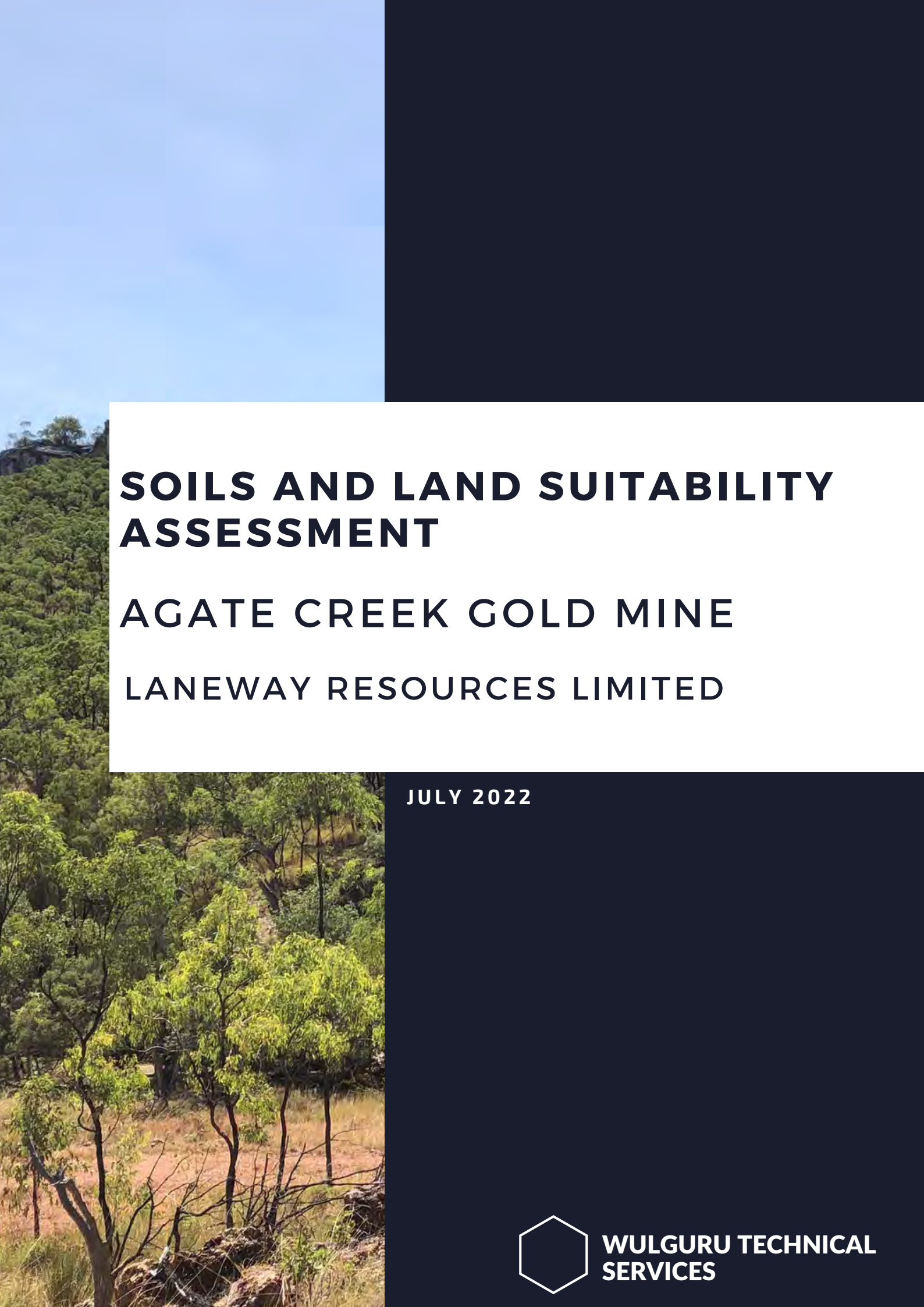


EA APPLICATION SUPPORTING REPORT

SAVANNAH GOLDFIELDS LTD

Appendix 4 Soils and Land Suitability Assessment (WTS, 2022)



SOILS AND LAND SUITABILITY ASSESSMENT

AGATE CREEK GOLD MINE

LANEWAY RESOURCES LIMITED

JULY 2022



**WULGURU TECHNICAL
SERVICES**

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1. Introduction

Laneway Resources Limited (Laneway) is the owner and operator of the Agate Creek Gold Mine (Agate Creek) – Environmental Authority (EA) EPSL03068015. Wulguru Technical Services Pty Ltd (WTS) has been engaged to undertake a Soils and Land Suitability Assessment (SLSA) for Agate Creek.

This SLSA report provides a baseline understanding of soil and land resources, and their suitability for use in rehabilitation activities at Agate Creek. The Project focused on areas of minimal disturbance to previously undisturbed land, evaluating resources such as topsoil material availability, suitability for use in rehabilitation and potential constraints to plant growth.

1.1. Purpose and Objectives

The purpose of this report is to evaluate the soil mapping units and land resources available within the Project's Mining Lease (ML). The objectives of this Project are to:

- Identify and map soil mapping units and terrain that occurs within the ML;
- Classify and determine soil types according to observed and analysed physical and chemical characteristics;
- Validate Land Suitability Classifications within the ML; and
- Validate topsoil resources and rehabilitation materials.

1.2. Project Description

Agate Creek is situated on the boundary area of Einasleigh and Woolgar Goldfields of north Queensland approximately 50km south of Forsayth. Laneway has mined gold ore from the Sherwood Pit since the granting of Mining Lease (ML)100030 in 2019.

Ore is extracted via conventional open cut mining techniques and is transported to the Run of Mine (ROM) Pad 1km south of the open cut. The ore is processed offsite, with ore transported via Agate Creek/North head Road.

Project mining domains include:

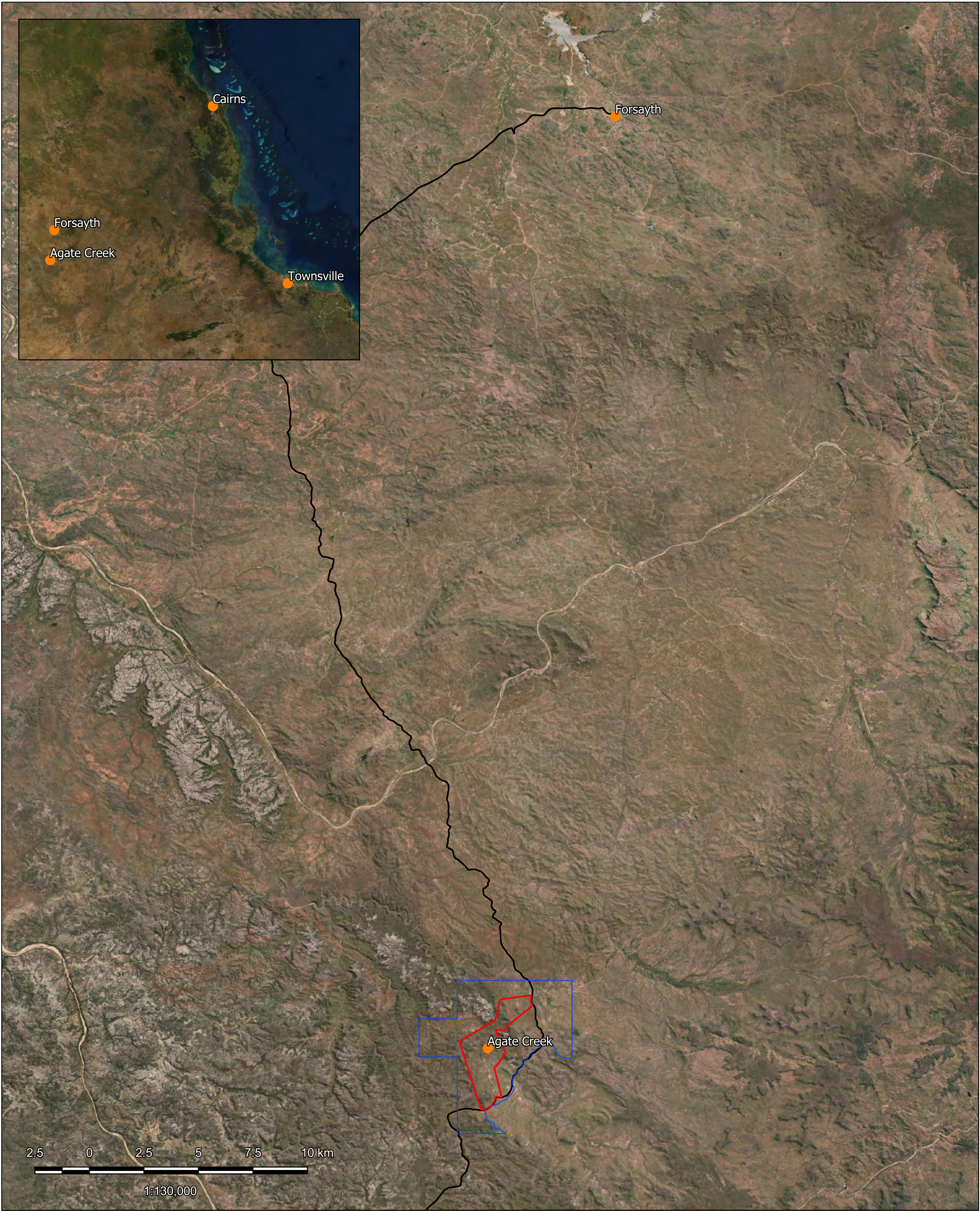
- 4 Waste Rock Dumps;
- ROM Pad;
- 6 Open Cut Pits;
- Water Management Infrastructure;
- Accommodation village including sewage treatment infrastructure; and
- Mine Infrastructure Areas (MIA) (including workshops, administration buildings, fuel and oil storages, roads and carparks, and other ancillary infrastructure).

1.3. Project Location

Agate Creek is located 50km south of Forsyth, Queensland. Agate Creek is bound by pastoral land currently under Laneway held Mineral Development License (MDL) 402. Access to Agate Creek is via the Agate Creek Road. Project details are outlined in Table 1.

Table 1. Property Description

Company Name – ABN	Laneway Resources Limited 75 003 049 714
Lot on Plan	Lot 4 on BD164
Mining Lease	ML 100030
ML Area	689.3
Local Government Area	Etheridge Shire Council
Zoning Information	Rural



Client: Laneway Resources Ltd
Project number: 2021.09001
CRS: GDA2020 EPSG: 7844
Date: 11 July 2022

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Figure 1. Agate Creek Gold Project Locality

Legend

- Key Features
 - Access Road
 - Mineral Development Licence
 - Mining Lease
- ESRI Satellite

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2. Existing Environment

2.1. Climate

The Project is located in the dry tropics' region and experiences hotter and wetter periods during the summer months (wet season) and drier, cooler periods during the winter months (dry season).

LWR operates a weather station at Agate Creek (Lat. -19.0127, Lon. 143.5500). Mean maximum temperatures recorded in 2021 were 32.8°C – 34.2°C from January to March and 27.6°C – 29.1°C from June to August. Mean minimum temperatures recorded in 2021 were 21.9°C – 23.0°C from January to March and 15.1°C – 15.8°C from June to August. A total of 1016 mm rainfall was recorded at the Agate Creek Camp station in 2021 (Weatherlink 2022).

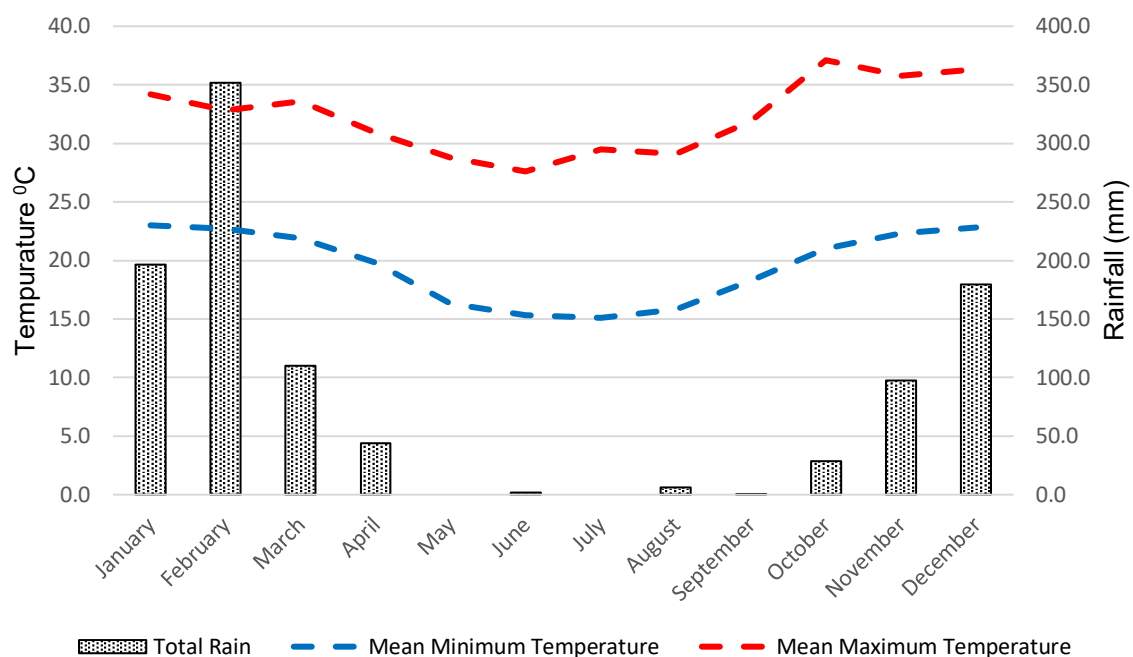


Figure 2. Mean Temperature and Rainfall at Agate Creek Weather Station

2.2. Topography and Hydrology

The topography of the Site includes steep sandstone scarps and formations to the west, with the western boundary bordered by the Gregory Range, along with steeply undulating hills, gullies and gently undulating open woodland and seasonal floodplain (SLR Consulting, 2021). The Project is between 420 m and 550 m Australian Height Datum (AHD) (Queensland Government, 2021). There are ephemeral watercourses/shallow drainage depressions (unnamed 1st and 2nd order creeks) that flow across the Project. Most surface water eventually flows into Agate Creek, a 4th order stream that flows approximately south-east to north-west though the central part of the ML as shown in Figure 3.

2.3. Geology

Agate Creek is situated within the Etheridge Goldfield which has a rich history of gold mining prospects, the most significant being the Kidston deposit approx. 60km east of Agate Creek. Gold mineralisation of Agate Creek includes epithermal and meso-thermal systems within quartz veining, stockworks and breccias associated with the felsic volcanic units of:

- **Permian Kennedy Igneous Group** - Mostly felsic igneous rocks and less commonly intermediate to mafic. Intrusive and extrusive in roughly equal proportions. Characterised by rhyolitic (& subordinate dacitic) ignimbrites (& lavas) in volcanic subsidence structures (cauldrons), and granitic intrusions in ring complexes, sub-circular plutons and batholiths. Also various felsic & mafic dyke swarms (Geoscience Australia, 2002); and
- **Proterozoic Forsayth Batholith** - light to dark grey, biotite granite and granodiorites (Geoscience Australia, 2002).

Agate Creek Geology is displayed on Figure 3.

2.4. Soils

There is limited information on soils at Agate Creek. According to the Atlas of Australian Soils (1:2,000,000), there are two soil types found at the Project, as described in Table 3 (ARIS,2013).

Table 2. Soil Types of the Project (Queensland Government, 2021a)

ATLAS 1:2000000 Code	Soil Type Description	Sub Soils Factual Key
LL8	uniform medium, nonbleached A2 horizon, underlain by B horizon of value/chroma=5YR	Uc4.2 Dr2.12 Dr2.22
Ta11	duplex yellow-grey, hard setting A horizon, A2 horizon nonbleached, acid pedal mottled B horizon	Dr2.22 Dr2.21 Uc4.2 Uc4.1 Gn2.11 Gn2.21 Gn2.45
JK23	uniform coarse, A2 horizon nonbleached underlain by non coherent col B horizon value/chroma=5	Uc4.11 Uc4.12 Uc2.12 Uc2.21 Uc5.21 Gn2.11 Gn2.14



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CRS: GDA2020 EPSG: 7844
Date: 1 June 2022

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Figure 3. Topography and Hydrology

Legend

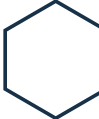
- Mineral Development Licence
- Mining Lease
- Existing Mine Features
- Proposed Mine Features
- Gilbert Basin
- Major Rivers
- 10m Contour

Watercourse - Stream Order

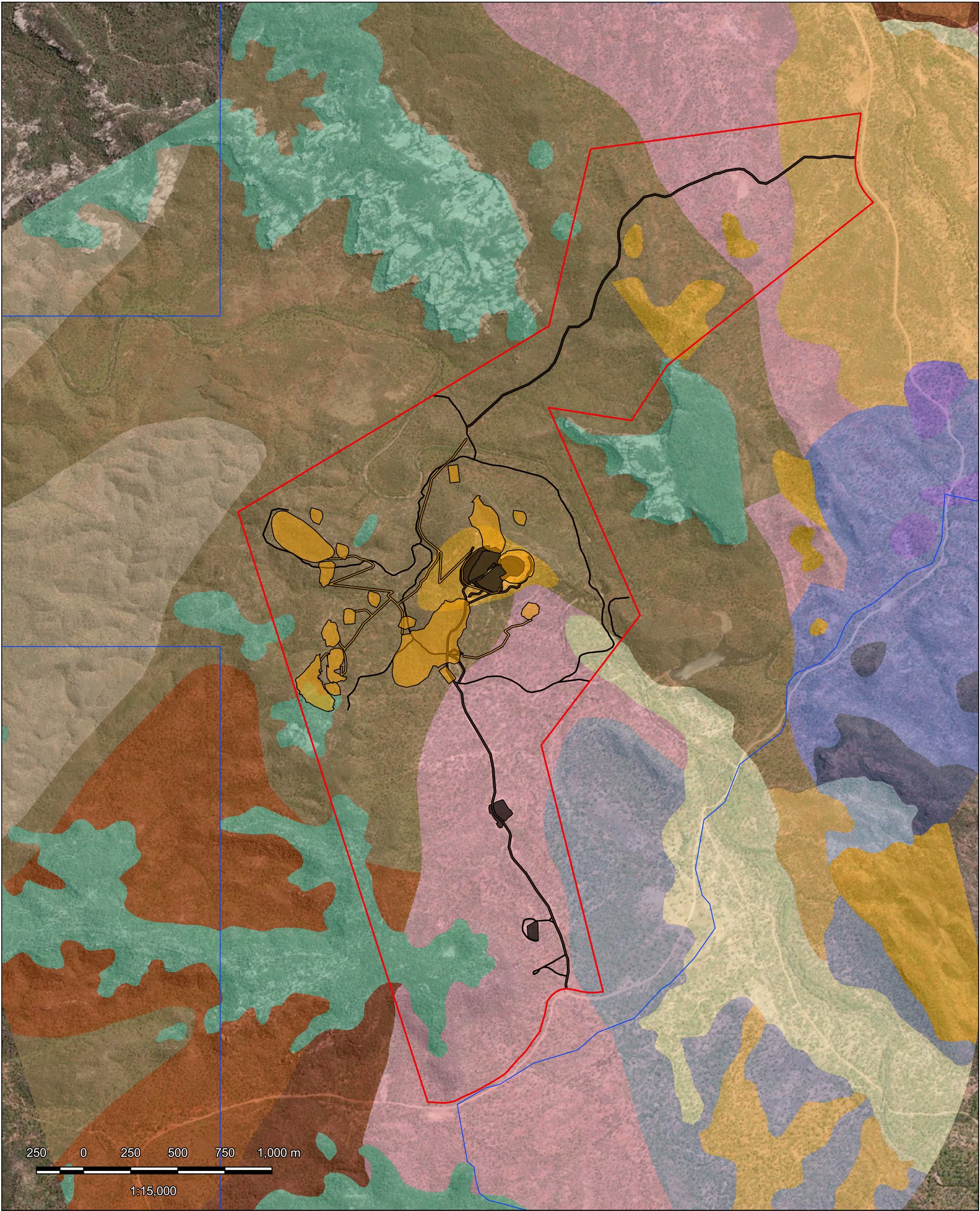
- 0
- 1
- 2
- 3
- 4

ESRI Satellite

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3. Soil Survey

The distribution of main soil types within the SLSA area were identified, validated and refined from the field survey, which was conducted according to land resource assessment guidelines (The National Committee on Soil and Terrain, 2009). The methods and results for the field and laboratory assessment are described herein.

3.1. Methodology

3.1.1. Background Information

Descriptions of soil types/ units and their distribution with landforms and parent material refer to the Australian Soil Resource Information System (ASRIS). Preliminary soil unit boundaries were developed from:

- Publicly available reports and data sources – Geological mapping, Qspatial databases, etc.
- Topographic mapping.

3.1.2. Field Investigations

A 'free survey' was adopted that complied with land suitability assessment criteria. Soil unit boundaries varied from abrupt/clear to gradual and trends were associated with variations along geological mapping units and topographic sequences. Professional judgement was utilised to identify appropriate reference and detailed observation sites, check sites were utilised to confirm soil boundaries and points of interest.

Survey design details relating to map scale and survey density were developed in accordance with McKenzie et al. (2008b) (Table 4). Seven detailed observation sites were recorded with three submitted for laboratory analysis. 15 check sites were collected to determine soil boundaries and units. On this basis it is considered that the survey design was sufficiently detailed to assess soil properties and their distribution across the Assessment area.

Table 3. Field survey observations.

Class	Observations	Land Suitability	Actual for Project
	Minimum map scale	1:50,000	1:50,000
	Site density	1 Site/ 20 ha	1 site/ 20 ha
	Total number	7	7
I	Detailed profiles	1	7
II	Reference profiles with laboratory data	1	7
III	Check Sites	21	21

¹ One reference site with laboratory analysis for each soil type identified.

3.1.3. Laboratory Analytes

Soils were classified from profile morphology and laboratory analyses according to the Australian Soil Classification (ASC) system. Laboratory samples were collected and submitted to a National Association of Testing Authorities (NATA) laboratory, ALS Environmental, for analysis of the following analytes:

- pH;
- Electrical conductivity;
- Moisture content;
- Particle size distribution;
- Exchangeable Cations;
- Bicarbonate Extractable Potassium;
- Sulphate;
- Chloride;
- Total metals (As, Cd, Cr, Cu, Fe, Pb, Ni, Zn, Hg);
- Nitrite plus Nitrate;
- Kjeldahl Nitrogen;
- Total Nitrogen;
- Total Phosphorus; and
- Total Organic Carbon.

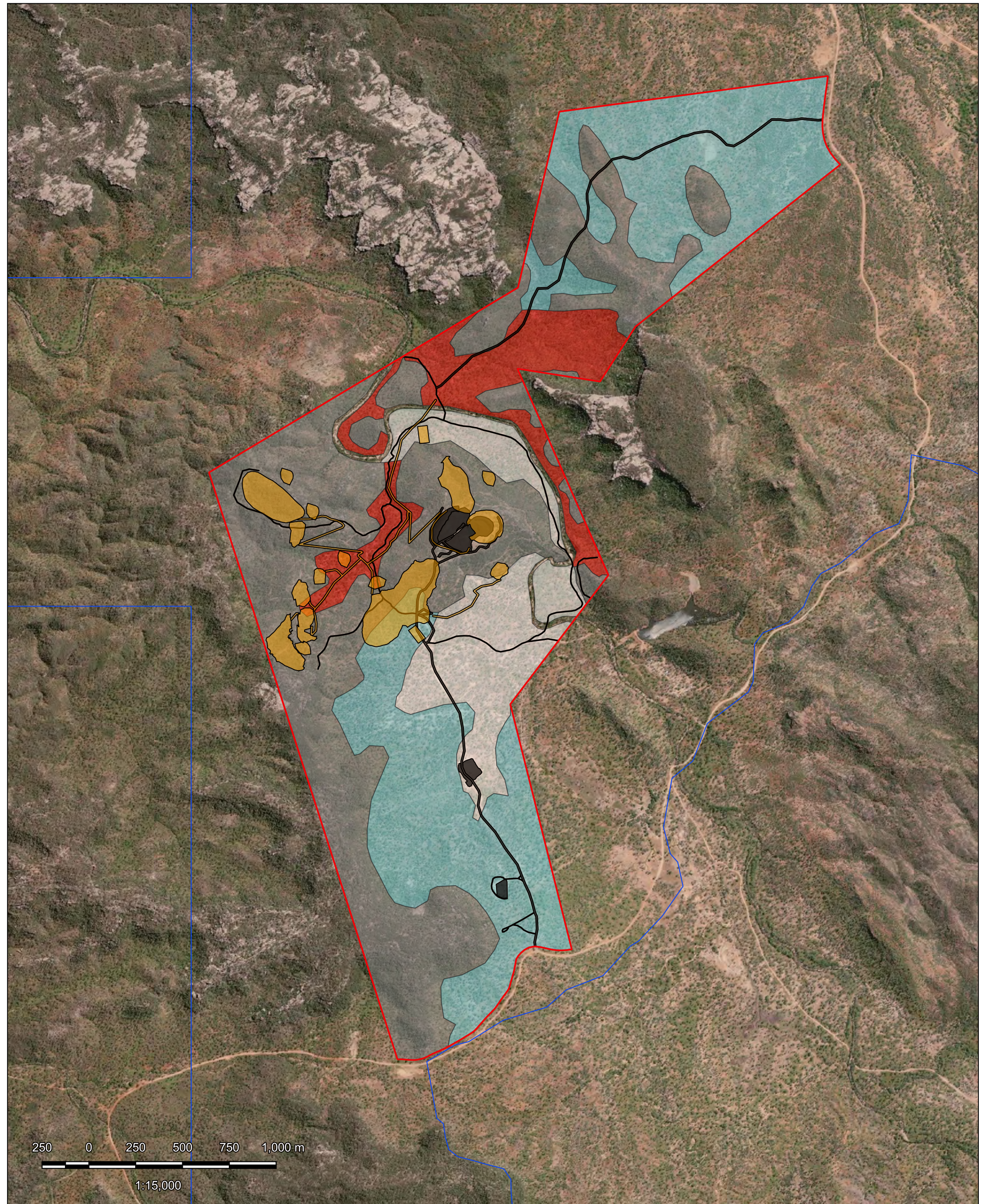
4. Results

4.1. Soil Map Units

WTS identified four soil map units across the Project. Representative soil profiles are described in Table 5 and distribution of soils is mapped in Figure 5.

Table 4. Representative Soil Profiles Soil Management Unit Reference Site Area (ha) Area (percentage)

Soil Management Unit	Reference Site	Area (ha)	Area (%)
Brown Mellic Kandosol	S1	232.58	34.86
Red Massive Gypsic Vertosol	S3	63.97	9.32
Brown Bleached Kandosol	S4	83.51	12.18
Brown Lithsolic Rudosol	S5	299.13	43.62



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Project number: 2021.09001
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Date: 11 July 2022

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Figure 5. Ground-truthed Soils

Legend

- Mine Tenure
- Mineral Development Licence
 - Mining Lease
 - Existing Mine Features
 - Proposed Mine Features

- Ground-truthed Soils
- Brown Bleached Kandosol
 - Brown Lithsolic Rudosol
 - Brown Mellic Kandosol
 - Red Massive Gypsic Vertosol
- ESRI Satellite

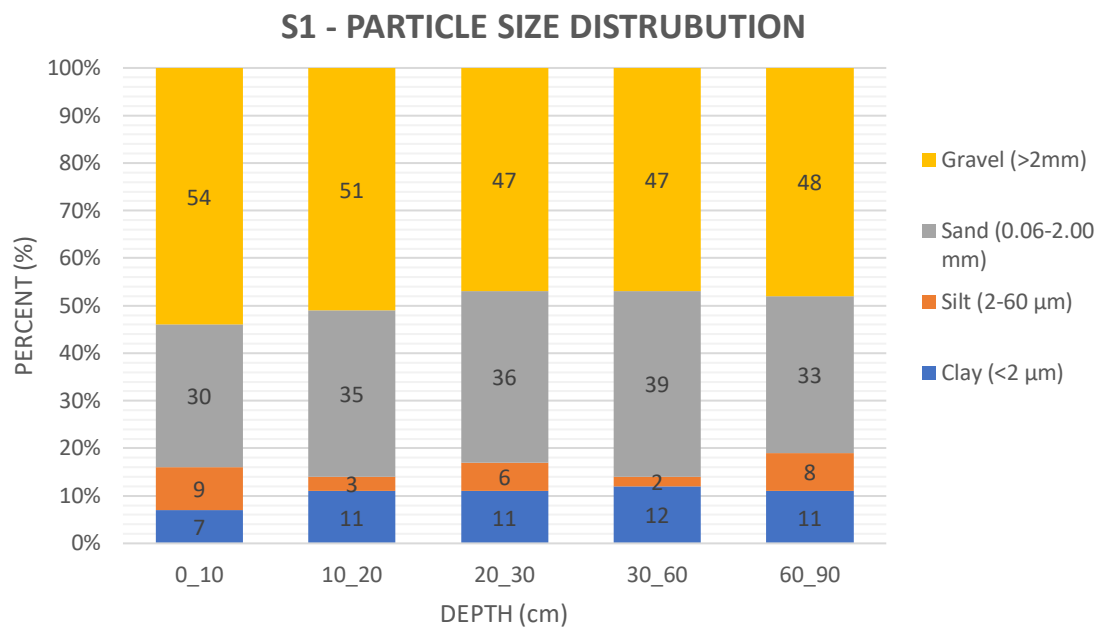
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4.2. Soil Profile 1 – Brown Mellic Kandosol

Project: Agate Creek SLSA Site: S1								
Location: Agate Creek Mine, Qld Described by: Matthew Ayre Date: 23/11/2022								
Site Description								
Geology: Sgr								
Landform pattern: Mid slope								
Element: -								
Permeability: -								
Microrelief: Normal								
Microrelief component: No record								
Drainage: Well								
Slope: 3-5 %								
Rock outcrops: None								
Surface coarse fragments: -								
Surface condition: Firm								
Disturbances: Grazing								
Australian Soil Classification: [AB] [DO] [KA]								
Profile Morphology								
Horizon	Depth (cm)	Description						
A1	0 - 10	Brown – 5/3 7.5 YR, loamy coarse sand with many coarse earthy segregations (gravel), single grain granular structure, few roots (very fine), nil mottling, well drained with gradual transition to B1 Horizon						
B1	10-90	Light brown – 6/3 7.5 YR, loamy coarse sand with many coarse earthy segregations (gravel) single grain granular structure, few roots (very fine), nil mottling, well drained with gradual transition to B2 Horizon						
Depth (cm)	pH	EC (µS/cm)	Nitrite + Nitrate as N (NOx)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%w/w)	Colwell K (mg/kg)
0 - 10	6.2	20	1.0	190	190	144	0.23	921
10 - 20	6.1	5	1.4	150	150	173	0.16	575
20 - 30	5.9	4	0.8	140	140	155	0.19	437
30 - 60	5.9	4	0.2	110	110	129	0.14	349
60 - 90	6.0	4	0.2	110	110	146	0.13	280
Depth (cm)	Exc. Na (meq/100g)	Exc. K (meq/100g)	Exc. Ca (meq/100g)	Exc. Mg (meq/100g)	Cation Exc. Capacity (meq/100g)	ESP (%)	Ca:Mg Ratio	S (mg/kg)
0 - 10	<0.1	0.4	1.9	0.6	2.9	1.2	3.2	<10
10 - 20	<0.1	0.3	1.0	0.6	1.9	0.8	1.7	<10
20 - 30	<0.1	0.2	0.8	0.4	1.4	0.8	2.0	<10
30 - 60	<0.1	0.2	0.5	0.7	1.6	3.2	0.7	<10
60 - 90	0.1	0.2	0.5	0.9	2.4	6.2	0.6	<10

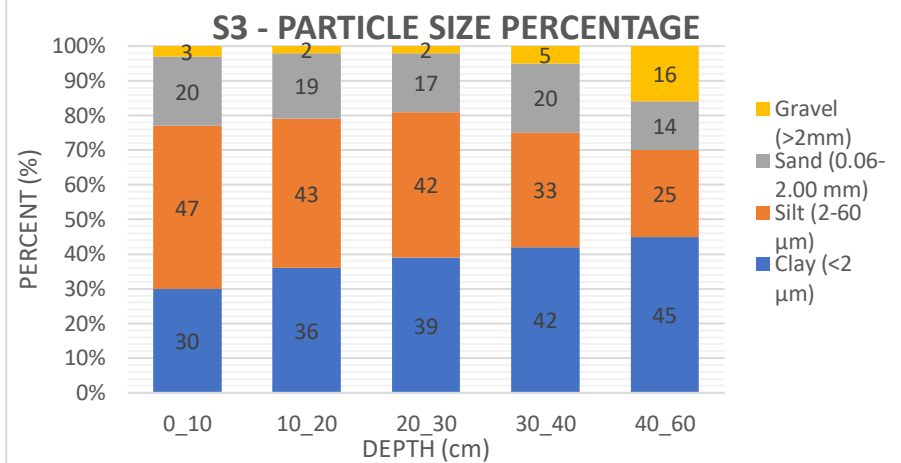
Particle Size Distribution



4.3. Soil Profile 3 – Red Massive Gypsic Vertosol

Project: Agate Creek SLSA Site: S3								
Location: Agate Creek Mine Described by: Matthew Ayre Date: 23/11/2022		 						
Site Description								
Geology: PLco								
Landform pattern: Mid Slope								
Element: -								
Permeability: -								
Microrelief: Normal								
Microrelief component: No record								
Drainage: Poor								
Slope: 3-5 %								
Rock outcrops: No rock								
Surface coarse fragments: -								
Surface condition: Firrn								
Disturbances: Remnant vegetation								
Australian Soil Classification:								
Profile Morphology								
Horiz on	Depth (cm)	Description						
A1	0-20	Redish brown (5/4 5YR) clay loam with no segregations, weak structure with angular blocky peds (5-20 mm), few roots (fine), poorly drained, gradual transition to B1						
B1	20-30	Light redish brown (6/4 2.5 YR) clay with few gypseous nodules, moderate structure with angular blocky peds (5-10mm), nil roots, poorly drained, gradual transition to B2						
B2	30-60	Red (4/6 2.5 YR) clay with few segregations (gravel), weak to moderate structure with angular blocky peds (2-10mm), nil roots, poorly drained.						
Depth (cm)	pH	EC (µS/cm)	Nitrite + Nitrate as N (NOx)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%w/w)	Colwell K (mg/kg)
0-10	7.0	42	0.2	780	780	169	1.76	1170
10-20	6.6	10	0.3	700	700	138	1.29	522
20-30	6.8	5	<0.2	430	430	117	0.76	278
30-40	6.8	6	<0.2	880	880	294	0.60	162
40-60	6.8	4	<0.2	820	820	219	0.47	129
Depth (cm)	Exc. Na (meq/100g)	Exc. K (meq/100g)	Exc. Ca (meq/100g)	Exc. Mg (meq/100g)	Cation Exc. Capacity (meq/100g)	ESP (%)	Ca:Mg Ratio	S (mg/kg)
0-10	<0.1	1.4	13.0	7.4	21.7	0.1	1.8	<10
10-20	<0.1	0.8	9.8	7.0	17.6	0.2	1.4	<10
20-30	<0.1	0.4	10.6	7.8	19.0	0.3	1.4	<10
30-40	<0.1	0.3	10.4	7.8	18.6	0.3	1.3	<10
40-60	<0.1	0.2	9.3	7.1	16.7	0.4	1.3	<10

Particle Size Distribution

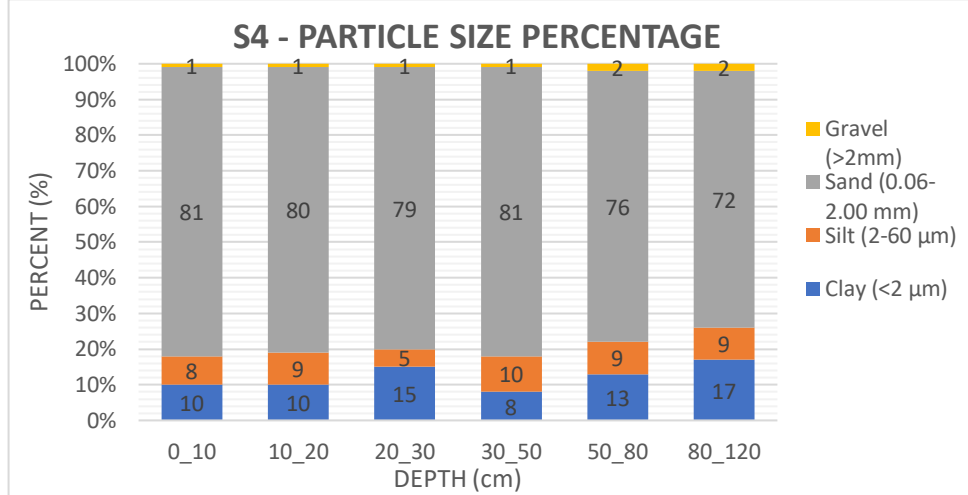


4.4. Soil Profile 4 – Brown Bleached Kandosol

Project: Agate Creek SLSA				Site: S4				
Location: Agate Creek Mine Described by: Matthew Ayre Date: 23/11/2022								
Site Description								
Geology: PLco Landform pattern: Flat Element: - Permeability: - Microrelief: Normal Microrelief component: - Drainage: Well Slope: 0-1% Rock outcrops: No rock Surface coarse fragments: - Surface condition: Firm Disturbances: Remnant Vegetation								
Australian Soil Classification:								
Profile Morphology								
Horiz on	Depth (cm)	Description						
A1	0-10	Brown (4/2 7.5YR) loamy sand with no segregations, weak structure with angular blocky peds (5-20 mm), roots common, well drained, clear transition to B1 horizon.						
B1	10-50	Light brown (6/3 7.5 YR) sandy loam with no segregations, weak structure with angular blocky peds, nil roots, well drained, clear transition to B2 horizon.						
B2	50-80	Pink to light brown (7/3 7.5YR) sandy loam, with no segregations, weak structure with subangular blocky peds (10-20mm), moderately drained, moist, clear transition to B3 horizon.						
B3	80-120	Brown (5/4 7.5YR) sandy loam with few ferruginous nodules, moderate structure with subangular blocky peds, nil roots, moderately drained, moist.						
Depth (cm)	pH	EC (µS/cm)	Nitrite + Nitrate as N (NOx)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%w/w)	Colwell K (mg/kg)
0-10	6.5	18	292	630	630	168	0.96	292
10-20	6.7	12	277	390	390	164	0.54	277
20-30	6.5	11	270	210	210	116	0.32	270
30-50	6.4	8	222	150	150	126	0.18	222
50-80	6.4	6	193	120	120	142	0.15	193
80-120	6.5	17	308	140	140	125	0.23	308
Depth (cm)	Exc. Na (meq/100g)	Exc. K (meq/100g)	Exc. Ca (meq/100g)	Exc. Mg (meq/100g)	Cation Exc. Capacity (meq/100g)	ESP (%)	Ca:Mg Ratio	S (mg/kg)
0-10	<0.1	0.4	3.2	0.8	4.4	<0.1	4.0	292
10-20	<0.1	0.4	2.2	0.6	3.1	0.3	3.7	277
20-30	<0.1	0.4	2.1	0.6	3.0	0.3	3.5	270
30-50	<0.1	0.3	1.9	0.5	2.7	0.4	3.8	222

50-80	<0.1	0.2	2.1	0.8	3.1	0.8	2.6	193
80-120	<0.1	0.4	3.6	2.1	6.2	1.2	1.7	308

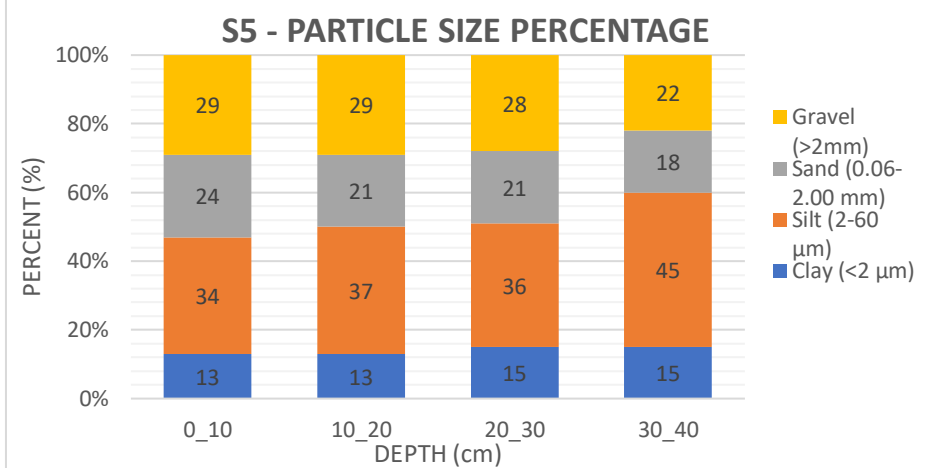
Particle Size Distribution



4.5. Soil Profile 5 – Brown Lithsolic Rudosol

Project: Agate Creek SLSA				Site: S5				
Location: Agate Creek Mine								
Described by: Matthew Ayre								
Date: 25 November 2021								
Site Description								
Geology: PLco								
Landform pattern: Hillock								
Element: -								
Permeability: -								
Microrelief: Normal								
Microrelief component: -								
Drainage:								
Slope: 10%								
Rock outcrops: Rocky to very rocky								
Surface coarse fragments: Many								
Surface condition: Firm								
Disturbances: Remnant Vegetation								
Australian Soil Classification: [AB] [HJ] [RU]								
Profile Morphology								
Horizon	Depth (cm)	Description						
A1	0-20	Brown (4/2 7.5YR) loam with very many segregations (gravel to cobbles), weak structure with subangular blocky peds (5-10 mm), well drained, clear transition to B1 Horizon.						
B1	20-40	Pink to light brown (7/3 7.5YR) loam with very many segregations (gravel to cobbles), massive structure, well drained, abrupt transition to C1 Horizon						
C1	-	Parent Material						
Depth (cm)	pH	EC (µS/cm)	Nitrite + Nitrate as N (NOx)	TKN (mg/kg)	TN (mg/kg)	TP (mg/kg)	TOC (%w/w)	Colwell K (mg/kg)
0 - 10	5.3	6	0.7	510	510	256	0.90	224
10 - 20	5.3	4	0.5	360	360	169	0.60	115
20 - 30	5.0	3	0.4	280	280	325	0.34	109
30 - 40	5.3	2	0.4	190	190	359	0.22	<100
Depth (cm)	Exc. Na (meq/100g)	Exc. K (meq/100g)	Exc. Ca (meq/100g)	Exc. Mg (meq/100g)	Cation Exc. Capacity (meq/100g)	ESP (%)	Ca:Mg Ratio	S (mg/kg)
0 - 10	<0.1	0.3	0.5	0.5	2.1	1.2	1.0	<10
10 - 20	<0.1	0.1	0.2	0.4	2.3	2.6	0.5	<10
20 - 30	<0.1	0.2	0.2	0.4	1.9	2.4	0.5	<10
30 - 40	<0.1	0.1	<0.1	0.4	1.3	2.0	<0.1	<10

Particle Size Distribution



5. Land Assessment

5.1. Land Suitability Assessment

Land Suitability has been assessed using the methods and criteria provided in the Guideline for Agricultural Land Evaluation (Department of Science Information Technology and Innovation and Department of Natural Resources and Mines, 2015) and Guideline for Land Suitability Assessment Techniques (Department of Mines and Energy, 1995). This assesses how suitable an area of land is for two major rural agricultural enterprises: rainfed broadacre cropping and beef cattle grazing.

The Land Suitability assessment cross-references each soil unit's characteristics with suitability criteria from Department of Mines and Energy (1995). The Land Suitability assessment uses a five-class system, where Class 1 indicates that the land is most suitable for the enterprise and Class 5 the least suitable. The overall land suitability ranking for each specific soil unit is determined by the most severe limitation, or a combination of the varying limitations. Land is considered less suitable as the severity of limitations for a land use increases. The increasing limitations may reflect any combination of:

- Reduced potential for production;
- Increased inputs to achieve an acceptable level of production; and/or
- Increased inputs required to prevent land degradation.

The Land Suitability Classes are described in Table 6.

Table 5. Land Suitability Classes

Class	Suitability	Limitations	Description
1	Suitable	Negligible	Highly productive land requiring only simple management practices to maintain economic production.
2	Suitable	Minor	Land with limitations that either constrain production, or require more than the simple management practices of class 1 land to maintain economic production.
3	Suitable	Moderate	Land with limitations that either further constrain production, or require more than those management practices of class 2 land to maintain economic production.
4	Unsuitable	Severe	Currently unsuitable land. The limitations are so severe that the sustainable use of the land in the proposed manner is precluded. In some circumstances, the limitations may be surmountable with changes to knowledge, economics or technology.
5	Unsuitable	Extreme	Land with extreme limitations that preclude any possibility of successful sustained use of the land in the proposed manner.

WTS' analysis provides a considered approach to land suitability assessments whereby each soil management unit's characteristics have been cross-referenced against Department of Mines and Energy (1995) and Guidelines for Agricultural Land Evaluation in Queensland (Department of Science Information Technology and Innovation and Department of Natural Resources and Mines, 2015). The overall land suitability class for each SMU is determined by the most severe limitation, or a combination of varying limiting components under both the rainfed broadacre cropping and beef cattle grazing.

5.1.1. Plant Available Water Capacity and Effective Rooting Depth

The primary land suitability assessment attribute is 'moisture'. The indicator for moisture is Plant Available Water Capacity (PAWC). PAWC is an estimate of the amount of moisture stored in the soil profile that is available for plant extraction. It is generally defined as the difference between field capacity and permanent wilting point. PAWC is calculated for the soil profile by summing the available water capacity over the soil's effective rooting depth (ERD). For the purposes of this assessment, PAWC is calculated based on the soil texture methods detailed in *How to demonstrate that land in the strategic cropping area does not meet the criteria for strategic cropping land* (Department of State Development Manufacturing Infrastructure and Planning, 2014). Soil water storage based on field texture is outlined in Table 7.

Table 6. Soil Texture Table (Department of State Development Manufacturing Infrastructure and Planning, 2014)

Soil Texture	Soil Water Storage
Sand; clayey sand; loamy sand	4 mm / 100 mm
Sandy loam	5 mm / 100 mm
Loam; silty loam; sandy clay loam	6 mm / 100 mm
Clay loam; clay loam, sandy; silty clay loam	8 mm / 100 mm
Silty clay; clays with <45% clay fraction	10 mm / 100 mm
Clays with >45% clay fraction	12 mm / 100 mm

Effective rooting depth is defined as the soil depth to which 90% of the plant roots will extract water and can be estimated through observed rooting depth, soil chemical parameters or a standardised soil rooting depth (McKenzie et al., 2008a). For the purposes of this assessment methodologies employed to determine ERD, and subsequently PAWC are determined based on guideline *How to demonstrate that land in the strategic cropping area does not meet the criteria for strategic cropping land* (Department of State Development Manufacturing Infrastructure and Planning, 2014) (Table 8).

Table 7. Effective Rooting Depth Criteria

Descriptor	ERD Limitation Threshold
Electrical Conductivity	> 0.8 dS/cm
Chloride	> 800 ppm
Sodicity	> 15%
pH	<= 5.0
Soil Structure	Moderate or strong columnar structure. Sandy free draining horizons. Significant rock content.

5.1.2. Beef Cattle Grazing

Limitations for Beef Cattle Grazing suitability on improved pastures have been assessed in accordance with Department of Mines and Energy (1995), including categories:

- Water availability;
- Nutrient deficiency;
- Soil physical factors;
- Salinity;
- Rockiness;
- Microrelief;
- pH;
- ESP;
- Wetness;
- Topography;
- Water erosion;
- Flooding; and
- Vegetation.

Note: a depth of 0.6 m has been assumed for root zone depth for any profile in which weathered rock, and/ or a salt bulge was absent as outlined in Department of Mines and Energy (1995).

5.1.2.1. Water Availability

PAWC thresholds for land suitability classes are as follows:

- **Class 1:** > 125 mm;
- **Class 2:** 100 – 125 mm;
- **Class 3:** 75 – 100 mm;
- **Class 4:** 50 – 75 mm;
- **Class 5:** <50 mm.

The thresholds stated are based on pasture generally, and do not account for specific pasture species. Land Suitability Classes are described in Table 9.

Table 8. Water Availability

SMU	ERD	PAWC	Land Suitability Class
Brown Mellic Kandosol	20mm	90	2
Red Massive Gypsic Vertosol	20mm	20	5
Brown Bleached Kandosol	20mm	120	1
Brown Lithsolic Rudosol	10mm	20	5

5.1.2.2. Nutrient Deficiency

Nutrient deficiency for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 10.

Table 9. Nutrient Deficiency Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	<i>Eucalyptus microneura</i> +/- <i>Terminalia</i> spp. low woodland on sand sheets. Nitrate as N < 3mg/ kg, Cowell Potassium >143mg/kg.	2
Red Massive Gypsic Vertosol	<i>Eucalyptus crebra</i> and/or <i>E. whitei</i> +/- <i>Corymbia erythrophloia</i> open woodland on steep to rolling hills on igneous rocks. Nitrate as N < 3mg/ kg, Cowell Potassium >143mg/kg	2
Brown Bleached Kandosol	<i>Eucalyptus microneura</i> +/- <i>Terminalia</i> spp. low woodland on sand sheets. Nitrate as N >3mg/ kg, Cowell Potassium >143mg/kg	2
Brown Lithsolic Rudosol	<i>Eucalyptus crebra</i> and/or <i>E. whitei</i> +/- <i>Corymbia erythrophloia</i> open woodland on steep to rolling hills on igneous rocks Nitrate as N < 3mg/ kg, Cowell Potassium >143mg/kg.	2

5.1.2.3. Soil Physical Factors

Soil physical factors for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 11.

Table 10. Soil Physical Factor Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Soft soils with a hard setting surface when dry.	2
Red Massive Gypsic Vertosol	Soft soils with a hard setting surface when dry.	2
Brown Bleached Kandosol	Soils with a loose, soft surface when dry.	2
Brown Lithsolic Rudosol	Large soil aggregate size on surface (>20mm)	4

5.1.2.4. Salinity

Salinity limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 12.

Table 11. Salinity Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Rootzone Electrical Conductivity < 0.15 dS/cm or rootzone Chloride <300 ppm.	1
Red Massive Gypsic Vertosol	Rootzone Electrical Conductivity < 0.15 dS/cm or rootzone Chloride <300 ppm.	1
Brown Bleached Kandosol	Rootzone EC < 0.15 dS/cm or rootzone Chloride <300 ppm.	1
Brown Lithsolic Rudosol	Rootzone EC < 0.15 dS/cm or rootzone Chloride <300 ppm.	1

5.1.2.5. Rockiness

Salinity limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 13.

Table 12. Rockiness Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	No Rock	2
Red Massive Gypsic Vertosol	No Rock	2
Brown Bleached Kandosol	No Rock	1
Brown Lithsolic Rudosol	60-200mm (cobbles) 20-50%.	4

5.1.2.6. Microrelief

Microrelief limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 14.

Table 13. Microrelief Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Melonholes cover < 20 % surface area.	1
Red Massive Gypsic Vertosol	Melonholes cover < 20 % surface area.	1
Brown Bleached Kandosol	Melonholes cover < 20 % surface area.	1
Brown Lithsolic Rudosol	Melonholes cover < 20 % surface area.	1

5.1.2.7. pH

pH limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 15.

Table 14. pH Limitation

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	pH 5.9 – 6.2	1
Red Massive Gypsic Vertosol	pH 6.8 – 7.0	1
Brown Bleached Kandosol	pH 6.4 – 6.7	1
Brown Lithsolic Rudosol	pH 5.0 – 5.3	1

5.1.2.8. Exchangeable Sodium Percentage (ESP)

ESP limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 16.

Table 15. ESP Limitation

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	ESP (10 cm) < 5.0	1
Red Massive Gypsic Vertosol	ESP (10 cm) < 5.0	1
Brown Bleached Kandosol	ESP (10 cm) < 5.0	1
Brown Lithsolic Rudosol	ESP (10 cm) < 5.0	1

5.1.2.9. Wetness

Wetness limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 17.

Table 16. Wetness Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Non rigid soils with non sodic subsoils (ESP < 15) within 60 cm of the surface. Well drained	1
Red Massive Gypsic Vertosol	Non rigid soils with non sodic subsoils (ESP < 15) within 60 cm of the surface. Well drained	1
Brown Bleached Kandosol	Non rigid soils with non sodic subsoils (ESP < 15) within 60 cm of the surface. Well drained	1
Brown Lithsolic Rudosol	Non rigid soils with non sodic subsoils (ESP < 15) within 60 cm of the surface. Well drained	1

5.1.2.10. Topography

Topography limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 18.

Table 17. Topography Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Flat to slightly undulated terrain suitable for efficient use of machinery, efficient installation and maintenance of infrastructure and/or irrigation requirements	1
Red Massive Gypsic Vertosol	Flat to slightly undulated terrain suitable for efficient use of machinery, efficient installation and maintenance of infrastructure and/or irrigation requirements	1
Brown Bleached Kandosol	Flat to slightly undulated terrain suitable for efficient use of machinery, efficient installation and maintenance of infrastructure and/or irrigation requirements	1
Brown Lithsolic Rudosol	Slope 10-20%, heavy machinery not safe to use	4

5.1.2.11. Water Erosion

Water erosion limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 19.

Table 18. Water Erosion Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Slopes on 1 – 3 % on all other soils .	1
Red Massive Gypsic Vertosol	Slopes < 3% on all other soils.	1
Brown Bleached Kandosol	Slopes < 3% on all other soils.	1
Brown Lithsolic Rudosol	Stable soils with 10-20% slope	3

5.1.2.12. Flooding

Flooding limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 20.

Table 19. Flooding Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Periodic flooding (from once in 50 years to whenever stream flow increases).	2
Red Massive Gypsic Vertosol	Periodic flooding (from once in 50 years to whenever stream flow increases).	2
Brown Bleached Kandosol	Flooding frequency of approximately 1 in 10 years	3
Brown Lithsolic Rudosol	No flooding or flooding less than 1 in 10 years	1

5.1.2.13. Vegetation

Vegetation limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 21.

Table 20. Vegetation Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	<i>Eucalyptus microneura</i> +/- <i>Terminalia</i> spp. low woodland on sand sheets.	2
Red Massive Gypsic Vertosol	<i>Eucalyptus crebra</i> and/or <i>E. whitei</i> +/- <i>Corymbia erythrophloia</i> open woodland on steep to rolling hills on igneous rocks.	4
Brown Bleached Kandosol	<i>Eucalyptus microneura</i> +/- <i>Terminalia</i> spp. low woodland on sand sheets.	2
Brown Lithsolic Rudosol	<i>Eucalyptus crebra</i> and/or <i>E. whitei</i> +/- <i>Corymbia erythrophloia</i> open woodland on steep to rolling hills on igneous rocks	4

5.1.2.14. Summary of Land Suitability Class for Beef Cattle Grazing

Overall, SMUs were found to be limited by Vegetation, Water Availability, Nutrients and pH. These factors combined have the potential to limit pasture and therefore livestock production across much of the Site.

No land was identified within the Site that was deemed suitable for beef cattle grazing (i.e. Class 1, 2 or 3) with 100 % of the Site found to require significant inputs to maintain production, encountering extreme limitations (Class 5).

Table 21. Summary of Land Suitability Classes for Beef Cattle Grazing

Limitation	Brown Mellic Kandosol	Red Massive Gypsic Vertosol	Brown Bleached Kandosol	Brown Lithsolic Rudosol
Water Availability	2	5	1	5
Nutrient Deficiency	2	2	2	2
Soil Physical Factors	2	2	2	4
Salinity	1	1	1	1
Rockiness	2	2	1	4
Microrelief	1	1	1	1
pH	1	1	1	1
ESP (10cm)	1	1	1	1
Wetness	1	1	1	1
Topography	1	1	1	4
Water Erosion	1	1	1	3
Flooding	2	2	3	1
Vegetation	2	4	2	4
Land Suitability Class	2	5	3	5

5.1.3. Rainfed Broadacre Cropping

Limitations for Rainfed Broadacre Cropping (Cropping) have been assessed in accordance with thresholds detailed in Department of Mines and Energy (1995), including:

- Water Availability;
- Nutrient Deficiency;
- Soil physical factors;
- Soil workability;
- Salinity;
- Rockiness;
- Microrelief;
- Wetness;
- Topography;
- Water Erosion; and
- Flooding.

Assessment of the SMUs suitability for cropping has been conducted in accordance with Department of Science Information Technology and Innovation and Department of Natural Resources and Mines (2015).

Note: a depth of 0.6 m has been assumed for root zone depth for any profile in which weathered rock, and/ or a salt bulge was absent as outlined in Department of Mines and Energy (1995).

5.1.3.1. Water Availability

PAWC thresholds for land suitability classes are as follows:

- Class 1: > 150 mm;
- Class 2: 125 - 150 mm;
- Class 3: 100 - 125 mm;
- Class 4: 75 - 100 mm;
- Class 5: <75 mm.

The thresholds stated are based on pasture generally, and do not account for specific pasture species. Land Suitability Classes are described in Table 23.

Table 22. Water Availability

SMU	ERD	PAWC	Land Suitability Class
Brown Mellic Kandosol	20mm	90	2
Red Massive Gypsic Vertosol	20mm	20	5
Brown Bleached Kandosol	20mm	120	1
Brown Lithsolic Rudosol	10mm	20	5

5.1.3.2. Nutrient Deficiency

Nutrient deficiency for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 24.

Table 23. Nutrient Deficiency Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	<i>Eucalyptus microneura</i> +/- <i>Terminalia</i> spp. low woodland on sand sheets. Nitrate as N < 3mg/ kg, Cowell Potassium >143mg/kg.	2
Red Massive Gypsic Vertosol	<i>Eucalyptus crebra</i> and/or <i>E. whitei</i> +/- <i>Corymbia erythrophloia</i> open woodland on steep to rolling hills on igneous rocks. Nitrate as N < 3mg/ kg, Cowell Potassium >143mg/kg	2
Brown Bleached Kandosol	<i>Eucalyptus microneura</i> +/- <i>Terminalia</i> spp. low woodland on sand sheets. Nitrate as N >3mg/ kg, Cowell Potassium >143mg/kg	2
Brown Lithsolic Rudosol	<i>Eucalyptus crebra</i> and/or <i>E. whitei</i> +/- <i>Corymbia erythrophloia</i> open woodland on steep to rolling hills on igneous rocks Nitrate as N < 3mg/ kg, Cowell Potassium >143mg/kg.	2

5.1.3.3. Soil Physical Factors

Soil physical factors for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 25.

Table 24. Soil Physical Factors Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Soft soils with a hard setting surface when dry.	2
Red Massive Gypsic Vertosol	Soft soils with a hard setting surface when dry.	2
Brown Bleached Kandosol	Soils with a loose, soft surface when dry.	2
Brown Lithsolic Rudosol	Large soil aggregate size on surface (>20mm)	4

5.1.3.4. Soil Workability

Soil workability limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 26.

Table 25. Soil Workability Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Soft soils with a hard setting surface when dry.	2
Red Massive Gypsic Vertosol	Soft soils with a hard setting surface when dry.	2
Brown Bleached Kandosol	Soils with a loose, soft surface when dry.	2
Brown Lithsolic Rudosol	Large soil aggregate size on surface (>20mm)	4

5.1.3.5. Salinity

Salinity limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 27.

Table 26. Salinity Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Rootzone Electrical Conductivity < 0.15 dS/cm or rootzone Chloride <300 ppm.	1
Red Massive Gypsic Vertosol	Rootzone Electrical Conductivity < 0.15 dS/cm or rootzone Chloride <300 ppm.	1
Brown Bleached Kandosol	Rootzone EC < 0.15 dS/cm or rootzone Chloride <300 ppm.	1
Brown Lithsolic Rudosol	Rootzone EC < 0.15 dS/cm or rootzone Chloride <300 ppm.	1

5.1.3.6. Rockiness

Salinity limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 28.

Table 27. Rockiness Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	No Rock	2
Red Massive Gypsic Vertosol	No Rock	2
Brown Bleached Kandosol	No Rock	1
Brown Lithsolic Rudosol	60-200mm (cobbles) 20-50%.	4

5.1.3.7. Microrelief

Microrelief limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 29.

Table 28. Microrelief Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Melonholes cover < 20 % surface area.	1
Red Massive Gypsic Vertosol	Melonholes cover < 20 % surface area.	1

Brown Bleached Kandosol	Melonholes cover < 20 % surface area.	1
Brown Lithsolic Rudosol	Melonholes cover < 20 % surface area.	1

5.1.3.8. Wetness

Wetness limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 30.

Table 29. Wetness Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Non rigid soils with non sodic subsoils (ESP < 15) within 60 cm of the surface. Well drained	1
Red Massive Gypsic Vertosol	Non rigid soils with non sodic subsoils (ESP < 15) within 60 cm of the surface. Well drained	1
Brown Bleached Kandosol	Non rigid soils with non sodic subsoils (ESP < 15) within 60 cm of the surface. Well drained	1
Brown Lithsolic Rudosol	Non rigid soils with non sodic subsoils (ESP < 15) within 60 cm of the surface. Well drained	1

5.1.3.9. Topography

Topography limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 31.

Table 30. Topography Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Flat to slightly undulated terrain suitable for efficient use of machinery, efficient installation and maintenance of infrastructure and/or irrigation requirements	1
Red Massive Gypsic Vertosol	Flat to slightly undulated terrain suitable for efficient use of machinery, efficient installation and maintenance of infrastructure and/or irrigation requirements	1
Brown Bleached Kandosol	Flat to slightly undulated terrain suitable for efficient use of machinery, efficient installation and	1

SMU	Limitation	Land Suitability Class
	maintenance of infrastructure and/or irrigation requirements	
Brown Lithsolic Rudosol	Slope 10-20%, heavy machinery not safe to use	4

5.1.3.10. Water Erosion

Water erosion limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 32.

Table 31. Water Erosion Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Slopes on 1 – 3 % on all other soils .	1
Red Massive Gypsic Vertosol	Slopes < 3% on all other soils.	1
Brown Bleached Kandosol	Slopes < 3% on all other soils.	1
Brown Lithsolic Rudosol	Stable soils with 10-20% slope	3

5.1.3.11. Flooding

Flooding limitations for each SMU is based on thresholds in Department of Mines and Energy (1995) and presented in Table 33.

Table 32. Flooding Limitations

SMU	Limitation	Land Suitability Class
Brown Mellic Kandosol	Periodic flooding (from once in 50 years to whenever stream flow increases).	2
Red Massive Gypsic Vertosol	Periodic flooding (from once in 50 years to whenever stream flow increases).	2
Brown Bleached Kandosol	Flooding frequency of approximately 1 in 10 years	3
Brown Lithsolic Rudosol	No flooding or flooding less than 1 in 10 years	1

5.1.3.12. Summary of Land Suitability Class for Rainfed Broadacre Cropping

Overall, SMUs were found to be limited by Vegetation, Topography and Erosion. These factors combined have the potential to limit production across much of the Site. Vegetation is dominated by woody species on undulating terrain with highly erosive properties, making SMUs unsuitable for grazing.

No land was identified within the Site that was deemed suitable for rainfed broadacre grazing (i.e. Class 1, 2 or 3), with approx.. 82.1 % (109.14 ha) of the Site found to require extreme inputs to maintain production (Class 5), 17.9 % (23.86 ha) encountering significant limitations (Class 4) (Table 34).

Table 33. Summary of Land Suitability Classes for Rainfed Broadacre Cropping

Limitation	Brown Mellic Kandosol	Red Massive Gypsic Vertosol	Brown Bleached Kandosol	Brown Lithsolic Rudosol
Water Availability	2	5	1	5
Nutrient Deficiency	2	2	2	2
Soil Physical Factors	2	2	2	4
Soil Workability	2	2	2	4
Salinity	1	1	1	1
Rockiness	2	2	1	4
Microrelief	1	1	1	1
Wetness	1	1	1	1
Topography	1	1	1	4
Water Erosion	1	1	1	3
Flooding	2	2	3	1
Land Suitability Class	2	5	3	5

5.2. Soil Resource Assessment

Topsoil resources are predominantly limited to surface soil horizons, with the upper horizons maintaining seedbank, micro-organisms, nutrients and organics necessary for plant growth and establishment. Generally, soil nutrients and micro-organism activity decrease with depth.

Soil resources are based on factors such as ERD, PAWC, nutrient availability, sodicity, etc. and represent the recommended maximum stripping depth for stockpiling and future rehabilitation. Generally, soil stripping should be timed based on favourable climatic conditions to avoid soil loss, compaction or erosion. Two stage stripping is recommended where sub soils may be encountered, unless topsoil can be recovered in a single pass. Topsoil resources should be placed directly onto rehabilitation areas as soon as possible to limit handling. Where stockpiling is required, it is recommended that stockpiles be shaped to no greater than 2 m high, and stabilised using suitable erosion and sediment controls (e.g. hydromulch, jute mesh, etc.).

Table 35 details the maximum soil resources stripping depths and potential volumes available for use.

Table 34. Maximum Soil Resource Stripping Depths and Potential Volumes Available

SMU	Stripping Depth (cm)	SMU Area (m ²)	Potential Volume Available (m ³)
Brown Mellic Kandosol	0 – 30	2,325,800	697,740
Red Massive Gypsic Vertosol	0 – 20	639,700	127,940
Brown Bleached Kandosol	0 – 30	835,100	250,530
Brown Lithsolic Rudosol	0	2,991,300	0

Respreding of soil resources should occur on prepared, reshaped areas as soon as possible. Where soil resources allow, soils should be spread to a nominal depth of ~20cm on all re-graded spoil or disturbance areas. Soil resources should be spread with fertiliser and seed in one consecutive operation to reduce the potential for soil losses to wind and water erosion.

5.3. Land Stability

5.3.1. Erosion Hazard (Average Rainfall)

The International Erosion Control Association's (IECA) Best Practice Erosion and Sediment Control Guidelines (IECA 2008) sets erosion hazard based on average rainfalls for regions around Australia. IECA erosion hazard for the Mt Isa/Cloncurry Region is detailed in Table 37.

Table 35. Erosion Hazard (IECA, 2008)

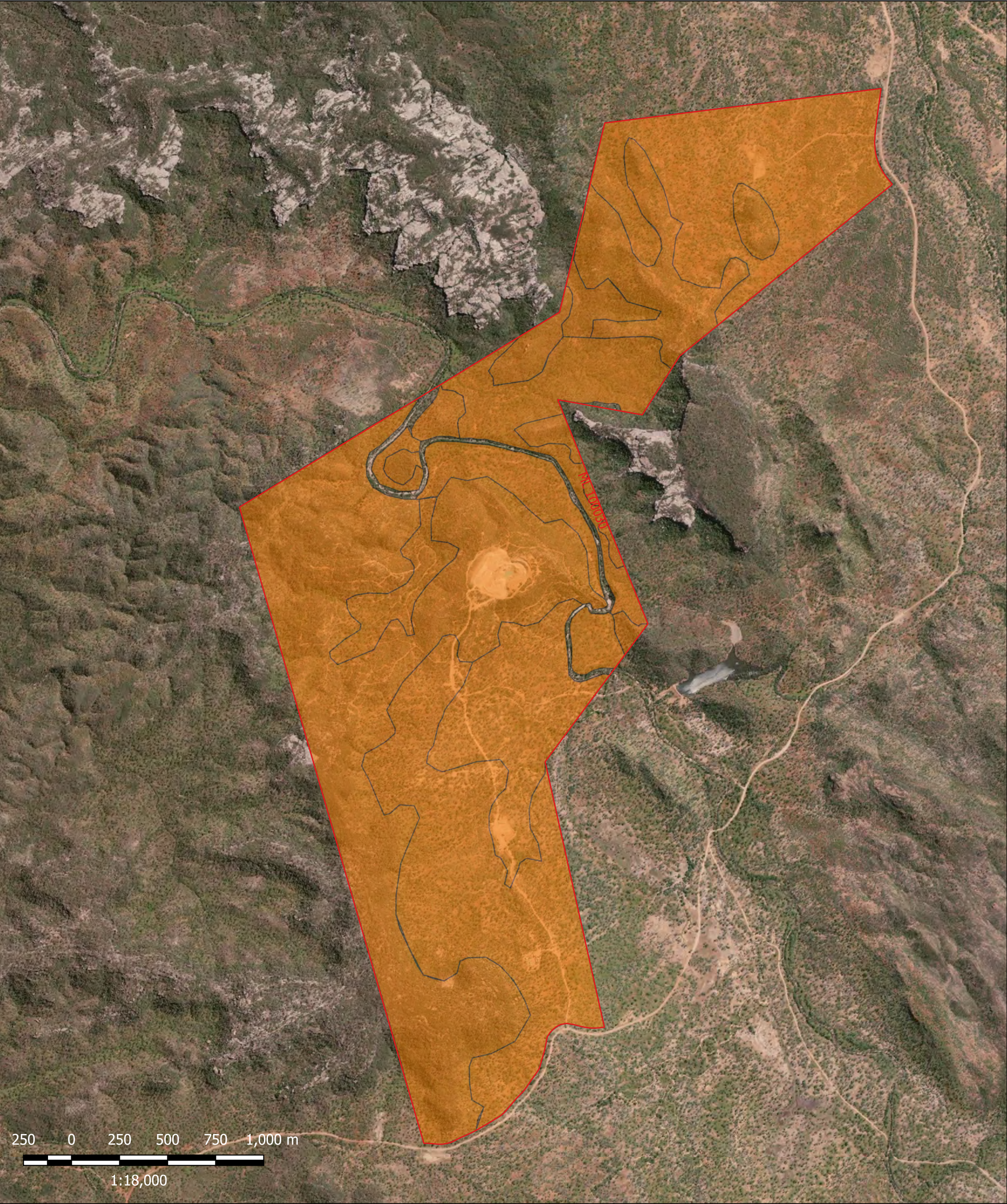
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
E	E	H	VL	VL	VL	VL	VL	VL	VL	L	H

5.3.2. Soil Erosion Susceptibility

An assessment of soil erosion susceptibility is given in Table 36, which lists influencing factors for both soil types that have been identified.

Table 36. Soil Erosion Susceptibility

Soil Type	Depth (cm)	Texture	ECEC (meq/100g)	Rating	ESP (%)	Rating	Landform	Vegetation Cover	Erosion Susceptibility
Brown Mellic Kandosol	0 - 10	Loam	1.2	Low	1.2	Non-Sodic	Gently undulating.	Sparse <i>Eucalyptus microneura</i> +/- <i>Terminalia</i> spp. low woodland	Moderate susceptibility due sparse erosion protection
	10-60	Loam	1.5	Low	1.6	Non-Sodic			
	60-90	Loam	2.4	Low	6.2	Slightly Sodic			
Red Massive Gypsic Vertosol	0-20	Clay Loam	20	Moderate	0.15	Non-Sodic	Flat to gently undulating	Sparse <i>Eucalyptus crebra</i> and/or <i>E. whitei</i> +/- <i>Corymbia erythrophloia</i> open woodland.	Moderate susceptibility due sparse erosion protection
	20-30	Clay	19	Moderate	0.3	Non-Sodic			
	30-60	Clay	17.6	Moderate	0.35	Non-Sodic			
Brown Bleached Kandosol	0-10	Loam	4.4	Low	0.1	Non-Sodic	Flat to gently undulating.	Sparse <i>Eucalyptus microneura</i> +/- <i>Terminalia</i> spp. low woodland.	Moderate susceptibility due sparse erosion protection
	10-50	Sandy Loam	2.9	Low	0.35	Non-Sodic			
	50-80	Sandy Loam	3.1	Low	0.8	Non-Sodic			
	80-120	Sandy Loam	6.2	Low	1.2	Non-Sodic			
Brown Lithsolic Rudosol	0 -20	Loam	2.2	Low	1.8	Non-Sodic	Slight to steeply undulated terrain	<i>Eucalyptus crebra</i> woodland, +/- <i>Corymbia pocillum</i> .	Moderate susceptibility due sparse erosion protection
	20-40	Loam	1.7	Low	2.2	Non-Sodic		<i>Acacia shirleyi</i> woodland	



Client: Laneway Reources
Project number: LWR
Coordinate Reference System: GDA 2020 Z54
Date: 2022-07-27

Map provided for interpretation purposes only.

Print as A0

Figure 6. Erosion Hazard

Legend

- ML100030
- Moderate Erosion Risk

Disclaimer:
Whilst every effort and care has been taken to ensure the accuracy of this report, Wulguru Technical Services Pty Ltd makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.
Digital data for this report is available on the Queensland Government Spatial Portal at <http://www.information.qld.gov.au>.



5.3.3. Erosion Management

Management recommendations to reduce the likelihood and potential impact of erosion include:

- Prioritising land clearing so as to only disturb areas necessary for development;
- Divert clean water and upstream catchments around proposed disturbances;
- Manage on site “dirty/ impacted” waters in such a way as to capture and treat sediment laden waters prior to leaving site;
- Ensure soil resources stockpiled are placed away from drainage areas, roads, machinery, transport, and grazing areas;
- Undertake progressive rehabilitation activities on landforms no longer required for operations.
- Staging the clearing activities where possible such that this is limited only in areas which are being actively cleared, therefore, limiting the time such areas are exposed;
- Erosion and Sediment Control Plans will be developed in accordance with IECA best practice guidelines such that these will highlight how far in advance vegetation clearing can be undertaken prior to construction works; and
- Develop and implement management strategies (as above) through an EM Plan and Erosion and Sediment Control Management Plan in line with all statutory legislation and regulations;
- General vegetation clearing and soil stripping should not be undertaken until earthwork and construction operations are ready to commence. All proposed erosion and sediment control measures will be implemented prior to, or in conjunction with, clearing activities.
- Prior to commencement of clearing and soil stripping, the limits of these works need to be clearly delineated by pegs placed at intervals on each side of the disturbed area by a suitably qualified supervisor.
- All operations will be planned to ensure that there is no damage to any trees, cropping or pasture areas outside the limits to be cleared.

Erosion of rehabilitated landforms/ domains reduces the potential for rehabilitation success and closure. In extreme instances, erosion can lead to the failure of structures (e.g. Tailings Storage Facility embankments), resulting in potential for environmental harm via release of sediment and contaminants to downstream receptors.

Pre-development landform is required to be re-established at post-development or post-land use as practical as possible. In areas where infrastructures maybe required for retention (i.e. dams or ponds), a provision for landform design in rehabilitation for such areas is recommended.

6. References

DEPARTMENT OF MINES AND ENERGY 1995. Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

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THE NATIONAL COMMITTEE ON SOIL AND TERRAIN 2009. *Australian Soil and Land Survey Field Handbook*, CSIRO Publishing, Commonwealth Scientific and Industrial Research Organisation.

Appendix A – Certificates of Analysis

CERTIFICATE OF ANALYSIS

Work Order : **EB2135923**
Client : **WULGURU TECHNICAL SERVICES PTY LTD**
Contact : **MATTHEW AYRE**
Address : **17 MUELLER ST WULGURU QLD**
WULGURU 4811
Telephone : **----**
Project : **2021.09001_Agate Creek SLA**
Order number : **----**
C-O-C number : **----**
Sampler : **MATTHEW AYRE**
Site : **----**
Quote number : **TV/140/21**
No. of samples received : **35**
No. of samples analysed : **35**

Page : 1 of 17
Laboratory : Environmental Division Brisbane
Contact : Customer Services EB
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 09-Dec-2021 07:55
Date Analysis Commenced : 10-Dec-2021
Issue Date : 18-Jan-2022 16:40



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- ED045G (Chloride) / EK059G (Nitrite and Nitrate as N (NO_x)): Some samples were diluted due to matrix interference. LOR adjusted accordingly.
- ALS is not NATA accredited for the analysis of Exchangeable Aluminium and Exchange Acidity in soils when performed under ALS Method ED005.
- ALS is not NATA accredited for the analysis of Exchangeable Cations on Alkaline Soils when performed under ALS Method ED006.
- EK061G (Total Kjeldahl Nitrogen as N) / EK067G (Total Phosphorus as P): Sample EB2135923_022 (S4_80_120) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EK061G (Total Kjeldahl Nitrogen as N): Sample EB2135923_002 (S1_10_20) Shows poor matrix spike recovery due to sample heterogeneity. Confirmed by visual inspection.
- ED006-Exchangeable Cations: Unable to calculate Magnesium/Potassium Ratio for sample 'S7_50_80' (EB2135923-035) as required Exchangeable Magnesium and/or Potassium results are less than the limit of reporting.
- ED007 (Exchangeable Cations by ICP-AES): Unable to calculate Magnesium/Potassium Ratio for some samples as required Exchangeable Magnesium and/or Potassium results are less than the limit of reporting.
- EG005T (Total Metals by ICP-AES): Sample S2_70_90 (EB2135923_011) shows poor duplicate results due to sample heterogeneity. This has been confirmed by visual inspection.
- EK067G (Total Phosphorus as P): Sample EB2135923_011 (S2_70_90) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H⁺ + Al³⁺).



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S1_0_10	S1_10_20	S1_20_30	S1_30_60	S1_60_90
Sampling date / time					23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-001	EB2135923-002	EB2135923-003	EB2135923-004	EB2135923-005
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		6.2	6.1	5.9	5.9	6.0
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		20	5	4	4	4
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		<1.0	<1.0	1.2	1.4	1.8
EA150: Particle Sizing									
+75µm	----	1	%		83	86	81	85	79
+150µm	----	1	%		76	76	72	74	71
+300µm	----	1	%		70	70	66	66	65
+425µm	----	1	%		68	67	64	62	62
+600µm	----	1	%		65	64	60	59	59
+1180µm	----	1	%		60	58	54	53	54
+2.36mm	----	1	%		51	49	44	45	45
+4.75mm	----	1	%		26	25	20	25	23
+9.5mm	----	1	%		10	5	<1	5	<1
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		7	11	11	12	11
Silt (2-60 µm)	----	1	%		9	3	6	2	8
Sand (0.06-2.00 mm)	----	1	%		30	35	36	39	33
Gravel (>2mm)	----	1	%		54	51	47	47	48
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.62	2.63	2.57	2.58	2.61
ED005: Exchange Acidity									
Ø Exchange Acidity	----	0.1	meq/100g		----	----	<0.1	0.1	0.6
Ø Exchangeable Aluminium	----	0.1	meq/100g		----	----	<0.1	<0.1	0.1
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		1.9	1.0	0.8	0.5	0.5
Exchangeable Magnesium	----	0.1	meq/100g		0.6	0.6	0.4	0.7	0.9
Exchangeable Potassium	----	0.1	meq/100g		0.4	0.3	0.2	0.2	0.2
Exchangeable Sodium	----	0.1	meq/100g		<0.1	<0.1	<0.1	<0.1	0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S1_0_10	S1_10_20	S1_20_30	S1_30_60	S1_60_90
Sampling date / time					23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-001	EB2135923-002	EB2135923-003	EB2135923-004	EB2135923-005
					Result	Result	Result	Result	Result
ED007: Exchangeable Cations - Continued									
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	1.4	1.6	2.4
Cation Exchange Capacity	----	0.1	meq/100g	----	2.9	1.9	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	1.2	0.8	0.8	3.2	6.2
Calcium/Magnesium Ratio	----	0.1	-	----	3.2	1.7	2.0	0.7	0.6
Magnesium/Potassium Ratio	----	0.1	-	----	1.7	2.0	2.0	3.9	4.8
ED021: Bicarbonate Extractable Potassium (Colwell)									
Bicarbonate Extractable K (Colwell)	----	100	mg/kg	----	921	575	437	349	280
ED040S : Soluble Sulfate by ICPAES									
Sulfate as SO4 2-	14808-79-8	10	mg/kg	----	<10	<10	<10	<10	<10
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	10	mg/kg	----	<10	<10	<10	<10	<10
EG005(ED093)T: Total Metals by ICP-AES									
Iron	7439-89-6	50	mg/kg	----	4940	6770	8810	7750	9180
Arsenic	7440-38-2	5	mg/kg	----	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	5	7	9	8	8
Copper	7440-50-8	5	mg/kg	----	<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg	----	5	7	11	8	7
Nickel	7440-02-0	2	mg/kg	----	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	----	<5	<5	<5	<5	<5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	1.0	1.4	0.8	0.2	0.2
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	190	150	140	110	110
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	----	190	150	140	110	110
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	----	144	173	155	129	146
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%	----	0.23	0.16	0.19	0.14	0.13



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S2_0_10	S2_10_20	S2_20_30	S2_30_40	S2_40_70
Sampling date / time					23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-006	EB2135923-007	EB2135923-008	EB2135923-009	EB2135923-010
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		5.9	5.5	5.6	5.6	5.7
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		17	10	6	4	3
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		<1.0	1.0	1.1	1.1	<1.0
EA150: Particle Sizing									
+75µm	----	1	%		82	82	84	84	85
+150µm	----	1	%		73	74	76	77	78
+300µm	----	1	%		60	62	65	68	68
+425µm	----	1	%		54	56	59	63	64
+600µm	----	1	%		48	50	55	58	60
+1180µm	----	1	%		39	42	46	51	53
+2.36mm	----	1	%		28	30	35	40	42
+4.75mm	----	1	%		12	13	18	16	15
+9.5mm	----	1	%		2	4	<1	<1	<1
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		7	10	8	10	8
Silt (2-60 µm)	----	1	%		9	7	7	5	7
Sand (0.06-2.00 mm)	----	1	%		53	49	46	42	40
Gravel (>2mm)	----	1	%		31	34	39	43	45
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.57	2.61	2.64	2.60	2.62
ED005: Exchange Acidity									
∅ Exchange Acidity	----	0.1	meq/100g		<0.1	0.2	0.2	0.2	0.2
∅ Exchangeable Aluminium	----	0.1	meq/100g		<0.1	<0.1	0.1	<0.1	<0.1
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		2.2	1.3	0.9	1.4	1.0
Exchangeable Magnesium	----	0.1	meq/100g		0.8	0.6	0.5	0.7	0.4
Exchangeable Potassium	----	0.1	meq/100g		0.3	0.2	0.2	0.2	0.2
Exchangeable Sodium	----	0.1	meq/100g		<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S2_0_10	S2_10_20	S2_20_30	S2_30_40	S2_40_70
Sampling date / time					23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-006	EB2135923-007	EB2135923-008	EB2135923-009	EB2135923-010
					Result	Result	Result	Result	Result
ED007: Exchangeable Cations - Continued									
Cation Exchange Capacity	----	0.1	meq/100g		3.3	2.5	1.9	2.5	1.9
Exchangeable Sodium Percent	----	0.1	%		0.3	0.6	0.9	1.5	1.3
Calcium/Magnesium Ratio	----	0.1	-		2.8	2.2	1.8	2.0	2.5
Magnesium/Potassium Ratio	----	0.1	-		2.5	2.5	2.2	3.4	2.8
ED021: Bicarbonate Extractable Potassium (Colwell)									
Bicarbonate Extractable K (Colwell)	----	100	mg/kg		406	265	244	191	182
ED040S : Soluble Sulfate by ICPAES									
Sulfate as SO4 2-	14808-79-8	10	mg/kg		<10	<10	<10	<10	<10
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	10	mg/kg		<10	<10	<10	<10	<10
EG005(ED093)T: Total Metals by ICP-AES									
Iron	7439-89-6	50	mg/kg		4230	7240	4700	5140	5770
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		8	10	8	9	14
Copper	7440-50-8	5	mg/kg		<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg		6	7	6	7	11
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg		<5	<5	<5	<5	<5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		1.7	2.8	1.1	0.5	0.2
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		290	270	140	80	90
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		290	270	140	80	90
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		101	89	75	64	92
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.48	0.40	0.19	0.11	0.12



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S2_70_90	S3_0_10	S3_10_20	S3_20_30	S3_30_40
Sampling date / time					23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-011	EB2135923-012	EB2135923-013	EB2135923-014	EB2135923-015
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		5.8	7.0	6.6	6.8	6.8
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		3	42	10	5	6
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		2.2	5.3	7.4	10.2	9.5
EA150: Particle Sizing									
+75µm	----	1	%		77	21	20	18	24
+150µm	----	1	%		73	16	15	13	18
+300µm	----	1	%		65	12	12	10	15
+425µm	----	1	%		60	10	10	9	13
+600µm	----	1	%		56	8	8	7	11
+1180µm	----	1	%		50	4	4	3	7
+2.36mm	----	1	%		41	2	1	1	5
+4.75mm	----	1	%		15	<1	<1	<1	2
+9.5mm	----	1	%		<1	<1	<1	<1	<1
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		15	30	36	39	42
Silt (2-60 µm)	----	1	%		6	47	43	42	33
Sand (0.06-2.00 mm)	----	1	%		35	20	19	17	20
Gravel (>2mm)	----	1	%		44	3	2	2	5
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.62	2.45	2.56	2.66	2.71
ED005: Exchange Acidity									
Ø Exchange Acidity	----	0.1	meq/100g		0.4	----	----	----	----
Ø Exchangeable Aluminium	----	0.1	meq/100g		<0.1	----	----	----	----
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		1.6	13.0	9.8	10.6	10.4
Exchangeable Magnesium	----	0.1	meq/100g		1.0	7.4	7.0	7.8	7.8
Exchangeable Potassium	----	0.1	meq/100g		0.1	1.4	0.8	0.4	0.3
Exchangeable Sodium	----	0.1	meq/100g		<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S2_70_90	S3_0_10	S3_10_20	S3_20_30	S3_30_40
Sampling date / time					23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00	23-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-011	EB2135923-012	EB2135923-013	EB2135923-014	EB2135923-015
					Result	Result	Result	Result	Result
ED007: Exchangeable Cations - Continued									
Cation Exchange Capacity	----	0.1	meq/100g		3.3	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g		----	21.7	17.6	19.0	18.6
Exchangeable Sodium Percent	----	0.1	%		2.8	0.1	0.2	0.3	0.3
Calcium/Magnesium Ratio	----	0.1	-		1.6	1.8	1.4	1.4	1.3
Magnesium/Potassium Ratio	----	0.1	-		8.2	5.3	9.1	18.5	27.6
ED021: Bicarbonate Extractable Potassium (Colwell)									
Bicarbonate Extractable K (Colwell)	----	100	mg/kg		125	1170	522	278	162
ED040S : Soluble Sulfate by ICPAES									
Sulfate as SO4 2-	14808-79-8	10	mg/kg		<10	<10	<10	<10	<10
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	10	mg/kg		<10	20	<20	<20	<20
EG005(ED093)T: Total Metals by ICP-AES									
Iron	7439-89-6	50	mg/kg		10700	38900	47300	47700	49200
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		20	30	37	37	39
Copper	7440-50-8	5	mg/kg		<5	54	80	91	97
Lead	7439-92-1	5	mg/kg		11	5	6	6	7
Nickel	7440-02-0	2	mg/kg		6	31	31	32	35
Zinc	7440-66-6	5	mg/kg		<5	92	73	70	71
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		0.2	0.2	0.3	<0.2	<0.2
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		70	780	700	430	880
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		70	780	700	430	880
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		59	169	138	117	294
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.10	1.76	1.29	0.76	0.60



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S3_40_60	S4_0_10	S4_10_20	S4_20_30	S4_30_50
Sampling date / time					23-Nov-2021 00:00	24-Nov-2021 00:00	24-Nov-2021 00:00	24-Nov-2021 00:00	24-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-016	EB2135923-017	EB2135923-018	EB2135923-019	EB2135923-020
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		6.8	6.5	6.7	6.5	6.4
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		4	18	12	11	8
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		8.1	1.3	1.7	1.5	1.8
EA150: Particle Sizing									
+75µm	----	1	%		30	81	80	80	80
+150µm	----	1	%		26	70	66	66	65
+300µm	----	1	%		24	39	36	34	33
+425µm	----	1	%		22	21	19	18	17
+600µm	----	1	%		21	9	9	9	8
+1180µm	----	1	%		18	2	2	3	2
+2.36mm	----	1	%		16	<1	<1	<1	<1
+4.75mm	----	1	%		12	<1	<1	<1	<1
+9.5mm	----	1	%		7	<1	<1	<1	<1
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		45	10	10	15	8
Silt (2-60 µm)	----	1	%		25	8	9	5	10
Sand (0.06-2.00 mm)	----	1	%		14	81	80	79	81
Gravel (>2mm)	----	1	%		16	1	1	1	1
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.73	2.61	2.63	2.65	2.67
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		9.3	3.2	2.2	2.1	1.9
Exchangeable Magnesium	----	0.1	meq/100g		7.1	0.8	0.6	0.6	0.5
Exchangeable Potassium	----	0.1	meq/100g		0.2	0.4	0.4	0.4	0.3
Exchangeable Sodium	----	0.1	meq/100g		<0.1	<0.1	<0.1	<0.1	<0.1
Cation Exchange Capacity	----	0.1	meq/100g		16.7	4.4	3.1	3.0	2.7
Exchangeable Sodium Percent	----	0.1	%		0.4	<0.1	0.3	0.3	0.4
Calcium/Magnesium Ratio	----	0.1	-		1.3	4.0	3.7	3.5	3.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S3_40_60	S4_0_10	S4_10_20	S4_20_30	S4_30_50
Sampling date / time					23-Nov-2021 00:00	24-Nov-2021 00:00	24-Nov-2021 00:00	24-Nov-2021 00:00	24-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-016	EB2135923-017	EB2135923-018	EB2135923-019	EB2135923-020
					Result	Result	Result	Result	Result
ED007: Exchangeable Cations - Continued									
Magnesium/Potassium Ratio	----	0.1	-		29.1	2.0	1.6	1.6	2.0
ED021: Bicarbonate Extractable Potassium (Colwell)									
Bicarbonate Extractable K (Colwell)	----	100	mg/kg		129	292	277	270	222
ED040S : Soluble Sulfate by ICPAES									
Sulfate as SO4 2-	14808-79-8	10	mg/kg		<10	<10	<10	<10	<10
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	10	mg/kg		<20	<10	<10	<10	<10
EG005(ED093)T: Total Metals by ICP-AES									
Iron	7439-89-6	50	mg/kg		41500	6480	7240	8280	6800
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		33	11	11	12	11
Copper	7440-50-8	5	mg/kg		83	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg		7	<5	<5	<5	<5
Nickel	7440-02-0	2	mg/kg		30	4	4	4	4
Zinc	7440-66-6	5	mg/kg		59	11	9	10	9
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		<0.2	4.6	3.1	3.0	2.6
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		820	630	390	210	150
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		820	630	390	210	150
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		219	168	164	116	126
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.47	0.96	0.54	0.32	0.18



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S4_50_80	S4_80_120	S5_0_10	S5_10_20	S5_20_30
Sampling date / time					24-Nov-2021 00:00	24-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-021	EB2135923-022	EB2135923-023	EB2135923-024	EB2135923-025
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		6.4	6.5	5.3	5.3	5.0
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		6	17	6	4	3
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		2.5	4.3	3.5	2.2	2.4
EA150: Particle Sizing									
+75µm	----	1	%		77	73	49	48	47
+150µm	----	1	%		63	61	38	37	36
+300µm	----	1	%		31	32	37	36	35
+425µm	----	1	%		17	18	36	35	34
+600µm	----	1	%		9	10	35	34	33
+1180µm	----	1	%		3	3	32	32	31
+2.36mm	----	1	%		1	1	28	28	27
+4.75mm	----	1	%		<1	<1	21	20	16
+9.5mm	----	1	%		<1	<1	8	10	4
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		13	17	13	13	15
Silt (2-60 µm)	----	1	%		9	9	34	37	36
Sand (0.06-2.00 mm)	----	1	%		76	72	24	21	21
Gravel (>2mm)	----	1	%		2	2	29	29	28
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.64	2.72	2.62	2.54	2.56
ED005: Exchange Acidity									
∅ Exchange Acidity	----	0.1	meq/100g		----	----	0.8	1.5	1.0
∅ Exchangeable Aluminium	----	0.1	meq/100g		----	----	0.4	0.8	0.6
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		2.1	3.6	0.5	0.2	0.2
Exchangeable Magnesium	----	0.1	meq/100g		0.8	2.1	0.5	0.4	0.4
Exchangeable Potassium	----	0.1	meq/100g		0.2	0.4	0.3	0.1	0.2
Exchangeable Sodium	----	0.1	meq/100g		<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S4_50_80	S4_80_120	S5_0_10	S5_10_20	S5_20_30
Sampling date / time					24-Nov-2021 00:00	24-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-021	EB2135923-022	EB2135923-023	EB2135923-024	EB2135923-025
					Result	Result	Result	Result	Result
ED007: Exchangeable Cations - Continued									
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	2.1	2.3	1.9
Cation Exchange Capacity	----	0.1	meq/100g	----	3.1	6.2	----	----	----
Exchangeable Sodium Percent	----	0.1	%	----	0.8	1.2	1.2	2.6	2.4
Calcium/Magnesium Ratio	----	0.1	-	----	2.6	1.7	1.0	0.5	0.5
Magnesium/Potassium Ratio	----	0.1	-	----	3.0	5.0	2.0	2.9	2.6
ED021: Bicarbonate Extractable Potassium (Colwell)									
Bicarbonate Extractable K (Colwell)	----	100	mg/kg	----	193	308	224	115	109
ED040S : Soluble Sulfate by ICPAES									
Sulfate as SO4 2-	14808-79-8	10	mg/kg	----	<10	<10	<10	<10	<10
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	10	mg/kg	----	<10	10	<10	<10	<10
EG005(ED093)T: Total Metals by ICP-AES									
Iron	7439-89-6	50	mg/kg	----	8020	11600	15700	16800	16300
Arsenic	7440-38-2	5	mg/kg	----	<5	<5	13	12	11
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	12	14	8	8	8
Copper	7440-50-8	5	mg/kg	----	<5	5	11	11	11
Lead	7439-92-1	5	mg/kg	----	<5	<5	<5	<5	<5
Nickel	7440-02-0	2	mg/kg	----	4	6	5	4	4
Zinc	7440-66-6	5	mg/kg	----	9	13	6	5	6
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	----	1.3	0.2	0.7	0.5	0.4
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg	----	120	140	510	360	280
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg	----	120	140	510	360	280
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg	----	142	125	256	169	325
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%	----	0.15	0.23	0.90	0.60	0.34



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S5_30_40	S6_0_10	S6_10_20	S6_20_30	S6_30_50
Sampling date / time					25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-026	EB2135923-027	EB2135923-028	EB2135923-029	EB2135923-030
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		5.3	5.1	5.4	5.7	5.4
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		2	7	6	7	8
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		2.2	2.7	2.2	2.7	2.9
EA150: Particle Sizing									
+75µm	----	1	%		38	64	61	55	54
+150µm	----	1	%		27	54	54	47	48
+300µm	----	1	%		26	43	46	39	41
+425µm	----	1	%		26	35	41	34	37
+600µm	----	1	%		25	28	37	30	34
+1180µm	----	1	%		24	19	28	25	29
+2.36mm	----	1	%		21	12	21	20	24
+4.75mm	----	1	%		14	6	13	13	18
+9.5mm	----	1	%		<1	<1	<1	6	8
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		15	17	18	19	14
Silt (2-60 µm)	----	1	%		45	17	18	25	28
Sand (0.06-2.00 mm)	----	1	%		18	52	40	35	32
Gravel (>2mm)	----	1	%		22	14	24	21	26
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.61	2.74	2.57	2.63	2.67
ED005: Exchange Acidity									
Ø Exchange Acidity	----	0.1	meq/100g		0.6	0.5	0.3	0.1	<0.1
Ø Exchangeable Aluminium	----	0.1	meq/100g		1.1	0.1	0.2	<0.1	<0.1
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		<0.1	0.8	0.9	1.5	1.6
Exchangeable Magnesium	----	0.1	meq/100g		0.4	0.4	0.5	0.6	0.6
Exchangeable Potassium	----	0.1	meq/100g		0.1	0.2	0.1	0.1	<0.1
Exchangeable Sodium	----	0.1	meq/100g		<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S5_30_40	S6_0_10	S6_10_20	S6_20_30	S6_30_50
Sampling date / time					25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-026	EB2135923-027	EB2135923-028	EB2135923-029	EB2135923-030
					Result	Result	Result	Result	Result
ED007: Exchangeable Cations - Continued									
Cation Exchange Capacity	----	0.1	meq/100g		1.3	1.8	1.8	2.4	2.4
Exchangeable Sodium Percent	----	0.1	%		2.0	1.2	2.0	2.0	2.1
Calcium/Magnesium Ratio	----	0.1	-		<0.1	2.0	1.8	2.5	2.7
Magnesium/Potassium Ratio	----	0.1	-		3.3	2.4	4.2	5.6	----
ED021: Bicarbonate Extractable Potassium (Colwell)									
Bicarbonate Extractable K (Colwell)	----	100	mg/kg		<100	160	<100	103	<100
ED040S : Soluble Sulfate by ICPAES									
Sulfate as SO4 2-	14808-79-8	10	mg/kg		<10	<10	<10	<10	<10
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	10	mg/kg		<10	<10	110	<10	<20
EG005(ED093)T: Total Metals by ICP-AES									
Iron	7439-89-6	50	mg/kg		16300	13600	17000	15100	15400
Arsenic	7440-38-2	5	mg/kg		10	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		7	8	12	9	10
Copper	7440-50-8	5	mg/kg		13	8	10	10	10
Lead	7439-92-1	5	mg/kg		<5	12	13	12	13
Nickel	7440-02-0	2	mg/kg		4	5	6	5	5
Zinc	7440-66-6	5	mg/kg		6	18	18	16	16
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		0.4	2.9	2.5	2.4	4.2
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		190	340	260	250	270
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		190	340	260	250	270
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		359	189	164	257	266
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		0.22	0.38	0.28	0.26	0.21



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S7_0_10	S7_10_20	S7_20_30	S7_30_50	S7_50_80
Sampling date / time					25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-031	EB2135923-032	EB2135923-033	EB2135923-034	EB2135923-035
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		6.3	6.3	6.7	7.1	7.9
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		31	12	9	7	386
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		2.2	2.6	2.8	2.3	2.7
EA150: Particle Sizing									
+75µm	----	1	%		78	79	82	83	56
+150µm	----	1	%		66	68	74	78	50
+300µm	----	1	%		36	37	46	60	39
+425µm	----	1	%		23	23	33	49	34
+600µm	----	1	%		15	15	24	40	29
+1180µm	----	1	%		8	7	15	26	21
+2.36mm	----	1	%		3	3	10	16	13
+4.75mm	----	1	%		<1	<1	5	6	6
+9.5mm	----	1	%		<1	<1	<1	<1	<1
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		12	15	11	12	35
Silt (2-60 µm)	----	1	%		7	5	7	4	9
Sand (0.06-2.00 mm)	----	1	%		77	76	71	65	41
Gravel (>2mm)	----	1	%		4	4	11	19	15
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.59	2.58	2.66	2.62	2.65
ED006: Exchangeable Cations on Alkaline Soils									
∅ Exchangeable Calcium	----	0.2	meq/100g		----	----	----	----	5.3
∅ Exchangeable Magnesium	----	0.2	meq/100g		----	----	----	----	3.1
∅ Exchangeable Potassium	----	0.2	meq/100g		----	----	----	----	<0.2
∅ Exchangeable Sodium	----	0.2	meq/100g		----	----	----	----	1.8
∅ Cation Exchange Capacity	----	0.2	meq/100g		----	----	----	----	10.2
∅ Exchangeable Sodium Percent	----	0.2	%		----	----	----	----	17.8
∅ Calcium/Magnesium Ratio	----	0.2	-		----	----	----	----	1.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S7_0_10	S7_10_20	S7_20_30	S7_30_50	S7_50_80
Sampling date / time					25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-031	EB2135923-032	EB2135923-033	EB2135923-034	EB2135923-035
					Result	Result	Result	Result	Result
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		4.6	5.2	4.6	4.1	----
Exchangeable Magnesium	----	0.1	meq/100g		1.4	1.8	1.8	1.8	----
Exchangeable Potassium	----	0.1	meq/100g		0.7	0.3	0.3	0.2	----
Exchangeable Sodium	----	0.1	meq/100g		<0.1	<0.1	<0.1	<0.1	----
Cation Exchange Capacity	----	0.1	meq/100g		6.7	7.4	6.8	6.3	----
Exchangeable Sodium Percent	----	0.1	%		0.4	0.6	0.6	1.4	----
Calcium/Magnesium Ratio	----	0.1	-		3.3	2.9	2.6	2.3	----
Magnesium/Potassium Ratio	----	0.1	-		2.2	5.4	6.8	7.1	----
ED021: Bicarbonate Extractable Potassium (Colwell)									
Bicarbonate Extractable K (Colwell)	----	100	mg/kg		499	264	164	123	<100
ED040S : Soluble Sulfate by ICPAES									
Sulfate as SO4 2-	14808-79-8	10	mg/kg		<10	<10	<10	<10	70
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	10	mg/kg		30	10	<10	<10	370
EG005(ED093)T: Total Metals by ICP-AES									
Iron	7439-89-6	50	mg/kg		12900	14700	14600	14200	26200
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		11	12	12	12	17
Copper	7440-50-8	5	mg/kg		8	9	8	7	12
Lead	7439-92-1	5	mg/kg		6	7	6	<5	10
Nickel	7440-02-0	2	mg/kg		8	10	9	7	19
Zinc	7440-66-6	5	mg/kg		33	33	32	27	39
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		2.7	1.4	1.7	0.7	0.3
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		600	380	290	220	120
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		600	380	290	220	120
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		176	155	146	145	106



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S7_0_10	S7_10_20	S7_20_30	S7_30_50	S7_50_80
Sampling date / time					25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00	25-Nov-2021 00:00
Compound	CAS Number	LOR	Unit		EB2135923-031	EB2135923-032	EB2135923-033	EB2135923-034	EB2135923-035
Result					Result	Result	Result	Result	Result
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		1.29	0.96	0.68	0.43	0.17