4 | L | 1420.0 | L | 683.0 | 1480.0 |
| Total Phosphorus - Nitric/Perchloric | mg/kg | 216.0 | * | 311.5 | * | 253 | 370 | 107.4 | 13 | 58 | 197.4 | * | 452.6 | * | 147.0 | 488.0 |
| Phosphorus - Colwell extr | mg/kg | <5.00 | L | 18.9 | * | 9 | 29 | 15.6 | 10 | 10 | 9.0 | * | 33.4 | * | 6.0 | 56.3 |
| Potassium - Colwell ext | mg/kg | 147.00 | L | 157.9 | * | 131 | 185 | 49.6 | 13 | 27 | 126.0 | * | 180.2 | * | 95.3 | 304.0 |
| Sulphur - KCl | mg/kg | 30.3 | VH | 46.8 | VH | 22.48 | 71.08 | 44.7 | 13 | 24.30 | 10.0 | M | 115.9 | VH | 8.9 | 130.0 |
| Organic Carbon | % | 0.29 | EL | 1.3 | M | 1.04 | 1.52 | 0.4 | 13 | 0.24 | 0.9 | L | 1.6 | M | 0.3 | 2.2 |
| Copper | mg/kg | 0.78 | M | 0.9 | M | 0.79 | 1.02 | 0.2 | 13 | 0.12 | 0.7 | M | 1.0 | M | 0.7 | 1.5 |
| Iron | mg/kg | 2.60 | * | 8.0 | * | 5 | 11 | 5.7 | 13 | 3 | 3.6 | * | 16.1 | * | 2.6 | 22.1 |
| Manganese | mg/kg | 10.40 | M | 6.4 | M | 5.22 | 7.54 | 2.1 | 13 | 1.16 | 4.1 | M | 9.8 | M | 3.8 | 10.5 |
| Zinc | mg/kg | 1.94 | M | 0.9 | M | 0.48 | 1.26 | 0.7 | 13 | 0.39 | 0.3 | VL | 1.9 | M | 0.2 | 1.9 |
| Boron | mg/kg | 1.42 | M | 1.7 | M | 1.35 | 2.05 | 0.6 | 13 | 0.35 | 1.0 | L | 2.3 | H | 0.8 | 3.1 |
| Cation Extraction Method | Rayment& Lyons | 15C1 | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Cation Exchange Capacity | meq/100g | 16.9 | M | 19.0 | M | 14.9 | 23.1 | 7.5 | 13 | 4.1 | 12.0 | L | 28.2 | H | 9.1 | 34.7 |
| Ex Calcium Percent | % | 40.57 | L | 61.0 | L | 55.8 | 66.2 | 9.6 | 13 | 5.2 | 47.0 | L | 69.6 | Normal | 40.6 | 72.0 |
| Ex Magnesium Percent | % | 35.76 | H | 27.2 | H | 24.5 | 30.0 | 5.1 | 13 | 2.8 | 20.8 | H | 34.8 | H | 18.9 | 35.8 |
| Ex Potassium Percent | % | 2.25 | Normal | 2.1 | Normal | 1.6 | 2.6 | 0.8 | 13 | 0.5 | 1.3 | Normal | 3.0 | Normal | 1.0 | 4.0 |
| Ex Sodium Percent | % | 21.29 | H.Sodic | 9.5 | Sodic | 6.6 | 12.4 | 5.4 | 13 | 2.9 | 4.5 | N.Sodic | 16.6 | H.Sodic | 3.1 | 21.3 |
| Ex Aluminium Percent | % | 0.13 | VL | 0.1 | VL | 0.1 | 0.2 | 0.1 | 13 | 0.0 | 0.1 | VL | 0.2 | VL | 0.1 | 0.2 |
| Exchangeable Calcium | mg/kg | 1369 | H | 2330.5 | H | 1742.9 | 2918.0 | 1080.8 | 13 | 587.5 | 1323.4 | H | 3849.2 | H | 1275.0 | 4748.0 |
| Exchangeable Magnesium | mg/kg | 724 | H | 615.9 | H | 492.5 | 739.4 | 227.1 | 13 | 123.5 | 371.2 | H | 860.2 | H | 207.0 | 965.0 |
| Exchangeable Potassium | mg/kg | 148 | H | 138.5 | H | 124.5 | 152.6 | 25.9 | 13 | 14.1 | 116.8 | H | 161.4 | H | 72.1 | 177.0 |
| Exchangeable Sodium | mg/kg | 826 | FALSE | 424.4 | H.Sodic | 290.7 | 558.1 | 246.0 | 13 | 133.7 | 110.0 | H.Sodic | 635.0 | H.Sodic | 97.3 | 826.0 |
| Exchangeable Aluminium | mg/kg | 2 | * | 2.0 | * | #NUM! | #NUM! | 0.0 | 13 | #NUM! | 2.0 | * | 2.0 | * | 2.0 | 2.0 |
| Exchangeable Calcium | meq/100g | 6.85 | M | 11.7 | H | 8.7 | 14.6 | 5.4 | 13 | 2.9 | 6.6 | M | 19.2 | H | 6.4 | 23.7 |
| Exchangeable Magnesium | meq/100g | 6.03 | H | 5.1 | H | 4.1 | 6.2 | 1.9 | 13 | 1.0 | 3.1 | H | 7.2 | H | 1.7 | 8.0 |
| Exchangeable Potassium | meq/100g | 0.38 | M | 0.4 | M | 0.3 | 0.4 | 0.1 | 13 | 0.0 | 0.3 | L | 0.4 | M | 0.2 | 0.5 |
| Exchangeable Sodium | meq/100g | 3.59 | VH | 1.8 | H | 1.3 | 2.4 | 1.1 | 13 | 0.6 | 0.5 | M | 2.8 | VH | 0.4 | 3.6 |
| Exchangeable Aluminium | meq/100g | 0.02 | VH | 0.0 | VH | 0.0 | 0.0 | 0.0 | 13 | 0.0 | 0.0 | VH | 0.0 | VH | 0.0 | 0.0 |
| Calcium/Magnesium Ratio | - | 1.1 | Low Ca | 2.4 | Low Ca | 2.0 | 2.8 | 0.8 | 13 | 0.4 | 1.4 | Low Ca | 3.4 | Low Ca | 1.1 | 3.8 |
| Emerson Aggregate | Class | 4 | Slaking | 4.1 | * | * | * | * | * | * | * | * | * | * | * | * |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Highly acidic | | Extremely alkaline | | High salinity | | Sodic | | Strongly sodic |