Report

Wagerup RSA10N Acid Sulfate Soils Report

H368360-0000-2A0-230-0005

[redacted]

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1. Introduction

Alcoa of Australia Limited (Alcoa) has engaged Hatch Engineering (Hatch) to undertake an acid sulphate soils (ASS) and geotechnical investigation for the FEL2.2 design of Residue Storage Area (RSA) RSA10N at the Wagerup facility. This report presents the results of the ASS investigation only. The geotechnical investigation results are presented in Report ref. H368360-0000-2A0-230-0003 (Hatch, 2024a), H368360-0000-2A0-0004 (Hatch, 2024b), and H368360-0000-2A0-0006 (Hatch, 2024c).

1.1 Background

The Wagerup residue facility currently comprises eight Residue Storage Areas (RSAs) designated as RSA2 to RSA9. The residue site also contains the refinery water storage dams, a cooling pond, runoff water storage ponds (ROWS), a sand lake and two Run-off Collection Ponds (ROCPs).

Alcoa commissioned Hatch Pty Ltd (Hatch) to undertake engineering and design for a prefeasibility study (FEL2.2 Level) to develop a new residue storage area (RSA10N) at Wagerup Alumina Refinery to the north of RSA9. The proposed RSA10N footprint is approximately 45ha and will be located at the north-western corner of the existing Wagerup residue storage complex as shown in Figure 1-1.

Figure 1-1: Wagerup Refinery Residue Disposal Areas

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The study included an assessment of potential borrow material from an existing borrow pit (BP) area and a future borrow pit (BP) area, both of which are located to the northeast of the residue storage area (refer Figure 1-1).

1.2 Acid Sulfate Soils

Acid sulfate soils (ASS) typically occur in low-lying regions such as wetlands, coastal flatlands, waterways, and estuaries. These naturally occurring soils have high contents of iron sulfide or sulfide oxidation products. When ASS are disturbed mechanically by either dewatering, excavation, or stockpiling activities the exposure to oxygen from the atmosphere reacts with the iron sulfides resulting in the production of sulfuric acid (Australian Government Department of Agriculture and Water Resources, 2018a). When oxidised the soils have the potential to cause significant environmental and economic impacts including biodiversity loss, contamination of groundwater resources, loss of land productivity and corrosion of concrete and steel infrastructure.

ASS includes both the following:

- Actual acid sulfate soils (AASS) are soils or sediments which contain iron sulfides and/or other sulfidic minerals that have undergone some oxidation.
- Potential acid sulfate soils (PASS) are soils or sediments which contain sulfide oxidation products that have not been oxidised.

Proper identification of these soils is required to ensure that developments that disturb more than 1000 tonnes of material are identified prior to construction to prevent any adverse effects on the environment (Australian Government Department of Agriculture and Water Resources, 2018a). The 1000 tonne minimum also forms the assessment criteria in the ‘Identification and investigation of acid sulfate soils and acidic landscapes’ guidelines (Department of Water and Environmental Regulation, 2015a).

The Wagerup Alumina refinery and residue areas are located within the Pinjarra Plain, predominantly comprising a mixture of alluvial sediments which present a moderate risk of ASS, as seen in Figure 1-2.

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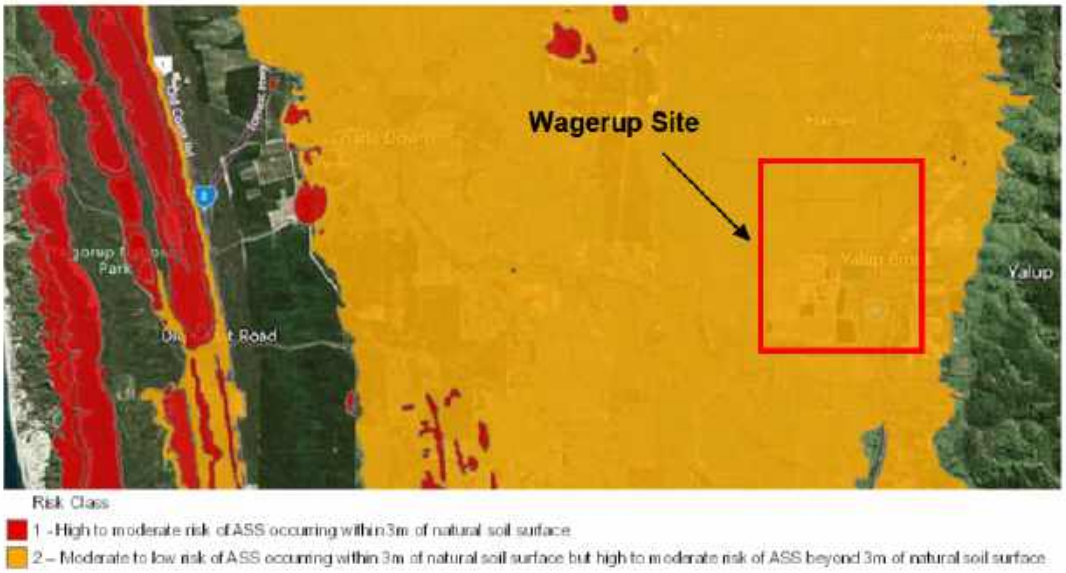

Figure 1-2: Map of ASS Risk (Government of Western Australia, 2017)

1.3 Historical Investigations

A list of historical geotechnical investigations relevant to the RSA10N study along with a brief summary of the completed scope of works is provided Table 1-1: Summary of Previous Field Investigation. Historical investigation data has been used to improve confidence of material boundaries and geological units across the site.

Table 1-1: Summary of Previous Field Investigation

Report Name and No.	Investigation Date	Scope of the Investigation
RSA9 Geotechnical Investigation Report (Hatch, 2010a)	June 2010	Test pits, DCPs and supporting laboratory tests
RSA9/ROCP 3 Geotechnical Investigation Report (Hatch, 2010b)	December 2010	Test pits in borrow pit area to investigate the quality and quantity of clay liners and fill material
RSA9 and ROCP3 FEL3 Geotechnical Report (Worley Parsons, 2011)	June 2011	Test pits, Boreholes and supporting laboratory tests
Installation and Testing of the Depressurising Borefield at RSA9 and ROCP3 (Peter Clifton & Associates, 2015)	January 2015	Installation of depressurisation bores and monitoring wells
RSA10 Geotechnical Report (Hatch, 2022)	April 2022	CPTus, SCPTus, test pits, vane shear testing, and supporting laboratory tests

The full report references for these investigations are provided in Section 10.

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2. Details of Development

2.1 Proposed Development

The RSA10N site is to be approximately 45 ha in size and located in the north-west corner of the refinery site. The site is currently undeveloped and primarily used as grazing land. The RSA10N facility is to be constructed using clayey soils won from the existing and proposed borrow pits to form perimeter embankments, a low permeability clay liner and composite HDPE liner along the floor and interior slopes of the embankments.

The project would involve excavating approximately 1.34 Mm^3 of clay materials from an existing borrow pit, a potential proposed borrow pit, and within the RSA10N footprint to be used as perimeter embankments and clay liner. The existing borrow pit is approximately 23 hectares in size and has been partially excavated for sourcing of embankment fill for previous RSA projects. The future borrow area is approximately 25 hectares in size and is currently undeveloped and used as grazing land. The future borrow pit area is to be a provisional extension to the existing borrow pit area should additional fill be required.

Due to the high alkalinity of the residue materials (pH>12), it has become common practice to install composite liner systems at the base of the newer impoundments. The composite liner is used to limit potential contamination of the natural groundwater. Once consolidated (solar dried) mud reaches a maximum level behind the initial impoundment embankment, a perimeter wall is constructed using the upstream method. The upstream walls are generally constructed on dried fine-grained residue "mud" using the coarse-grained residue "sand" as embankment fill.

2.2 Proposed Construction Methodology

The general methodology for the construction of RSA10N can be summarised as follows:

- Clear vegetation and strip topsoil, approximately 99,000 m^3 from the remainder of RSA10N site including the starter wall footprint.
- Excavate RSA10N footprint area to the foundation design level, approximately 0.5 m to 1.0m below ground surface level.
- Construct the foundation of the starter wall embankment.
- Install clay liner at the base of RSA10N footprint, approximately 340,000 m^3, extending over the upstream surface of the starter wall and over the starter wall crest.
- Install HDPE Liner to the RSA10N base walls and crests.
- Place sand layer to form RSA10N liquor under-drain system.

Based on the results of the geotechnical investigation, the RSA10N footprint is not expected to require groundwater dewatering. A summary of the preliminary material take-offs for civil works are presented in Table 2-1 below. A more detailed breakdown of the material quantities is presented in the WG256 RSA10N Design Report, Hatch document number H368360-0000-200-230-0002 (Hatch, 2024d).

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Table 2-1: Summary of Key Civil Works Commodities

Item Description	Unit	General Soil Type (USCS)	Unit	Quantity
Cut to Stockpile (topsoil)	Topsoil	Varies	m^3	99,000
Cut to Fill (Bulk/General Fill) from local borrow	Guildford Formation	Silty Sand (SM) Clayey Sand (SC)	m^3	1,000,000
Cut to Fill (Clay) from local borrow	Guildford Formation	Sandy Clay Clay	m^3	340,000
Cut to Fill (Sand) from local stockpile	Bassendean Sand / Residue Sand	Sand with Silt	m^3	600,000

3. Objectives

The purpose of the ASS investigation is to support the design and construction of RSA10N, satisfy regulatory requirements from Department of Water and Environmental Regulation (DWER), Government of Western Australia, and support the Works approval process.

The objectives of the ASS investigations are to assess for the potential presence of ASS soil conditions over the investigation area and provide recommendations to support the FEL2.2 design stage of the project.

This report has been revised to include the results of the Phase 2 and Phase 3 fieldwork campaigns.

4. Scope of Works

4.1 General

The ASS investigation for RSA10N was performed by Hatch in conjunction with a geotechnical investigation for the site. The investigation was completed in three fieldwork phases. Table 4-1 below outlines scope of work, report reference, and commencement and completion dates for each investigation phase.

Table 4-1: Key dates for geotechnical fieldwork

Phase No.	Scope of Investigation	Report Name	Dates
Phase 1	CPTus, SCPTu, test pits, vane shear testing, and supporting laboratory testing	RSA10N Geotechnical Report (Hatch, 2024a)	8 to 22 May 2023
Phase 2	Borehole and monitoring well installation	RSA10N Geotechnical Report (Hatch, 2024a)	28 to 29 November 2023
Phase 3	Test Pit, monitoring well installation, borehole drilling	RSA10N FEL2.2 Phase 3 Geotechnical Factual Report (Hatch, 2024c)	11 to 29 March 2024

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All phases included collection of soil samples and subsequent laboratory tests in accordance with Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes (Department of Water and Environmental Regulation, 2015a) and national acid soil sampling and identification methods manual.

A summary of the investigation is provided in Section 4.2. Site plans showing the as-completed test locations are included in Appendix A (Test Locations).

4.2 Fieldwork Summary

4.2.1 Phase 1

The Phase 1 investigation for the proposed RSA10N comprised:

- Cone Penetration Tests (CPTs), which included the following:
  - Cone Penetration Test with pore pressure measurement (CPTu) at 13 No. locations (HA-CPTu01 to HA-CPTu13) within footprint of RSA10N.
  - Cone Penetration Test with shear wave velocity measurements (SCPTu) at 5 No. locations (HA-SCPTu02, ‘-05, ‘-08, ‘-09, ‘-12) within footprint of RSA10N.
- Excavation of 30 No. test pits (H-TP10N-01 to H-TP10N-30) within the footprint of RSA10N.
- Excavation of 28 No. test pits (H-TP10B-01 to H-TP10B-28) for borrow assessment, which consisted of:
  - 17 No. over the existing borrow pit area (H-TP10B-12 to H-TP10B-28).
  - 11 No. over the future borrow pit area (H-TP10B-01 to H-TP10B-11).
- Collection of soil samples at 0.25 m depth intervals for ASS laboratory testing.
- Four (4) surface water samples were also collected from the existing northern borrow pit surface water pond.

4.2.2 Phase 2

The Phase 2 investigation comprised:

- Continuous 50mm push tube boreholes, with monitoring well installation at 20 No. locations within the RSA10N footprint, comprising:
  - 16 No. shallow boreholes (H-MW-01 to H-MW-16) extending to depths ranging from 1.5 m to 2.5 m below ground surface level.
  - 4 No. deeper boreholes (H-MW-17 to H-MW-20) extending from depths ranging from 6.0 m to 6.5 m.
- Collection of soil samples at 0.25 m depth intervals for ASS laboratory testing.

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4.2.3 Phase 3

The Phase 3 investigation comprised:

- Cone Penetration Tests (CPTs), which included the following:
  - Cone Penetration Test with pore pressure measurement (CPTu) at 13 locations (HA-CPTu14 to HA-CPTu26) within the RSA10N footprint.
- A total of 32 No. test pit excavations, including:
  - 17 No. test pits within the RSA10N location, including:
    - 5 No. within the footprint (H-TP10N-42, '-44, '-45, '-46, '-47)
    - 5 No. within the proposed sump positions (H-TP10N-31, '-35, '-36, '-50, '-51)
    - 4 No. within the proposed stockpile area (H-TP10N-37, '-38, '-39, '-40)
    - 3 No. within the proposed western toe drain, near the future haul road (H-TP10N-43, '-48,'-49).
- Continuous 50mm push tube boreholes, with monitoring well installation at 20. No. locations (H-MW-21 to H-MW-39) within the RSA10N footprint, comprising:
  - 16 No. shallow boreholes extending to depths ranging from 1.5 m to 2.5 m below ground surface level,
  - 4 No. deeper boreholes extending to depths of 6.0 m below ground surface level.
- Solid augered 125mm boreholes at 8 No. locations for borrow assessment, comprising:
  - 5 No. locations (H-DP10B-01 to H-DP10B-05) in the future borrow pit extending to depths of 10 m below ground surface.
  - 3 No. locations (H-DP10B-06 to H-DP10B-08) in the existing borrow pit extending to depths ranging from 13 m to 14 m below ground surface.
- Collection of soil samples at 0.5 m depth intervals for ASS laboratory testing.

The proposed investigation scope is considered adequate for characterising the various geological units and assessing ASS potential for a FEL2.2 Study. A total of 138 test locations have been performed over the RSA10N site (including historical test locations), which is in accordance with the DWER guidelines (Department of Water and Environmental Regulation, 2015a) of 2 test locations per hectare. The testing frequency over the existing borrow pit area is compliant with 46 test locations (including historical tests) over the approximate 23 hectare site. The future borrow pit area has 28 test locations over the approximate 25 hectare site. This area has only been considered as a provisional extension to the existing borrow pit area and generally complies with the DWER guidelines, which allows for reducing the specified sampling density if the sampling plan is appropriate or the site is greater than 20 hectares.

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Samples were collected from test pit spoil and push tube boreholes at 0.25 m and 0.50 m sampling intervals, or for each strata change. The maximum sampling depth was at least one meter below the expected maximum depth of disturbance or in case for solid augered boreholes to maximum depth of penetration. Soil samples were collected and sealed in clean laboratory supplied zip lock bags. The samples were labelled and stored in a portable freezer to comply with laboratory testing holding requirements. The frozen soil samples were transported, under a chain-of-custody (CoC), to the ALS Environmental NATA-accredited environmental testing laboratory. While samples were not weighed, they were estimated to be approximately 200g to 500g. Water samples were stored in an esky and transported to ALS Environmental on the day of sampling. CoC documentation is provided in Appendix B.

A geotechnical engineer from Hatch was on site to provide technical supervision, log the materials encountered in the test pits and boreholes and collect samples for laboratory testing. Test pit and borehole reports including profile descriptions and photographs are presented in the Geotechnical Factual Report (Hatch, 2024a) and (Hatch, 2024c).

A summary of the drilling/testing density and number of samples analysed are presented in Table 4-2 below.

Table 4-2: Drilling density and soil sampling intensity

Location	Area (ha)	Number of test locations	Number of sample locations	Sample intensity (m)	Number of samples collected
RSA 10N	45	138	70	0.25 / 0.50	527
Existing Borrow Pit	23	46	20	0.25 / 0.50	299
Future Borrow Pit	25	28	16	0.25 / 0.50	202

4.3 Laboratory Testing

Soil and water samples were tested by ALS Environmental Group, a National Association of Testing Authority (NATA) registered laboratory.

4.3.1 Phase 1

The Phase 1 testing comprised:

- Primary analysis of 706 soil samples, including 33 duplicate samples, for initial screening analysis of field pH (pH_F) and field pH after oxidation with hydrogen peroxide (pH_{Fox}).
- Analysis of 53 selected soils samples taken from the proposed RSA 10N footprint for Chromium Reducible Sulfur (CRS) suite analysis.

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- Analysis of 53 selected soils samples, including 2 duplicate samples, taken from the future and existing borrow pit footprints for Chromium Reducible Sulfur (CRS) suite analysis.

4.3.2 *Phase 2*

The Phase 2 testing comprised:

- Primary analysis of 112 soil samples for initial screening analysis of field pH (pH_F) and field pH after oxidation with hydrogen peroxide (pH_{FOX}).
- Analysis of 30 selected soils samples for Chromium Reducible Sulfur (CRS) suite analysis.

4.3.3 *Phase 3*

The Phase 3 testing comprised:

- Primary analysis of 210 soil samples, including 12 duplicates, for initial screening analysis of field pH (pH_F) and field pH after oxidation with hydrogen peroxide (pH_{FOX}).
- Analysis of 22 selected soils samples, including 2 duplicate samples, taken from the proposed RSA 10N footprint for Chromium Reducible Sulfur (CRS) suite analysis
- Analysis of 38 selected soils samples, including 2 duplicate samples, taken from the proposed and existing borrow pit footprints for Chromium Reducible Sulfur (CRS) suite analysis.

A summary of pH_F and pH_{FOX} test results for all phases can be found in Table 4-3 below and Table C-1 in Appendix C. Summary of CRS test results for all phases within the RSA footprint is presented in Table C-2, and Table C-3 for the borrow pits. Laboratory certificates for soil tests are also presented in Appendix C.

Table 4-3: Testing Frequency

Phase No.	Location	Primary Analysis (pH_{field} / pH_{fox})	Secondary Analysis (S_{cr})
Phase 1	RSA10N	354	53
	Existing Borrow Pit	213	33
	Future Borrow Pit	139	20
Phase 2	RSA10N	112	30
	Existing Borrow Pit	-	-
	Future Borrow Pit	-	-
Phase 3	RSA10N	61	22
	Existing Borrow Pit	86	21
	Future Borrow Pit	63	17
Total		**1028**	**196**

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4.3.4 Surface Water Samples

Four surface water samples were collected from the pond at the existing clay borrow pit for the following tests:

- pH, electrical conductivity (EC), total dissolved solids (TDS)
- Sulphate
- Chloride
- Total Acidity, Total Alkalinity
- Dissolved Cations (Ca, Mg, Na, K)
- Dissolved Metals (Al, As, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Zn, Fe)
- Total Metals (Al, Fe)
- Ammonia as N
- Nitrite and Nitrate as N
- Total Nitrogen as N
- Total Phosphorus as P
- Reactive Phosphorus as P
- Sulfide as S2
- Ionic Balance.

Figure 4-1 show the approximate surface water sampling locations within the existing borrow pit. Results for the water test can be found in Appendix D.

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Figure 4-1: Locations of Water Sampling

5. Site Conditions and Surrounding Environment

5.1 Geology and Soils

The Wagerup Refinery and RSAs are broadly underlain by sedimentary units of Perth Basin, which consists of late Tertiary and Quaternary (the Cenozoic) deposits and underlying Mesozoic deposits. The Cenozoic deposits include Guildford Formation, Yoganup Formation or Ascot Formation. The underlying Mesozoic deposits mainly refers to the Leederville Formation in this area.

At a more local level the site is located in an area of the Perth Basin referred to as the Pinjarra Plain. The Pinjarra Plain comprises the land between the foot of darling ranges to the east and Bassendean Dunes to the west and stretches as far north as Muchea and to Dunsborough in the south. The width of the plain in the vicinity of the Waroona township is approximately 6.5 km.

The surficial soils of the Pinjarra Plain present at the Wagerup site comprise Quaternary Guildford Formation soils. The Guildford Formation soils covers a broad range of typically clayey and sandy soils with interbedded layering. A summary of the surface geology sub-units for the region are presented in Table 5-1.

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Table 5-1: Typical Regional Surface Geology

Origin	Unit	Name	General Soil Type	Potentially Suitable for
Aeolian	Bassendean Sand	Bassendean Dunes	Sand with Silt (SP)	Drainage Layers
Alluvial	Guildford Formation	Dardanup	Silty Sand (SM)	Bulk Fill
		Boyanup	Sandy Clay (CL – CI)	Clay Liner
		Wellesley	Clay (CH)	Clay Liner
		Coolup	Clayey Sand (SP)	Bulk Fill
Uplifted Marine Shelf	Yoganup Formation	Ridges Hill Shelf	Sand (SP)	Drainage Layers

Further information on the site geology and ground conditions is presented in the RSA10N Geotechnical Interpretive Report (Hatch, 2024b).

5.2 Soil Profile

5.2.1 RSA10N

The soil stratum for the proposed RSA10N has been summarised in Table 5-2 below.

Table 5-2: Soil Unit Summary – RSA10N

Soil Unit	Description
TOPSOIL	Medium to high plasticity sandy CLAY, dark brown to dark grey, fine to medium grained, sub-angular to sub-rounded, quartz, with silt, trace organics (rootlets) This unit was generally encountered from 0.0 m to 0.5 m below ground level (bgl).
Clay / Sandy CLAY (Guildford formation)	Medium to high plasticity clay, dark brown/brown to black, fine to medium grained, sub-angular to sub-rounded quartz. This layer is generally extending to about 4.0 m depth.
Sand / Clayey SAND (Guildford formation)	Fine to coarse grained sand, sub-rounded, brown, and grey with red-orange mottling, trace gravel, moderately to weakly cemented sand (laterites) along the east side of RSA10N embankment.
Silty CLAY/Clayey SILT (Guildford formation)	Lenses of Silty CLAY/Clayey Silt present between 12.0 m to 16.0 m, inferred from CPT data.

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5.2.2 Borrow Pits

The soil stratum for the proposed and existing borrow pits are presented in Table 5-3 below.

Table 5-3: Soil Unit Summary – Borrow Pits

Unit Name	Description
TOPSOIL	Silty SAND, low plasticity, dark brown/grey, fine to medium grained, sub-angular to sub-rounded, trace organics (rootlets). This material was encountered in the top 0.2 m of the undisturbed borrow pit areas.
SAND (Bassendean)	Fine to medium grained, pale brown and grey, trace silt. Approximately 0.6 m thick layer encountered underlying the topsoil unit in the future borrow pit area.
Sandy Clay (Guildford formation)	Medium to high plasticity, brown to pale brown with red-orange mottling (weakly cemented), fine to coarse grained, with or trace laterite gravels.
SAND/Clayey SAND (Guildford formation)	Fine to coarse grained, sub-rounded, brown and grey with red-orange mottling, moderately to well cemented sand (laterites).

Further information on the soil profile for the site is presented in the RSA10N Geotechnical Interpretive Report (Hatch, 2024b).

5.3 Hydrogeology

In the area of the RSA10N and proposed borrow pit, the groundwater level is typically 2 m to 3 m below ground level depending on the seasons. Surface water ponding during winter seasons is common. The direction of groundwater in the refinery area is generally from east to west of the refinery towards the Harvey River Main Drain and the Harvey River.

Groundwater typically flows in coarse layers and lenses within the Guildford Formation and in the underlying Ridge Hill Sand (Yoganup) unit. The Guildford Formation in the Wagerup area is not considered as an aquifer due to no significant amount of groundwater yielded to bores or seeps. Guildford Formation has a lower bulk permeability than underlying units, Yoganup Formation and Ascot Formation. A conceptual groundwater model is shown in Figure 5-1 (Peter Clifton & Associates, 2015).

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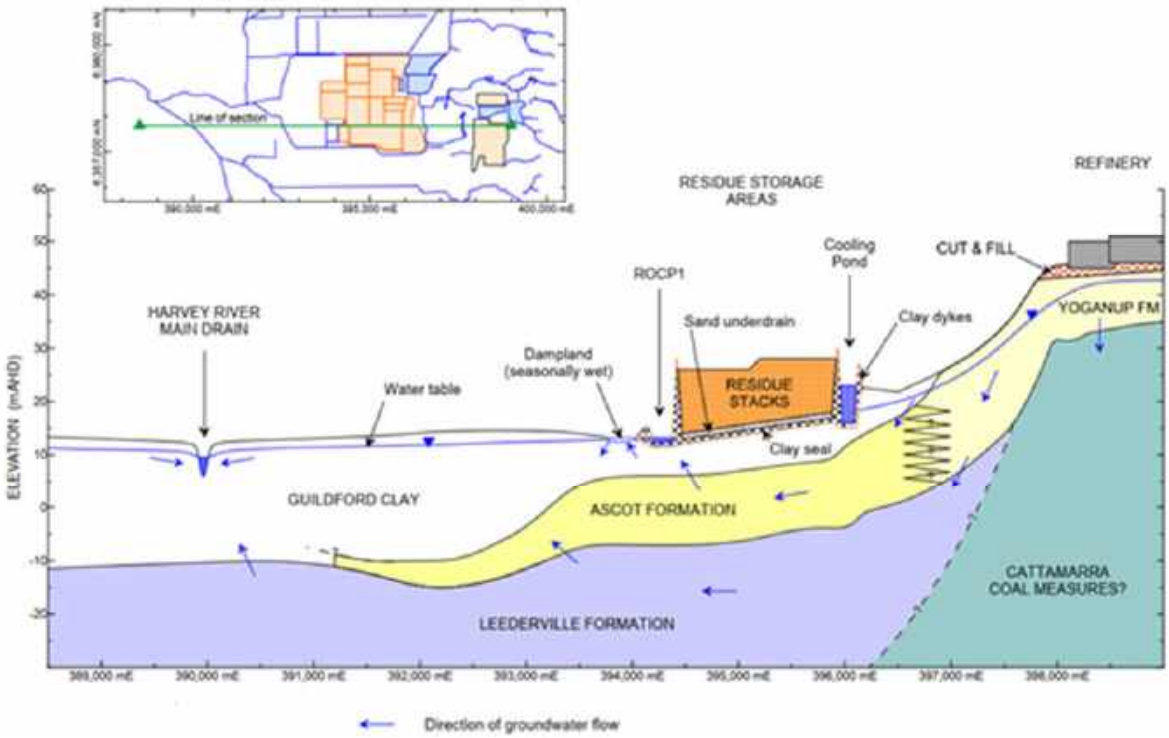

Figure 5-1: Wagerup RSAs Conceptual Hydrogeological Section (Peter Clifton & Associates, 2015)

5.4 Geological Model

A 3D geotechnical model has been developed by Hatch using the geotechnical software Leapfrog by Seequent. Leapfrog uses spheroidal interpolation of stratigraphy points or polylines to produce 3D surfaces. Due to relative complexity of the geological setting and current design stage of the project, the model has been developed based on the general geological units as defined in Section 5.2.

It is important to note that the 3D model has been developed based on an interpolation of available geotechnical data. Therefore, the accuracy of the model is directly related to the quality and quantity of data available, and the potential risk associated with the geological units defined.

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6. Quality Assurance Quality Control (QA/QC)

Quality control sampling and testing ensures that the soil and surface data collected is appropriate representative and adequate for the purpose of the assessment. Quality control was practiced both in field and laboratory.

To appropriately identify samples, the sampling containers were clearly labelled with the following details:

- Job reference number.
- Unique sample identification identifying sample depth.
- Date and time sample was taken.

6.1 Field Quality Assurance Control (QA/QC)

6.1.1 Sample Collection, Storage, Preservation and Transportation

For the test pits (Phase 1), soil samples were collected at 250 mm depth intervals plus one duplicated sample for every second test pit. This ensured that each geological unit was tested.

For push tube boreholes, soil samples were collected at 250 mm depth intervals for Phase 2. For Phase 3, soil samples were collected at 500 mm depth intervals.

A small hand shovel was used to collect the samples which were then sealed in small plastic bags. Then all soil samples for a specific test site were sealed in a larger zipped lock plastic bag and immediately stored into a potable freezer. The soil samples were frozen and transported to the ALS laboratory in Perth.

6.2 Laboratory Quality Assurance Control (QA/QC)

ALS limited (ALS) were engaged to perform all primary and secondary soil sample analyses as well as the surface water analysis.

The relative percent differences (RPD) calculation was used to normalise each pair of results to allow for better QA/QC data interpretation. For those RPD values that exceed acceptable criteria, correlation is poor; however, consideration needs to be given to sample homogeneity and concentrations detected.

The quality control term Laboratory Duplicate refers to a randomly selected inter-laboratory split. Laboratory duplicates provided information regarding method precision and sample heterogeneity. The permitted ranges for the relative percent differences (RPD) of Laboratory Duplicates are specified in ALS method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting.

Method/Laboratory Blanks were used to monitor for potential laboratory contamination.

Laboratory Control Samples were used to monitor method precision accuracy and independent sample analyses.

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6.2.1 Soil Tests

6.2.1.1 Phase 1

The following are the results of QA/QC assessment for Phase 1:

- For RSA 10N, 46 laboratory duplicates tests were conducted for pHfox/pHfield tests. None exceeded acceptable RPD% limits.
- For the borrow pits, 44 laboratory duplicates tests were conducted for pHfox/pHfield tests. None exceeded acceptable RPD% limits.
- For RSA10N, 20 laboratory duplicates tests were conducted for Chromium Reducible Sulfur tests. None exceeded acceptable RPD% limits.
- For borrow pits, 19 laboratory duplicates tests were conducted for Chromium Reducible Sulfur tests. None exceeded acceptable RPD% limits.
- No limits were exceeded for the Method Blanks or Laboratory Control Samples.
- No analysis holding time outliers exist.

6.2.1.2 Phase 2

The following are the results of QA/QC assessment for Phase 2:

- 13 laboratory duplicates tests were conducted for pHfox/pHfield tests. None exceeded acceptable RPD% limits.
- 2 laboratory duplicates tests were conducted for Chromium Reducible Sulfur tests. None exceeded acceptable RPD% limits.
- No limits were exceeded for the Method Blanks or Laboratory Control Samples.
- No analysis holding time outliers exist.

6.2.1.3 Phase 3

The following are the results of QA/QC assessment for Phase 2:

- 22 laboratory duplicates tests were conducted for pHfox/pHfield tests. None exceeded acceptable RPD% limits.
- 6 laboratory duplicates tests were conducted for Chromium reducible sulfur tests. None exceeded acceptable RPD% limits.
- No limits were exceeded for the Method Blanks or Laboratory Control Samples.
- No analysis holding time outliers exist.

Quality control data for soil tests are presented in Appendix C.

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6.2.2 Surface Water Tests (Phase 1)

The following are the QA/QC results for the surface water tests:

- No Method Blank value outliers occurred.
- No Duplicate outliers occurred.
- No Laboratory Control outliers occurred.
- Analysis Holding Time outliers exist. Water samples were delivered to the laboratory within the holding time, however due to a delay with the sample processing, the testing for pH was performed outside the required holding time compliance. Impact is considered negligible for the purposes of the study.

Quality control data for surface water tests are presented in Appendix D.

7. ASS Assessment Criteria

7.1 Soils

7.1.1 Field Screening

The guidelines define indicator pH values for pH field (pH_F) and field peroxide testing (pH_{FOX}) to characterise likely acid generating soils. The pH indicator values are defined as:

- pH_F<4 pH units indicates that oxidation of sulfides has probably occurred in past, indicates presence of ASS
- pH_{FOX}<3 pH units combined with a significant reaction rate indicates PASS
- A significantly lower pH_{FOX} value than pH_F value is used as an indicative trigger value in the assessment, i.e., $pH_F - pH_{FOX}$> 1.0 pH unit.

Indicators of a Potential ASS materials following field testing is presented in Figure 7-1 below.

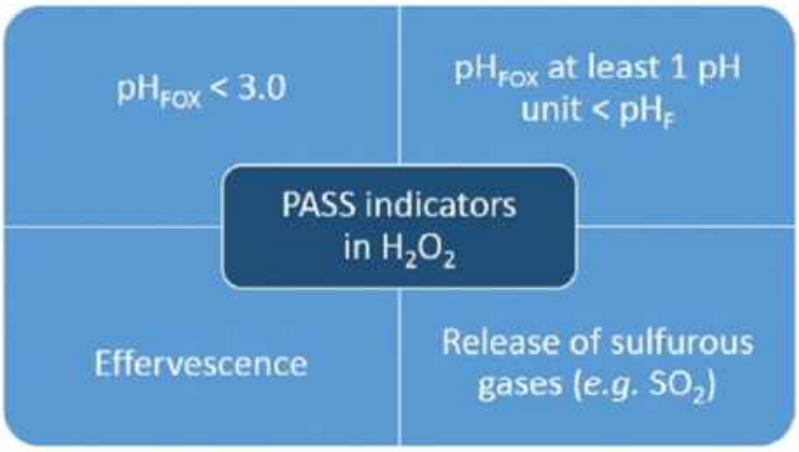

Figure 7-1: Indicators of Potential ASS Materials Following Field Peroxide Testing (Australian Government Department of Agriculture and Water Resources, 2018a)

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7.1.2 Secondary Screening

The Identification and Investigation of Acid Sulfate Soils and Acidic Landscape guidelines (Department of Water and Environmental Regulation, 2015a) have established action criteria for the assessment of environmental risk of AASS. Net Acidity is the quantitative measure of the acidity hazard of ASS materials. It is determined from an Acid Base Accounting (ABA) approach using equation 1 below.

$$Net\ Acidity = Potential\ Sulfidic\ Acidity + Actual\ Acidity + Retained\ Acidity - Acid\ Neutalising\ Capity \quad (1)$$

Potential Sulfidic Acidity refers to the potential for acidity to develop from oxidation of pyrite and is determined from Reduced Inorganic Sulfur (RIS) determination. There are two methods for determining Potential Sulfidic Acidity which are the Chromium Reducible Sulfur (S_{CR}) method and the Peroxide Oxidisable Sulfur (S_{POS}) method. The S_{CR} method has been chosen for this investigation based on the recommendation from (Australian Government Department of Agriculture and Water Resources, 2018b).

The S_{CR} method provides accurate, low-cost determination of (non-sulfate) inorganic sulfur and is not subject to significant interferences from sulfur, either in organic matter or sulfate minerals e.g. gypsum (Sullivan LA, 1999). The inorganic sulfur compounds measured by this method are: i) pyrite and other iron disulfides; ii) elemental sulfur (SE); iii) thiosulfate, tetrathionate, polythionites; and iv) SAV, acid volatile sulfides (SAV), (e.g. greigite, mackinawite, amorphous FeS) (Department of Water and Environmental Regulation, 2015a).

Actual Acidity is a measure of the readily available soluble and exchangeable acidity in the soil and is quantified using the Titratable Actual Acidity (TAA) method.

Retained Acidity is a measure of the more slowly released, but still available acidity, contained within minerals such as jarosite.

Acid Neutralising Capacity (ANC) is a measure of the ability of the ASS to neutralise acidity. Unless sources of buffering (pH_{KCL}) are greater than 6.5 then they are usually considered ineffective and ignored in calculations.

As clay content tends to influence the soils natural buffering capacity, the action criteria are group by three (3) broad categories – coarse, medium, and fine. The criteria are used to determine when disturbance of ASS will require treatment and management. If the Net Acidity of any individual soil material tested is equal to or greater than the action criteria than a detailed ASS management plan will need to be developed. Table 7-1 outlines the assessment criteria.

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Table 7-1: ASS Assessment Criteria

Type of Material		Net Acidity#			
		1 – 1000 t Materials Disturbed		> 1000 t Material Disturbed	
Texture Range* (NSCT 2009)	Approximate Clay Content (%)	% S-equiv. (oven-dried basis)	Mol H+/t (Oven-dried basis)	% S-equiv. (oven-dried basis)	Mol H+/t (Oven-dried basis)
Fine: light medium to heavy clay	> 40	≥ 0.10	≥ 62	≥ 0.03	≥ 18
Medium: clayey sand to light clays	5 – 40	≥ 0.06	≥ 36	≥ 0.03	≥ 18
Coarse and Peats: sands to loamy sands	< 5	≥ 0.03	≥ 18	≥ 0.03	≥ 18

The Chromium Reducible Sulfur (S_{CR}) method includes the following analyses and calculated parameters:

- pH KCl
- Titratable Actual Acidity
- Chromium Reducible Sulfur
- Net Acid Soluble Sulfur
- KCl Extractable Sulfur
- HCl Extractable Sulfur
- Net Acidity
- Net Acidity excluding ANC

The selection of samples was based on one of the following observations and/or field results:

- pH_{FOX} was < 4.0 pH units
- pH_F – pH_{FOX} was > 1.0 pH units
- Representation of the soil lithology on site.

7.2 Water

7.2.1 Surface Water

The following are main indicator values that can be used to assess whether surface water is being affected by the oxidation of sulfides:

- pH less than 4 pH units
- A soluble sulfate to soluble chloride ratio (SO4:Cl) of more than 0.25.

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Other indicators have been presented in Table 7-2.

Table 7-2: Additional Indicators of RIS Oxidation in Groundwater

Indicator	Indicative Value	Comments
SO_4/alkalinity ratio	>0.2	May indicate sulfide oxidation and/or consumption of alkalinity
Al/Ca mole ratio	>1	May indicate Ca depletion and potential for Al toxicity to plants
Alkalinity	<10 mg/L	pH can reduce if alkalinity reduces to 0
Al	>1 mg/L	Indicative of Al mobilisation should correlate with pH
Other trace metals & metalloids	Refer to Table 7-3	Useful to monitor and compare with ANZECC guidelines values for ecosystem protection

7.2.2 *Fresh Waters*

The surface water was also assessed against the Groundwater Investigation Levels for 'fresh waters' as specified in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ, 2000) and outlined in Table 7-3.

Table 7-3: Surface Water Assessment Criteria

Analyte	Fresh Waters – Surface Waters Investigation Levels
pH	6.5 – 8.5
Chloride	-
Sulfate	-
Aluminium (Al) (pH 6.5)	55 µg/L
Arsenic (As)	24 µg/L as As (III) 13 µg/L as As (V)
Cadmium (Cd)	0.2 µg/L
Chromium (Cr) (VI)	1 µg/L
Cobalt (Co)	-
Copper (Cu)	1.4
Iron (Fe)	-
Manganese (Mn)	1900 µg/L
Nickel (Ni)	11 µg/L
Selenium (Se)	5 µg/L
Zinc (Zn)	8 µg/L
Nitrate	700 µg/L
Total Nitrogen	2000 µg/L
Ammonia as N	900 µg/L

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8. Acid Sulfate Soils Assessment Results

8.1 Field Screening

A review of the pH_F and pH_{FOX} against assessment criteria provided the following conclusions:

1. None of the 1,028 samples recorded a pH_F<4 pH units, indicating there are no initial signs of AASS. The pH_F values for all samples varied from 4.4 to 8.7, with an average pH_F of 6.5. pH_F values are plotted against depth in Figure 8-1.
2. A total of 52 out of 1028 samples (5%) recorded a pH_{FOX}<3 pH units, suggesting the possible presence of PASS. pH_{FOX} values are plotted against depth in Figure 8-2. The breakdown per site was as follows:
    i. RSA 10N: 31 out of 527 samples (6%)
    ii. Existing Borrow Pit: 6 out of 299 samples (2%)
    iii. Future Borrow Pit: 15 out of 202 samples (7%)
3. Of the 52 potential PASS samples, the breakdown per geological unit was as follows:
    i. Topsoil: 9 out of 35 samples (26%)
    ii. Bassendean Sand: 17 out of 47 samples (36%)
    iii. Guildford Formation: 26 out of 946 samples (3%)
4. All samples that recorded a pH_{FOX}<3 pH showed a difference between pH_F and the corresponding pH_{FOX} greater than 1.0 pH unit and moderate reaction rate.
5. The pH_{FOX} values for all soils analysed ranged from 2.0 to 7.9. The majority of soils (72%) had a pH_{FOX} value greater than 4.0 and 95% had a pH_{FOX} value greater than 3.0.

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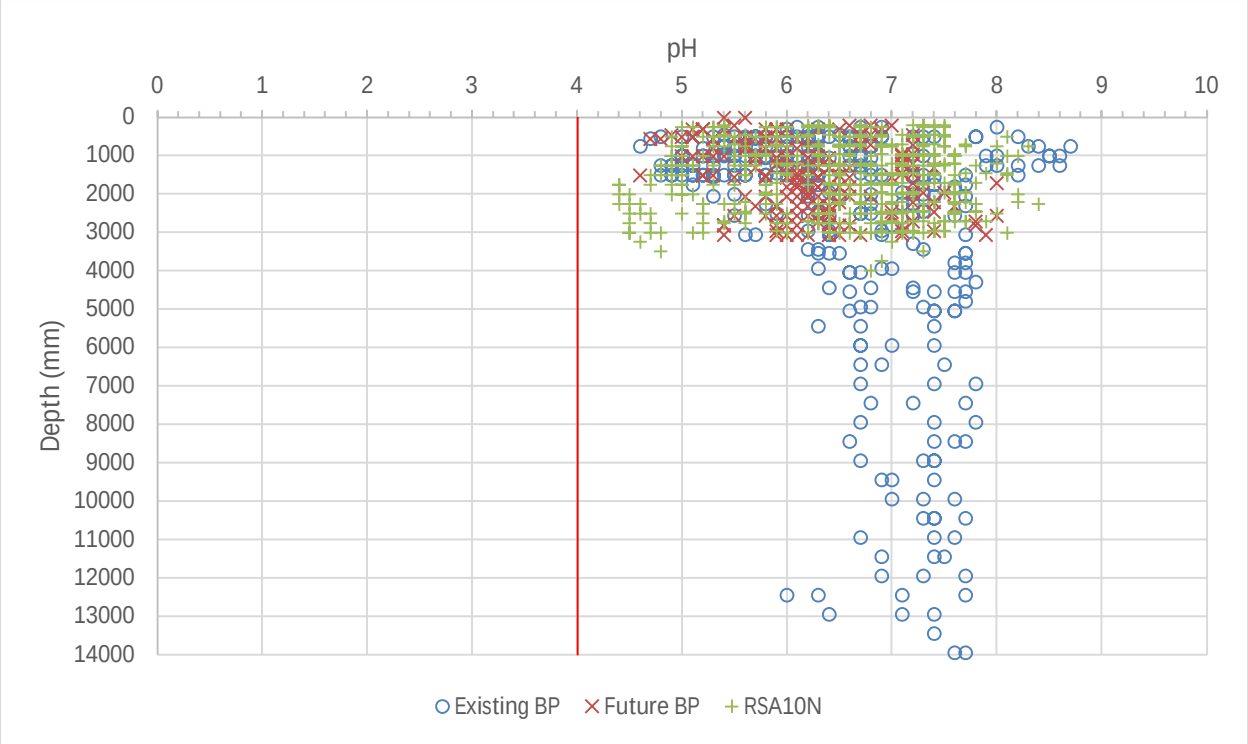

Figure 8-1: pH_F versus Depth

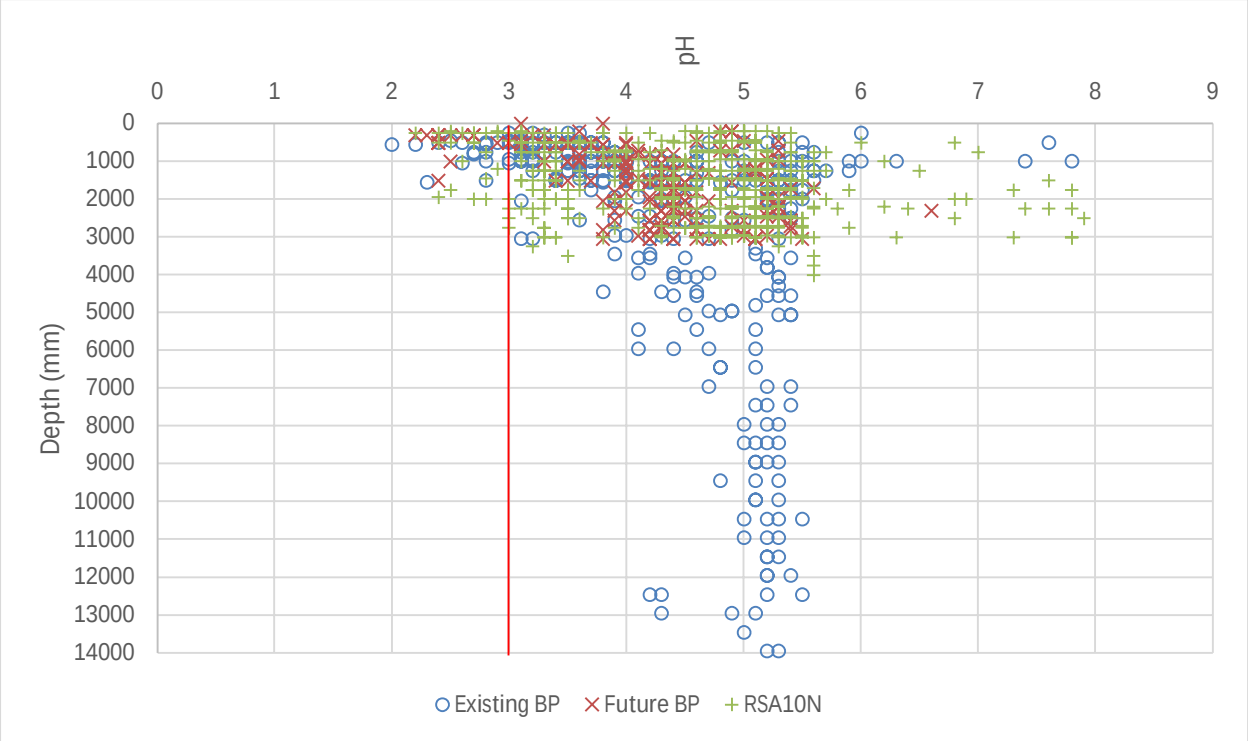

Figure 8-2: pH_{FOX} versus Depth

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A summary of the field screening test results is provided in **Table 8-1** to **Table 8-4**.

Table 8-1: Summary of pHF screening results per site

Site	No. Samples	No. pH_F > 4	Ave. pH_F	Min. pH_F	Max. pH_F
RSA10N	527	0	6.2	4.4	8.7
Existing BP	299	0	7.0	4.9	8.2
Future BP	202	0	6.3	4.7	8
Totals	**1028**	**0**	**6.5**	**4.4**	**8.7**

Table 8-2: Summary of pH_{FOX} screening results per site

Site	No. Samples	No. pH_{FOX} < 3	Ave. pH_{FOX}	Min. pH_{FOX}	Max. pH_{FOX}
RSA10N	527	31	4.4	2.2	7.9
Existing BP	299	6	4.8	2.4	6.2
Future BP	202	15	4.2	2.0	6.6
Totals	**1028**	**52**	**4.5**	**2.0**	**7.9**

Table 8-3: Summary of pH_F screening results per geological unit

Site	No. Samples	No. pH_{FOX}	Ave. pH_{FOX}	Min. pH_{FOX}	Max pH_{FOX}
Topsoil	35	0	6.3	5.0	8.0
Bassendean Sand	47	0	5.9	4.7	7.2
Guildford Formation	946	0	6.5	4.4	8.7
Totals	**1028**	**0**	**6.5**	**4.4**	**8.7**

Table 8-4: Summary of pH_{FOX} screening results per geological unit

Site	No. Samples	No. pH_{FOX}	Ave. pH_{FOX}	Min. pH_{FOX}	Max pH_{FOX}
Topsoil	35	9	2.6	2.2	6.0
Bassendean Sand	47	17	2.2	2.0	4.3
Guildford Formation	946	26	2.7	2.4	7.9
Totals	**1028**	**52**	**4.5**	**2.0**	**7.9**

The soil test results are presented in Table C-1 and Appendix C.

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8.2 Secondary Screening

The following subset of samples were sent for further analysis for Chromium Reducible Sulfur (S_{CR}) method:

- RSA10N: 105 out of 527 samples.
- Existing Borrow Pit: 54 out of 229 samples.
- Future Borrow Pit: 37 out of 202 samples.

In total, 196 samples were collected and analysed for chromium reducible sulfur S_{CR}. The soil test results are presented in Table C-2 and Table C-3 in Appendix C. Samples were tested from all geological units, Topsoil (RSA10N), Bassendean Sand, and Guildford Formation.

The summary of results from the ASS assessment are as follows:

1. A total of 72 out of 196 samples (37%) exceeded the TAA criterion of 18 mol H+/t (TAA > 0.03%). The samples were predominantly from Guildford Formation soils (71 out of 72 samples). This criterion is used to assess for the presence of actual acidity in the soil, including AASS. The breakdown of TAA results per area is provided below and shown on Figure 8-3:
    a. RSA10N: 65 out of 105 samples (62%)
    b. Existing Borrow Pit: 6 out of 54 samples (11%)
    c. Future Borrow Pit: 1 out of 37 samples (3%)
2. A total of 2 out of 196 samples (1%) exceeded the S_{CR} criterion of 18 mol H+/t (S_{CR} > 0.03%). The samples were all from Guildford Formation soils (2 out of 2 samples). This criterion is used to assess the potential acidity where sulphur in the soil is oxidised and the presence of PASS. The breakdown of S_{CR} results per area is provided below and shown on Figure 8-4:
    a. RSA10N: 0 out of 105 samples (0%)
    b. Existing Borrow Pit: 2 out of 54 samples (4%)
    c. Future Borrow Pit: 0 out of 37 samples (0%)
3. A total of 16 out of 196 samples (8%) recorded over 6 mol H+/t (S_{CR} > 0.01%) and are considered sulfidic soils. The samples were predominantly from Guildford Formation soils (15 out of 16 samples). All of samples assessed as sulfidic soil were taken from within 2 m depth of ground surface. The breakdown of sulfidic soils per area is provided below and shown on Figure 8-4:
    a. RSA10N: 13 out of 105 samples (12%)
    b. Existing Borrow Pit: 3 out of 54 samples (6%)
    c. Future Borrow Pit: 0 out of 37 samples (0%)

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4. A total of 88 out of 196 samples (45%) exceeded the Net Acidity (excluding ANC) criterion of 18 mol H+/t (Sulfur > 0.03%). The samples were predominantly from Guildford Formation soils (86 out of 88 samples). This criterion is used to assess the net acidity of the soil once all sulfur has been oxidised. These results are used to assess liming rates for treatment of ASS. The breakdown of Net Acidity (excluding ANC) results per area is provided below and shown on Figure 8-5:

    a. RSA10N: 74 out of 105 samples (70%)

    b. Existing Borrow Pit: 13 out of 54 samples (24%)

    c. Future Borrow Pit: 1 out of 37 samples (3%)

Site plans showing the location and Net Acidity value of samples for various depth profiles are presented in Appendix E. The plans show the presence of acidic soils are generally consistent over the site and predominantly in the near surface soils.

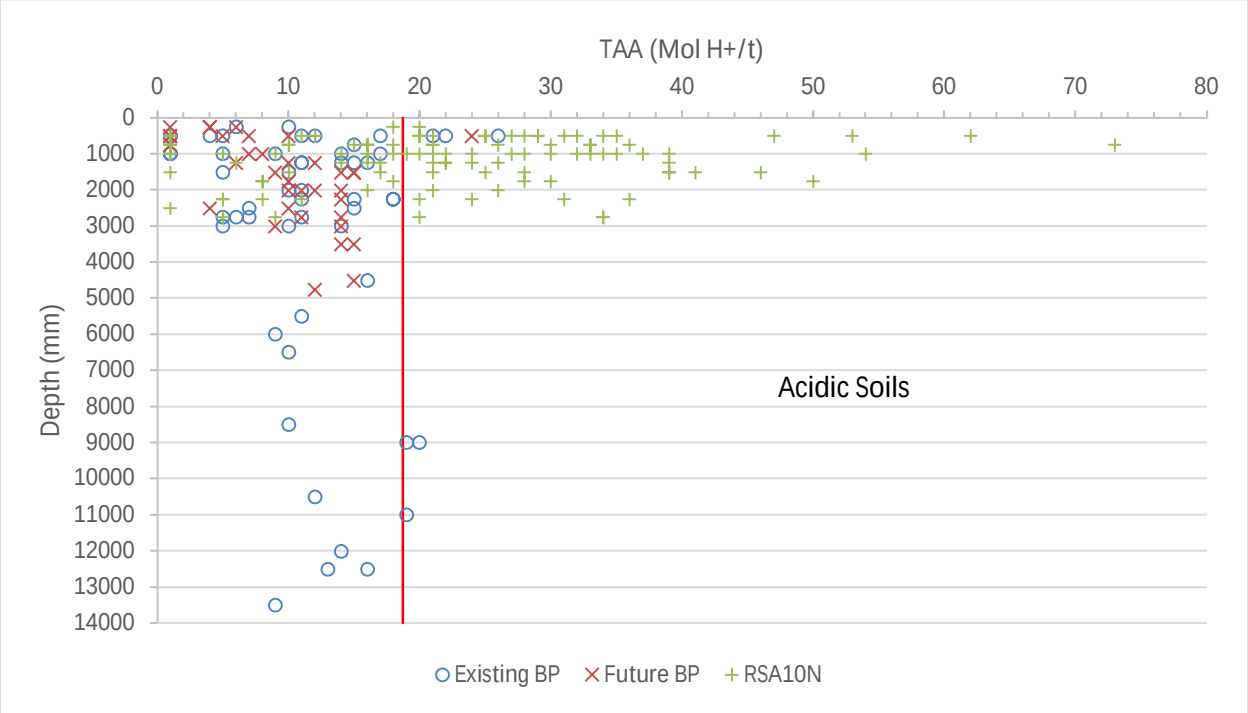

Figure 8-3: Acidity versus Depth

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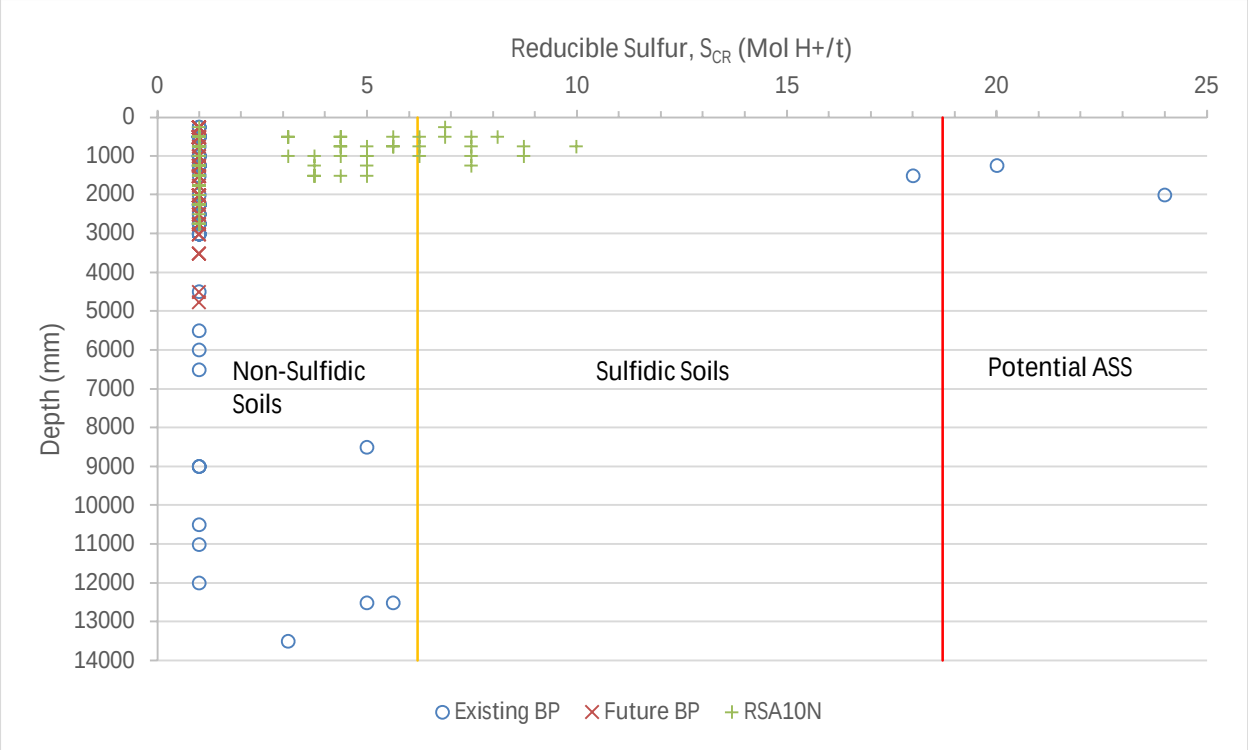

Figure 8-4: Reducible Sulfur versus Depth

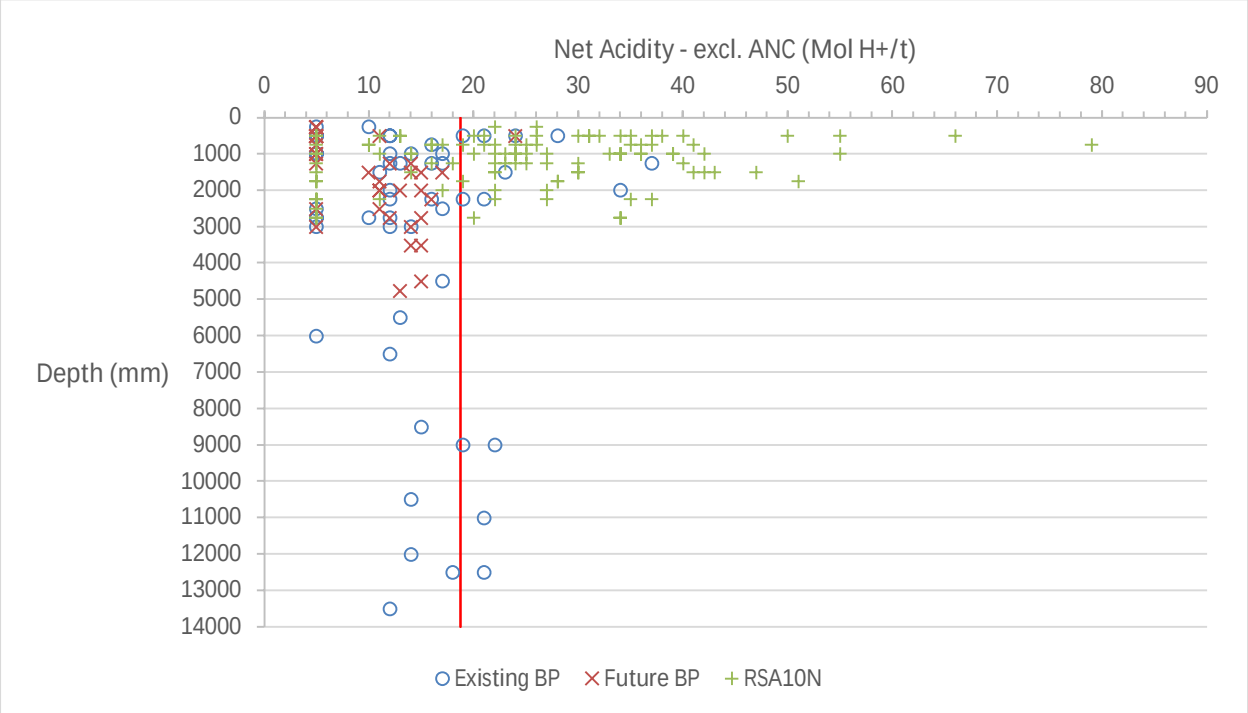

Figure 8-5: Net acidity versus Depth

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8.3 Liming Rate

The liming rate for acid soils has been calculated based on the Net Acidity of the soils as assessed in Section 7.1.2. When the volume of soil to be disturbed in more than 1,000m^3, the mean Net Acidity plus the standard deviation, may be used to calculate the amount of neutralising material needed.

The soil material to be excavated had a mean Net Acidity of 19.4 mol H+/t with a standard deviation of 13 mol H+/t. This results in an acidity of 33 mol H+/t to be neutralised. Given the acidity was predominantly identified in the Guildford Formation, individual soil layers have not been assessed.

A total of 1.7 kg of $CaCO_3$/t is required to neutralise a Net Acidity of 33 mol H+/t. Applying a safety factor of 1.5, neutralising value of 100% and bulk soil density of 1.8 t/m^3, the value of lime required to neutralise the soil is 5 kg/m^3.

8.4 Surface Water Results

8.4.1 Impact from ASS Assessment

Results from the surface water laboratory assessment concluded that ASS was not present.

- The sulfate to chloride ratio was less than 0.25 in all cases, with values between 0.098 and 0.17. pH was greater than 4 in all cases with values ranging between 7.49 to 7.71. This is indicative that ASS is not present.
- In no cases was the sulfate to alkalinity ratio greater than 0.2 which indicates no consumption of alkalinity is taking place. Sample 'Borrow – 3' returned an Al/Ca ratio less than 1 which may indicate Ca depletion and potential for Al toxicity. Aluminium concentrations were greater than 1 mg/L in all cases which indicates that Al mobilisation is not occurring.

Results are also presented in Table 8-5 below.

Table 8-5: Surface Water Analysis Results

	Borrow – 1	Borrow – 2	Borrow – 3	Borrow – 4
pH Value	7.66	7.49	7.71	7.69
Acidity ($CaCO_3$) (mg/L)	1	5	5	-
Alkalinity ($CaCO_3$) (mg/L)	68	52	70	69
Sulfate (SO_4) (mg/L)	73	117	69	70
Chloride (Cl) (mg/L)	697	688	704	703
Aluminium (Al)	8	10	8	8
Calcium (Ca)	3.19	2.86	2.46	2.56
Sulfate to Chloride ratio (mg/L)	0.105	0.170	0.098	0.100
Aluminium to Calcium ratio	2.507	3.496	3.252	3.125
Sulfate to Alkalinity ratio	1.073	2.250	0.986	1.014

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8.4.2 Fresh Water

The surface water for freshwater analysis reported the following exceedances:

- Borrow 1:
  - Total Nitrogen (0.4 mg/L) ANZECC & ARMCANZ 2000 FWG criteria.
- Borrow 2:
  - Total Nitrogen (0.6 mg/L) ANZECC & ARMCANZ 2000 FWG criteria.
- Borrow 3:
  - Total Nitrogen (0.3 mg/L) ANZECC & ARMCANZ 2000 FWG criteria.
- Borrow 4:
  - Total Nitrogen (0.4 mg/L) ANZECC & ARMCANZ 2000 FWG criteria.

Surface water test results are presented in Appendix D. No assessment of groundwater quality is included under this report scope.

9. Conclusion and Recommendations

The ASS investigation meets the requirements for sampling in accordance with DWER guidelines (Department of Water and Environmental Regulation, 2015a) for the RSA10N site and the existing borrow pit area. The future borrow pit area generally complies with the DWER guidelines, which allows for reducing the specified sampling density if the sampling plan is appropriate or the site is greater than 20 hectares. Considering the amount of testing that has been done over the site, this testing frequency is considered appropriate given this borrow pit area is a provisional borrow source option.

Based on the results of the ASS investigation and analysis, the soils over the RSA10N and borrow area sites are considered to have slightly acidic soils but not AASS. None of the field screening samples returned a pH_F values less than 4, indicating that the soil is only slightly acidic. The results of the TAA analysis returned 72 out of 196 samples (37%) above the TAA criterion of 18 mol H+/t (TAA > 0.03%) indicating the soil does comprises actual acidity. However for a soil to be classified as AASS the underlying soils must comprise sulfidic soils, with S_{CR} > 0.01% (6 mol H+/t) (Australian Government Department of Agriculture and Water Resources, 2018b). As shown in Figure 8-4: Reducible Sulfur versus Depth, the majority of soil samples and all samples below 2m depth are assessed as non-sulfidic soils. The results of the investigation therefore indicate the near surface soils at the site are slightly acidic and not AASS.

The soils were assessed for PASS using the results of the pH_{FOX} and S_{CR} analysis. Of the 1,028 field screening samples tested, a total of 52 (5%) returned a pH_{FOX} of less than 3, indicating possible PASS soils. The secondary screening analysed 196 samples, with only 2 samples (1%) exceeding the S_{CR} criterion for PASS of 0.03%. Based on these results the soils at the site are therefore considered not to be PASS within the investigation extent.

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The analysis of groundwater samples returned pH values ranging from 7.5 to 7.7, indicating neutral groundwater conditions. The alkalinity:sulfate ratio of the groundwater samples indicated that the groundwater has not been affected by the oxidation of sulfides.

Given the soils are not considered ASS but are instead slightly acid, treatment of the soil is therefore not required. Further to this the soil excavated from site is primarily being used for the construction of the RSA10N liner and embankments and would not be used in any environmentally sensitive areas. Surface water runoff from the RSA10N facility is captured and it is unlikely that the soils won from site and the borrow areas will be used in any environmentally sensitive areas.

A liming rate has been assessed based on the Net Actual Acidity results. Liming is not required for soil management as the surficial soils are slightly acidic, which is likely to be consistent with near surface soils in this region where grazing has been prominent. Liming should be considered where soils are used for general fill outside of the RSA10N facility to help improve the overall soil condition, particularly where re-vegetation is planned. The recommended liming rate of 5 kg/m^3 is based on the analysis assumptions and should be reviewed when planning any soil treatment works.

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Appendix A
Test Locations

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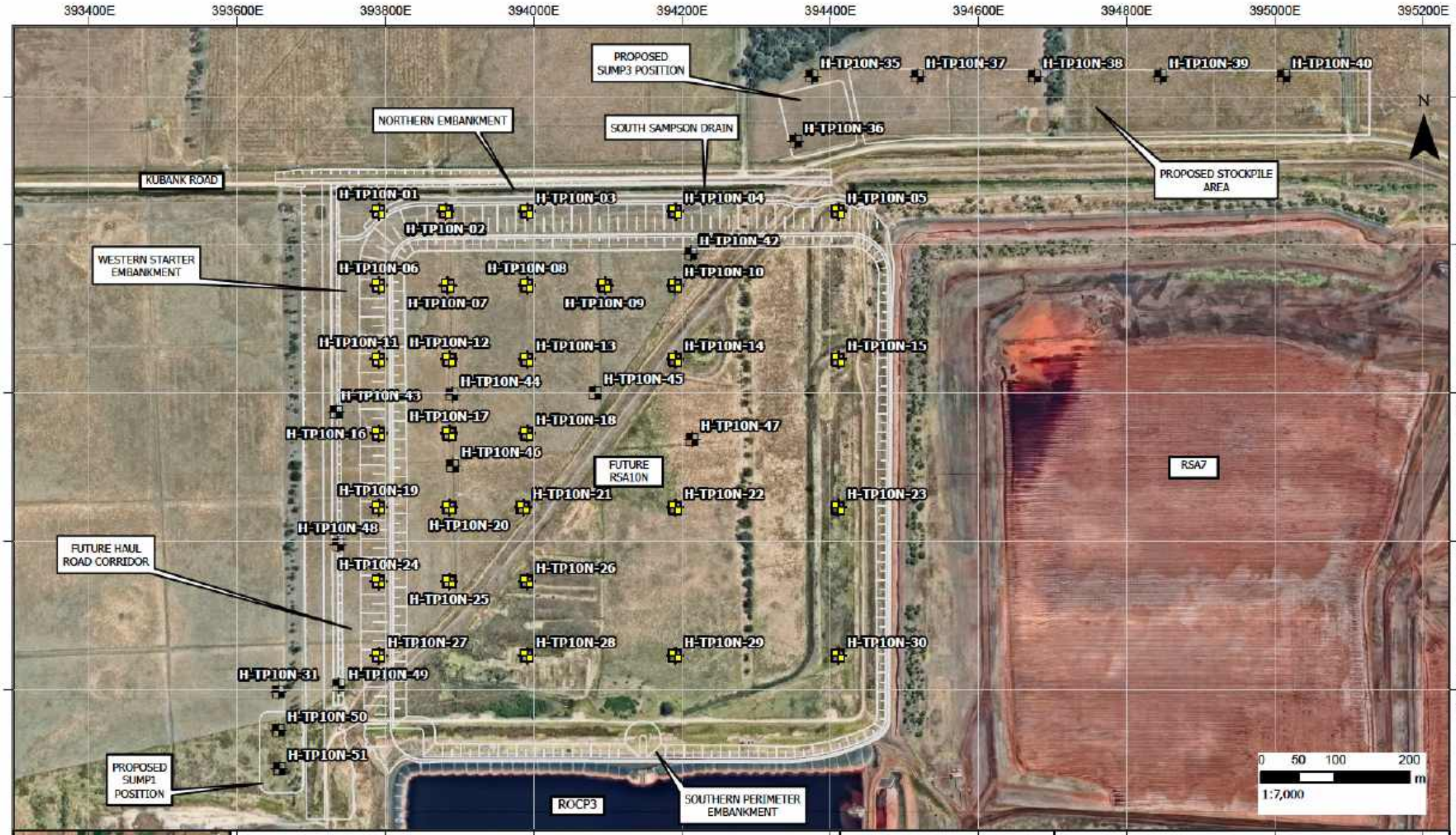


LEGEND

As-Constructed Test Locations

Phase 1 Test Pit Locations 2023

Phase 3 Test Pit Locations 2024

Design Layout

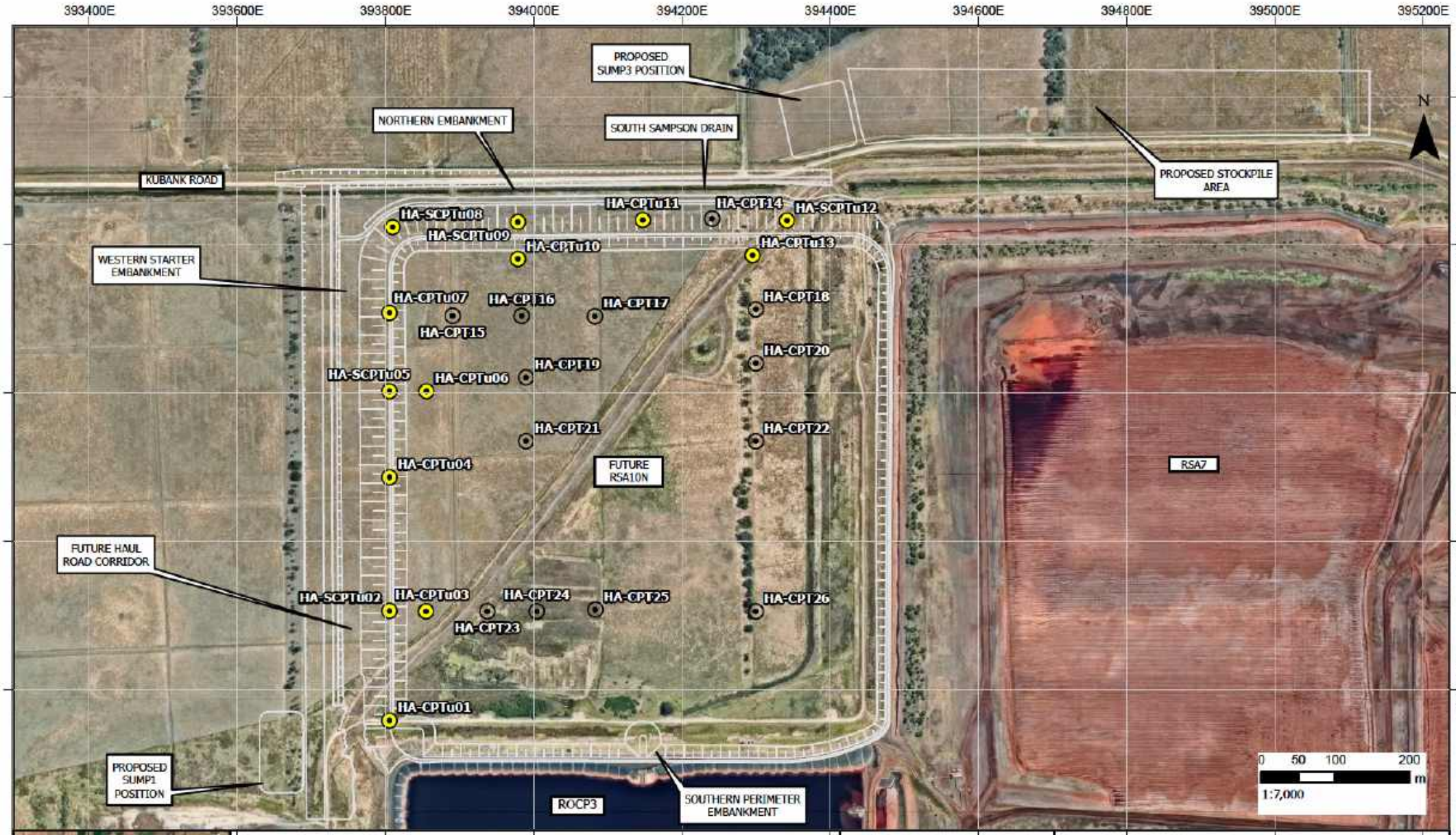
RSA10N design layout

NOTES

COORDINATES SYSTEM: GDA94
DATA SOURCE:
AERIAL IMAGERY FROM NEARMAPS
IMAGERY PROVIDED BY ALCOA
(2023,REF:EPSG28350
DATE20221122_
LAT-32.899431_LON115.870126_MPP0.597)

HATCH

Prepared by : PS/MN	**Project :** Wagerup RSA10NFEL2.2 Phase 3 Geotechnical Investigation
Checked by: S Hope	**Figure Title :** Acid Sulfate Soils Report - RSA10N Test Pit Locations
Date: 14/05/2024	**Client:** Alcoa of Australia Limited
	Design no. H368360-0000-2A0-230-0005 / **Rev.** 2 / **Figure Number:** A1



LEGEND

As-Constructed Test Locations

Phase 1 CPT Locations 2023

Phase 3 CPT Locations 2024

Design Layout

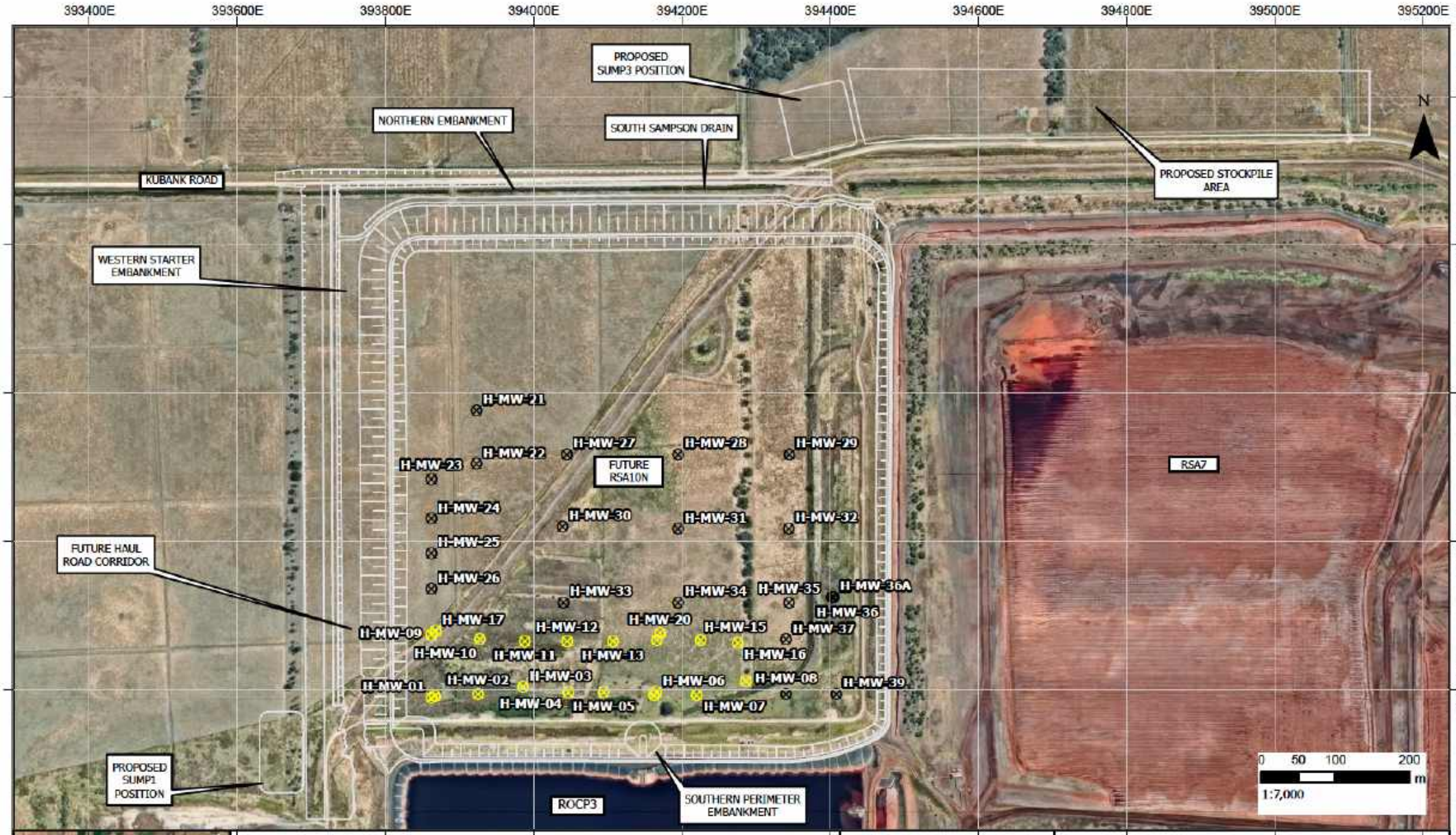
RSA10N design layout

NOTES

COORDINATES SYSTEM: GDA94
DATA SOURCE:
AERIAL IMAGERY FROM NEARMAPS
IMAGERY PROVIDED BY ALCOA
(2023,REF:EPSG28350
DATE20221122_
LAT-32.899431_LON115.870126_MPP0.597)

HATCH

Prepared by : PS/MN	**Project :** Wagerup RSA10NFEL2.2 Phase 3 Geotechnical Investigation
Checked by : S Hope	**Figure Title :** Acid Sulfate Soils Report - RSA10N CPT Locations
Date : 14/05/2024	**Client :** Alcoa of Australia Limited
	Design no. H368360-0000-2A0-230-0006 / **Rev.** 2 / **Figure Number:** A2



LEGEND

As-Constructed Test Locations

Phase 2 Monitoring Well Locations 2023

Phase 3 Monitoring Well Locations 2024

Design Layout

RSA10N design layout

NOTES

COORDINATES SYSTEM: GDA94
DATA SOURCE:
AERIAL IMAGERY FROM NEARMAPS
IMAGERY PROVIDED BY ALCOA
(2023,REF:EPSG28350
DATE20221122_
LAT-32.899431_LON115.870126_MPP0.597)

HATCH

Prepared by : PS/MN	**Project :** Wagerup RSA10NFEL2.2 Phase 3 Geotechnical Investigation
Checked by : S Hope	**Figure Title :** Acid Sulfate Soils Report - RSA10N Monitoring Well Locations
Date : 14/05/2024	**Client :** Alcoa of Australia Limited
	Design no. H368360-0000-2A0-230-0005 / **Rev.** 2 / **Figure Number:** A3

LEGEND

As-Constructed Test Locations

Phase 1 Test Pit Locations 2023

Phase 3 Test Pit Locations 2024

Design Layout

Borrow Pit

NOTES

Coordinate System: GDA94
Data Source:
AERIAL IMAGERY
FROM NEARMAPS IMAGERY
PROVIDED BY ALCOA.
(2023,REF: EPSG28350-
DATE20221122-
LAT-32.899431
LON115.870126-MPP0.299)

HATCH

Prepared by : PS/MN	**Project :** Wagerup RSA10N FEL2.2 Phase 3 Geotechnical Investigation
Checked by : S Hope	**Figure Title :** Acid Sulfate Soils Report - Borrow Area Test Pit Locations
Date : 15/05/2024	**Client :** Alcoa of Australia Limited
	Design no. H368360-0000-2A0-230-0005 / **Rev.** 2 / **Figure Number :** A4

LEGEND

As-Constructed Test Locations

Phase 3 Borehole Locations 2024

Design Layout

Borrow Pit

NOTES

Coordinate System: GDA94
Data Source:
AERIAL IMAGERY
FROM NEARMAPS IMAGERY
PROVIDED BY ALCOA.
(2023,REF: EPSG28350-
DATE20221122-
LAT-32.899431
LON115.870126-MPP0.299)

HATCH

Prepared by : PS/MN	**Project :** Wagerup RSA10N FEL2.2 Phase 3 Geotechnical Investigation
Checked by : S Hope	**Figure Title :** Acid Sulfate Soils Report - Borrow Area Borehole Locations
Date : 15/05/2024	**Client :** Alcoa of Australia Limited
	Design no. H368360-0000-2A0-230-0005 / **Rev.** 2 / **Figure Number :** A5

Appendix B
CoC Documentation

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CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	EG		
DATE/TIME: 19/5/23 - 3pm	DATE/TIME: 22/05@1556	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO: andrew.bodley@hatch.com	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS			MATRIX: Solid(S) Water(W)	CONTAINER INFORMATION	ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - Nata Accredited Option	CRS Only		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1 - 12	H-TP10N-1: 1 to 12			S							12			
13 - 25	H-TP10N-2: 1 to 12			S							12			
26 - 38	H-TP10N-3: 1 to 12			S							12			
39 - 50	H-TP10N-4: 1 to 8			S							8			
51 - 61	H-TP10N-5: 1 to 11			S							11			
	H-TP10N-6: 1 to 13			S							13			
	H-TP10N-7: 1 to 13			S							13			
	H-TP10N-8: 1 to 12			S							12			
	H-TP10N-9: 1 to 12			S							12			
	H-TP10N-10: 1 to 6			S							6			
	H-TP10N-11: 1 to 12			S							12			
	H-TP10N-12: 1 to 13			S							13			
	H-TP10N-13: 1 to 13			S							13			
	H-TP10N-14: 1 to 12			S							12			
	H-TP10N-15: 1 to 13			S							13			
	H-TP10N-16: 1 to 13			S							13			
	H-TP10N-17: 1 to 12			S							12			
	H-TP10N-18: 1 to 12			S							12			
	H-TP10N-19: 1 to 12			S							12			
	H-TP10N-20: 1 to 13			S							13			
	H-TP10N-21: 1 to 13			S							13			
	H-TP10N-22: 1 to 10			S							10			
	H-TP10N-23: 1 to 7			S							7			
	H-TP10N-24: 1 to 12			S							12			
	H-TP10N-25: 1 to 12			S							12			
	H-TP10N-26: 1 to 12			S							12			
	H-TP10N-27: 1 to 13			S							13			
	H-TP10N-28: 1 to 12			S							12			
	H-TP10N-29: 1 to 12			S							12			
	H-TP10N-30: 1 to 6			S							6			
	Borrow-1			W										Discard
	Borrow-2			W										Discard
	Borrow-3			W										Discard
	Borrow-4			W										Discard
				TOTAL							345			

Environmental Division
Perth
Work Order Reference
EP2306747

Telephone : +61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	EG		
DATE/TIME: 19/5/23 - 3pm	DATE/TIME: 22/05@1536	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Water(W))			CONTAINER INFORMATION (MATRIX: Solid(S))		ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - Nata Accredited Option	CRS Only		
	H-TP10N-1: 1 to 12			S							12			
	H-TP10N-2: 1 to 12			S							12			
	H-TP10N-3: 1 to 12			S							12			
	H-TP10N-4: 1 to 8			S							8			
	H-TP10N-5: 1 to 11			S							11			
1-13	H-TP10N-6: 1 to 13			S							13			
14-24	H-TP10N-7: 1 to 13			S							13			
25-37	H-TP10N-8: 1 to 12			S							12			
38-49	H-TP10N-9: 1 to 12			S							12			
50-56	H-TP10N-10: 1 to 6			S							6			
	H-TP10N-11: 1 to 12			S							12			
	H-TP10N-12: 1 to 13			S							13			
	H-TP10N-13: 1 to 13			S							13			
	H-TP10N-14: 1 to 12			S							12			
	H-TP10N-15: 1 to 13			S							13			
	H-TP10N-16: 1 to 13			S							13			
	H-TP10N-17: 1 to 12			S							12			
	H-TP10N-18: 1 to 12			S							12			
	H-TP10N-19: 1 to 12			S							12			
	H-TP10N-20: 1 to 13			S							13			
	H-TP10N-21: 1 to 13			S							13			
	H-TP10N-22: 1 to 10			S							10			
	H-TP10N-23: 1 to 7			S							7			
	H-TP10N-24: 1 to 12			S							12			
	H-TP10N-25: 1 to 12			S							12			
	H-TP10N-26: 1 to 12			S							12			
	H-TP10N-27: 1 to 13			S							13			
	H-TP10N-28: 1 to 12			S							12			
	H-TP10N-29: 1 to 12			S							12			
	H-TP10N-30: 1 to 6			S							6			
	Borrow-1			W										Discard
	Borrow-2			W										Discard
	Borrow-3			W										Discard
	Borrow-4			W										Discard
				TOTAL							345			

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Environmental Division
Perth
Work Order Reference
EP2306752

Telephone : – 61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	EG		
DATE/TIME: 19/5/23 - 3pm	DATE/TIME: 22/05/23 @ 1556	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO: EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Water(W) MATRIX: Solid(S))			CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pH/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pH/Fox - Nats Accredited Option	CRS Only			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10N-1: 1 to 12			S							12				
	H-TP10N-2: 1 to 12			S							12				
	H-TP10N-3: 1 to 12			S							12				
	H-TP10N-4: 1 to 8			S							8				
	H-TP10N-5: 1 to 11			S							11				
	H-TP10N-6: 1 to 13			S							13				
	H-TP10N-7: 1 to 13			S							13				
	H-TP10N-8: 1 to 12			S							12				
	H-TP10N-9: 1 to 12			S							12				
	H-TP10N-10: 1 to 6			S							6				
1-12	H-TP10N-11: 1 to 12			S							12				
13-25	H-TP10N-12: 1 to 13			S							13				
26-38	H-TP10N-13: 1 to 13			S							13				
39-50	H-TP10N-14: 1 to 12			S							12				
51-63	H-TP10N-15: 1 to 13			S							13				
	H-TP10N-16: 1 to 13			S							13				
	H-TP10N-17: 1 to 12			S							12				
	H-TP10N-18: 1 to 12			S							12				
	H-TP10N-19: 1 to 12			S							12				
	H-TP10N-20: 1 to 13			S							13				
	H-TP10N-21: 1 to 13			S							13				
	H-TP10N-22: 1 to 10			S							10				
	H-TP10N-23: 1 to 7			S							7				
	H-TP10N-24: 1 to 12			S							12				
	H-TP10N-25: 1 to 12			S							12				
	H-TP10N-26: 1 to 12			S							12				
	H-TP10N-27: 1 to 13			S							13				
	H-TP10N-28: 1 to 12			S							12				
	H-TP10N-29: 1 to 12			S							12				
	H-TP10N-30: 1 to 6			S							6				
	Borrow-1			W											Discard
	Borrow-2			W											Discard
	Borrow-3			W											Discard
	Borrow-4			W											Discard
				TOTAL							345				

Environmental Division
Perth
Work Order Reference
EP2306754

Telephone : – 61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	EG		
DATE/TIME: 19/5/23 - 3pm	DATE/TIME: 22/05/23 @ 1536	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO: EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice blocks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Water(W))			CONTAINER INFORMATION (MATRIX: Solid(S))		ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - Note Aeraditol Option	CRS Only		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10N-1: 1 to 12			S							12			
	H-TP10N-2: 1 to 12			S							12			
	H-TP10N-3: 1 to 12			S							12			
	H-TP10N-4: 1 to 8			S							8			
	H-TP10N-5: 1 to 11			S							11			
	H-TP10N-6: 1 to 13			S							13			
	H-TP10N-7: 1 to 13			S							13			
	H-TP10N-8: 1 to 12			S							12			
	H-TP10N-9: 1 to 12			S							12			
	H-TP10N-10: 1 to 6			S							6			
	H-TP10N-11: 1 to 12			S							12			
	H-TP10N-12: 1 to 13			S							13			
	H-TP10N-13: 1 to 13			S							13			
	H-TP10N-14: 1 to 12			S							12			
	H-TP10N-15: 1 to 13			S							13			
1-13	H-TP10N-16: 1 to 13			S							13			
14-25	H-TP10N-17: 1 to 12			S							12			
26-37	H-TP10N-18: 1 to 12			S							12			
38-50	H-TP10N-19: 1 to 12			S							12			
51-64	H-TP10N-20: 1 to 13			S							13			
	H-TP10N-21: 1 to 13			S							13			
	H-TP10N-22: 1 to 10			S							10			
	H-TP10N-23: 1 to 7			S							7			
	H-TP10N-24: 1 to 12			S							12			
	H-TP10N-25: 1 to 12			S							12			
	H-TP10N-26: 1 to 12			S							12			
	H-TP10N-27: 1 to 13			S							13			
	H-TP10N-28: 1 to 12			S							12			
	H-TP10N-29: 1 to 12			S							12			
	H-TP10N-30: 1 to 6			S							6			
	Borrow-1			W										Discard
	Borrow-2			W										Discard
	Borrow-3			W										Discard
	Borrow-4			W										Discard
				TOTAL							345			

Environmental Division
Perth
Work Order Reference
EP2306761

Telephone : +61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	EG		
DATE/TIME: 19/5/23 - 3pm	DATE/TIME: 22/05/23 @ 1536	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO EP/868/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917870	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Water(W) MATRIX: Solid(S))			CONTAINER INFORMATION		ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pH/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pH/Fox - Nata Accredited Option	CRS Only		
	H-TP10N-1: 1 to 12			S							12			
	H-TP10N-2: 1 to 12			S							12			
	H-TP10N-3: 1 to 12			S							12			
	H-TP10N-4: 1 to 8			S							8			
	H-TP10N-5: 1 to 11			S							11			
	H-TP10N-6: 1 to 13			S							13			
	H-TP10N-7: 1 to 13			S							13			
	H-TP10N-8: 1 to 12			S							12			
	H-TP10N-9: 1 to 12			S							12			
	H-TP10N-10: 1 to 6			S							6			
	H-TP10N-11: 1 to 12			S							12			
	H-TP10N-12: 1 to 13			S							13			
	H-TP10N-13: 1 to 13			S							13			
	H-TP10N-14: 1 to 12			S							12			
	H-TP10N-15: 1 to 13			S							13			
	H-TP10N-16: 1 to 13			S							13			
	H-TP10N-17: 1 to 12			S							12			
	H-TP10N-18: 1 to 12			S							12			
	H-TP10N-19: 1 to 12			S							12			
	H-TP10N-20: 1 to 13			S							13			
1-13	H-TP10N-21: 1 to 13			S							13			
14-24	H-TP10N-22: 1 to 10			S							10			
25-31	H-TP10N-23: 1 to 7			S							7			
32-43	H-TP10N-24: 1 to 12			S							12			
44-55	H-TP10N-25: 1 to 12			S							12			
	H-TP10N-26: 1 to 12			S							12			
	H-TP10N-27: 1 to 13			S							13			
	H-TP10N-28: 1 to 12			S							12			
	H-TP10N-29: 1 to 12			S							12			
	H-TP10N-30: 1 to 6			S							6			
	Borrow-1			W										Discard
	Borrow-2			W										Discard
	Borrow-3			W										Discard
	Borrow-4			W										Discard
				TOTAL:							345			

Environmental Division
Perth
Work Order Reference
EP2306773

Telephone : -- 61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	EG		
DATE/TIME: 19/5/23 - 3pm	DATE/TIME: 22/05@1556	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 436228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Water(W))			CONTAINER INFORMATION (MATRIX: Solid(S))		ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - Nata Accredited Option	CRS Only		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10N-1: 1 to 12			S							12			
	H-TP10N-2: 1 to 12			S							12			
	H-TP10N-3: 1 to 12			S							12			
	H-TP10N-4: 1 to 8			S							8			
	H-TP10N-5: 1 to 11			S							11			
	H-TP10N-6: 1 to 13			S							13			
	H-TP10N-7: 1 to 13			S							13			
	H-TP10N-8: 1 to 12			S							12			
	H-TP10N-9: 1 to 12			S							12			
	H-TP10N-10: 1 to 6			S							6			
	H-TP10N-11: 1 to 12			S							12			
	H-TP10N-12: 1 to 13			S							13			
	H-TP10N-13: 1 to 13			S							13			
	H-TP10N-14: 1 to 12			S							12			
	H-TP10N-15: 1 to 13			S							13			
	H-TP10N-16: 1 to 13			S							13			
	H-TP10N-17: 1 to 12			S							12			
	H-TP10N-18: 1 to 12			S							12			
	H-TP10N-19: 1 to 12			S							12			
	H-TP10N-20: 1 to 13			S							13			
	H-TP10N-21: 1 to 13			S							13			
	H-TP10N-22: 1 to 10			S							10			
	H-TP10N-23: 1 to 7			S							7			
	H-TP10N-24: 1 to 12			S							12			
	H-TP10N-25: 1 to 12			S							12			
1-M	H-TP10N-26: 1 to 12			S							12			
13-24	H-TP10N-27: 1 to 13			S							13			
25-37	H-TP10N-28: 1 to 12			S							12			
38-49	H-TP10N-29: 1 to 12			S							12			
50-57	H-TP10N-30: 1 to 8			S							6			
	Borrow-1			W										Discard
	Borrow-2			W										Discard
	Borrow-3			W										Discard
	Borrow-4			W										Discard
				TOTAL							345			

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

Environmental Division
Perth
Work Order Reference
EP2306774

Telephone : +61-8-9406 1301

CHAIN OF CUSTODY

ALS Laboratory

CLIENT:	HATCH
PROJECT:	RSA 10N
SITE:	Wagerup
PURCHASE ORDER NO.:	368360-1
PROJECT MANAGER:	Simon Hope
CONTACT PH:	0438917970
SAMPLER:	Jerry Zhang
SAMPLER MOBILE:	435228758
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com
EMAIL INVOICE TO:	andrew.bodley@hatch.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)

- ☑ Standard TAT (List due date):
- ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NC EP/968/22

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

RELINQUISHED BY: Jerry Zhang
DATE/TIME: 26/5/23 - 1pm

RECEIVED BY:
DATE/TIME: 26/5 1540

Environmental Division Perth
Work Order Reference
EP2307016

Telephone : +61-8-9406 1301

RECEIVED BY:
DATE/TIME:

Yes	No	N/A
Yes	No	N/A
°C		

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))			CONTAINER INFORMATION		ANALYSIS REQUIRED										Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX:	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - Nata Accredited Option	CRS Only				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1 - 4	Borrow - 1 to 4		26/5/23 12	W						1						4 bottles
TOTAL									0	1	0					

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	29/5		
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 1045	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO: EP/953/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917870	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO: andrew.bodley@hatch.com	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))			MATRIX:	CONTAINER INFORMATION	ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - Note Accredited Option	CRS Only		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1-12	H-TP10B-01: 1 to 12			S							12			
13	H-TP10B-01 - Duplicated			S							1			
14-25	H-TP10B-02: 1 to 12			S							12			
26-37	H-TP10B-03: 1 to 12			S							12			
38	H-TP10B-03 - Duplicated			S							1			
39-50	H-TP10B-04: 1 to 12			S							12			
51	H-TP10B-04 - Duplicated			S							1			
52-63	H-TP10B-05: 1 to 12			S							12			
	H-TP10B-06: 1 to 12			S							12			
	H-TP10B-06 - Duplicated			S							1			
	H-TP10B-07: 1 to 12			S							12			
	H-TP10B-08: 1 to 12			S							12			
	H-TP10B-09: 1 to 12			S							12			
	H-TP10B-10: 1 to 12			S							12			
	H-TP10B-11: 1 to 12			S							12			
	H-TP10B-11 - Duplicated			S							1			
	H-TP10B-12: 1 to 12			S							12			
	H-TP10B-12 - Duplicated			S							1			
	H-TP10B-13: 1 to 12			S							12			
	H-TP10B-14: 1 to 12			S							12			
	H-TP10B-15: 1 to 12			S							12			
	H-TP10B-16: 1 to 12			S							12			
	H-TP10B-17: 1 to 12			S							12			
	H-TP10B-17 - Duplicated			S							1			
	H-TP10B-18: 1 to 12			S							12			
	H-TP10B-19: 1 to 12			S							12			
	H-TP10B-19 - Duplicated			S							1			
	H-TP10B-20: 1 to 12			S							12			
	H-TP10B-21: 1 to 12			S							12			
	H-TP10B-21 - Duplicated			S							1			
	H-TP10B-22: 1 to 12			S							12			
	H-TP10B-23: 1 to 12			S							12			
	H-TP10B-24: 1 to 12			S							12			
	H-TP10B-25: 1 to 12			S							12			
	H-TP10B-25 - Duplicated			S							1			
	H-TP10B-26: 1 to 12			S							12			
	H-TP10B-26 - Duplicated			S							1			
	H-TP10B-27: 1 to 12			S							12			
	H-TP10B-27 - Duplicated			S							1			
	H-TP10B-28: 1 to 12			S							12			
				TOTAL							348			

Environmental Division
Perth
Work Order Reference
EP2307162

Telephone : -- 61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	29/5		
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 1045	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO: EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))			CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pH/Fox	ASSOW-1 Short Suite	ASSOW-2 Extended Suite	pH/Fox - Note Accredited Option	CRS Only			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10B-01: 1 to 12			S							12				
	H-TP10B-01 - Duplicated			S							1				
	H-TP10B-02: 1 to 12			S							12				
	H-TP10B-03: 1 to 12			S							12				
	H-TP10B-03 - Duplicated			S							1				
	H-TP10B-04: 1 to 12			S							12				
	H-TP10B-04 - Duplicated			S							1				
	H-TP10B-05: 1 to 12			S							12				
1-12	H-TP10B-06: 1 to 12			S							12				
13	H-TP10B-06 - Duplicated			S							1				
14-25	H-TP10B-07: 1 to 12			S							12				
26-38	H-TP10B-08: 1 to 12			S							12				
39-51	H-TP10B-09: 1 to 12			S							12				
52-63	H-TP10B-10: 1 to 12			S							12				
	H-TP10B-11: 1 to 12			S							12				
	H-TP10B-11 - Duplicated			S							1				
	H-TP10B-12: 1 to 12			S							12				
	H-TP10B-12 - Duplicated			S							1				
	H-TP10B-13: 1 to 12			S							12				
	H-TP10B-14: 1 to 12			S							12				
	H-TP10B-15: 1 to 12			S							12				
	H-TP10B-16: 1 to 12			S							12				
	H-TP10B-17: 1 to 12			S							12				
	H-TP10B-17 - Duplicated			S							1				
	H-TP10B-18: 1 to 12			S							12				
	H-TP10B-19: 1 to 12			S							12				
	H-TP10B-19 - Duplicated			S							1				
	H-TP10B-20: 1 to 12			S							12				
	H-TP10B-21: 1 to 12			S							12				
	H-TP10B-21 - Duplicated			S							1				
	H-TP10B-22: 1 to 12			S							12				
	H-TP10B-23: 1 to 12			S							12				
	H-TP10B-24: 1 to 12			S							12				
	H-TP10B-25: 1 to 12			S							12				
	H-TP10B-25 - Duplicated			S							1				
	H-TP10B-26: 1 to 12			S							12				
	H-TP10B-26 - Duplicated			S							1				
	H-TP10B-27: 1 to 12			S							12				
	H-TP10B-27 - Duplicated			S							1				
	H-TP10B-28: 1 to 12			S							12				
				TOTAL							348				

Environmental Division
Perth
Work Order Reference
EP2307165

Telephone -- 61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	29/5		
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 1045	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
PROJECT:	RSA 10N		
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO: EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917976	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))			MATRIX:	CONTAINER INFORMATION	ANALYSIS REQUIRED									Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHFFox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHFFox - Nats Acetrolled Option	CRS Only			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10B-01: 1 to 12			S							12				
	H-TP10B-01 - Duplicated			S							1				
	H-TP10B-02: 1 to 12			S							12				
	H-TP10B-03: 1 to 12			S							12				
	H-TP10B-03 - Duplicated			S							1				
	H-TP10B-04: 1 to 12			S							12				
	H-TP10B-04 - Duplicated			S							1				
	H-TP10B-05: 1 to 12			S							12				
	H-TP10B-06: 1 to 12			S							12				
	H-TP10B-06 - Duplicated			S							1				
	H-TP10B-07: 1 to 12			S							12				
	H-TP10B-08: 1 to 12			S							12				
	H-TP10B-09: 1 to 12			S							12				
	H-TP10B-10: 1 to 12			S							12				
1 - 12	H-TP10B-11: 1 to 12			S							12				
13	H-TP10B-11 - Duplicated			S							1				
14 - 25	H-TP10B-12: 1 to 12			S							12				
26	H-TP10B-12 - Duplicated			S							1				
27 - 39	H-TP10B-13: 1 to 12			S							12				
40 - 51	H-TP10B-14: 1 to 12			S							12				
52 - 63	H-TP10B-15: 1 to 12			S							12				
	H-TP10B-16: 1 to 12			S							12				
	H-TP10B-17: 1 to 12			S							12				
	H-TP10B-17 - Duplicated			S							1				
	H-TP10B-18: 1 to 12			S							12				
	H-TP10B-19: 1 to 12			S							12				
	H-TP10B-19 - Duplicated			S							1				
	H-TP10B-20: 1 to 12			S							12				
	H-TP10B-21: 1 to 12			S							12				
	H-TP10B-21 - Duplicated			S							1				
	H-TP10B-22: 1 to 12			S							12				
	H-TP10B-23: 1 to 12			S							12				
	H-TP10B-24: 1 to 12			S							12				
	H-TP10B-25: 1 to 12			S							12				
	H-TP10B-25 - Duplicated			S							1				
	H-TP10B-26: 1 to 12			S							12				
	H-TP10B-26 - Duplicated			S							1				
	H-TP10B-27: 1 to 12			S							12				
	H-TP10B-27 - Duplicated			S							1				
	H-TP10B-28: 1 to 12			S							12				
				TOTAL							348				

Environmental Division
Perth
Work Order Reference
EP2307170

Telephone : - 61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/lox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang			
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 29/5 1045	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	388360-1	ALS QUOTE NO: EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))		MATRIX:	CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox + Nata Accredited Option	CRS Only			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10B-01: 1 to 12			S							12				
	H-TP10B-01 - Duplicated			S							1				
	H-TP10B-02: 1 to 12			S							12				
	H-TP10B-03: 1 to 12			S							12				
	H-TP10B-03 - Duplicated			S							1				
	H-TP10B-04: 1 to 12			S							12				
	H-TP10B-04 - Duplicated			S							1				
	H-TP10B-05: 1 to 12			S							12				
	H-TP10B-06: 1 to 12			S							12				
	H-TP10B-06 - Duplicated			S							1				
	H-TP10B-07: 1 to 12			S							12				
	H-TP10B-08: 1 to 12			S							12				
	H-TP10B-09: 1 to 12			S							12				
	H-TP10B-10: 1 to 12			S							12				
	H-TP10B-11: 1 to 12			S							12				
	H-TP10B-11 - Duplicated			S							1				
	H-TP10B-12: 1 to 12			S							12				
	H-TP10B-12 - Duplicated			S							1				
	H-TP10B-13: 1 to 12			S							12				
	H-TP10B-14: 1 to 12			S							12				
	H-TP10B-15: 1 to 12			S							12				
1-12	H-TP10B-16: 1 to 12			S							12				
13-~~25~~24	H-TP10B-17: 1 to 12			S							12				
25	H-TP10B-17 - Duplicated			S							1				
26-37	H-TP10B-18: 1 to 12			S							12				
38-~~50~~49	H-TP10B-19: 1 to 12			S							12				
50	H-TP10B-19 - Duplicated			S							1				
51-62	H-TP10B-20: 1 to 12			S							12				
	H-TP10B-21: 1 to 12			S							12				
	H-TP10B-21 - Duplicated			S							1				
	H-TP10B-22: 1 to 12			S							12				
	H-TP10B-23: 1 to 12			S							12				
	H-TP10B-24: 1 to 12			S							12				
	H-TP10B-25: 1 to 12			S							12				
	H-TP10B-25 - Duplicated			S							1				
	H-TP10B-26: 1 to 12			S							12				
	H-TP10B-26 - Duplicated			S							1				
	H-TP10B-27: 1 to 12			S							12				
	H-TP10B-27 - Duplicated			S							1				
	H-TP10B-28: 1 to 12			S							12				
				TOTAL							348				

Environmental Division
Perth
Work Order Reference
EP2307178

Telephone . - 61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	29/5		
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 1045	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO: EP/068/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917070	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))		MATRIX:	CONTAINER INFORMATION		ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - Nata Accredited Option	CRS Only		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10B-01: 1 to 12			S							12			
	H-TP10B-01 - Duplicated			S							1			
	H-TP10B-02: 1 to 12			S							12			
	H-TP10B-03: 1 to 12			S							12			
	H-TP10B-03 - Duplicated			S							1			
	H-TP10B-04: 1 to 12			S							12			
	H-TP10B-04 - Duplicated			S							1			
	H-TP10B-05: 1 to 12			S							12			
	H-TP10B-06: 1 to 12			S							12			
	H-TP10B-06 - Duplicated			S							1			
	H-TP10B-07: 1 to 12			S							12			
	H-TP10B-08: 1 to 12			S							12			
	H-TP10B-09: 1 to 12			S							12			
	H-TP10B-10: 1 to 12			S							12			
	H-TP10B-11: 1 to 12			S							12			
	H-TP10B-11 - Duplicated			S							1			
	H-TP10B-12: 1 to 12			S							12			
	H-TP10B-12 - Duplicated			S							1			
	H-TP10B-13: 1 to 12			S							12			
	H-TP10B-14: 1 to 12			S							12			
	H-TP10B-15: 1 to 12			S							12			
	H-TP10B-16: 1 to 12			S							12			
	H-TP10B-17: 1 to 12			S							12			
	H-TP10B-17 - Duplicated			S							1			
	H-TP10B-18: 1 to 12			S							12			
	H-TP10B-19: 1 to 12			S							12			
	H-TP10B-19 - Duplicated			S							1			
	H-TP10B-20: 1 to 12			S							12			
1-12	H-TP10B-21: 1 to 12			S							12			
13	H-TP10B-21 - Duplicated			S							1			
14-25	H-TP10B-22: 1 to 12			S							12			
26-38	H-TP10B-23: 1 to 12			S							12			
39-50	H-TP10B-24: 1 to 12			S							12			
51-62	H-TP10B-25: 1 to 12			S							12			
63	H-TP10B-25 - Duplicated			S							1			
64-75	H-TP10B-26: 1 to 12			S							12			
76	H-TP10B-26 - Duplicated			S							1			
77-88	H-TP10B-27: 1 to 12			S							12			
89	H-TP10B-27 - Duplicated			S							1			
90-101	H-TP10B-28: 1 to 12			S							12			
				TOTAL							348			

Environmental Division
Perth
Work Order Reference
EP2307183

Telephone : +61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

Elea Gauliris

From: Zhang, Jerry <jerry.zhang@hatch.com>
Sent: Thursday, 15 June 2023 11:19 AM
To: David Brennan; Samples Perth
Cc: Hope, Simon; Bodley, Andrew
Subject: [EXTERNAL] - Further ASS Test for selected Samples
Attachments: Further ASS Tests.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Rebatch, Elea

Environmental Division Perth
Work Order Reference
EP2308132

Telephone : +61-8-9406 1301

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

Hi David,
Good morning. By now we have received the screening results for the first batch samples, thanks for that.
Based on the criteria form the DER 2015a and the latest national Acid Sulfate Soil Guidance, the total No. of 53 samples (refer to the attached) have been selected for further laboratory test – **CRS Suite (ALS Code: EA033-WA)**.
Please take note that the laboratory test method is **CRS Suite** only for all samples. If any query, please feel free to contact Simon or myself. Cheers.

Jerry Zhang
Graduate Geotechnical Engineer

Email: jerry.zhang@hatch.com
Level 7, 10 Telethon Ave
Perth WA 6000
HATCH

Tailored Analytical Services & Charges: CRS Suite

Parameter	ALS Code	Technique/ Method Reference
WA - Chromium Suite for Acid Sulphate Soils	EA033-WA	Ahern et al
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	In house
Total cost per sample (Excluding GST)		

From: David Brennan <david.brennan@ALSGlobal.com>
Sent: Wednesday, June 7, 2023 3:26 PM
To: Zhang, Jerry <jerry.zhang@hatch.com>

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-20 11
			Sampling date / time	[16-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-061
				Result
EA003 :pH (field/fox)				
pH (F)	----	0.1	pH Unit	5.9
pH (Fox)	----	0.1	pH Unit	4.6
Reaction Rate	----	1	Reaction Unit	1

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Tuesday, June 6, 2023 12:00 PM
To: Zhang, Jerry <jerry.zhang@hatch.com>
Subject: RESULTS & EDD for ALS Workorder : EP2306761 | Your Reference: RSA 10N

** CAUTION: This email originated outside Hatch. Do not click links or open attachments unless you can authenticate the sender and the content

Deliverables for ALS Workorder EP2306761

Project: RSA 10N

Dear Jerry Zhang,

Please find enclosed the following deliverables for **EP2306761**:

- EP2306761_0_COA.pdf
- RSA 10N.ESDAT_EP2306761_0.Chemistry2e.CSV
- RSA 10N.ESDAT_EP2306761_0.Header.XML

Table 1: ASS Field Analysis Results

	Test Pit ID	Sample ID	Depth (mm)	Date	Soil Type	Soil Unit	pH (Field)	pH (Fox)	Delta pH (Field-Fox)	Reaction Rate	Total	Test Type
	Units						pH units	pH units	pH units		53	
1	H-TP10N-3	H-TP10N-3 6	1500	17/05/2023	CLAY	2	5.50	3.9	1.1	1	1	CRS Suite
2	H-TP10N-4	H-TP10N-4 3	750	17/05/2023	CLAY	2	4.9	3.41	1.8	1	1	CRS Suite
3	H-TP10N-4	H-TP10N-4 5	1250	17/05/2023	CLAY	2	4.8	3.31	1.5	1	1	CRS Suite
4	H-TP10N-4	H-TP10N-4 7	1750	17/05/2023	CLAY	2	4.44	3.32	1.2	1	1	CRS Suite
5	H-TP10N-4	H-TP10N-4 9	2250	17/05/2023	Sandy Clayey GRAVEL	1c	4.4	3.32	1.2	1	1	CRS Suite
6	H-TP10N-4	H-TP10N-4 11	2750	17/05/2023	Sandy Clayey GRAVEL	1c	4.5		1.5	1	1	CRS Suite
7	H-TP10N-5	H-TP10N-5 3	750	18/05/2023	Sandy SILT	3	5.4	3.4	2	2	1	CRS Suite
8	H-TP10N-5	H-TP10N-5 5	1250	18/05/2023	Clayey SAND	1b	5.1	3.32	1.9	1	1	CRS Suite
9	H-TP10N-5	H-TP10N-5 7	1750	18/05/2023	Clayey SAND	1b	4.4		1.9	1	1	CRS Suite
10	H-TP10N-5	H-TP10N-5 9	2250	18/05/2023	Clayey SAND	1b	4.45	3.31	1.4	1	1	CRS Suite
11	H-TP10N-10	H-TP10N-10 3	750	18/05/2023	CLAY	2	5.4	3.91	1.8	1	1	CRS Suite
12	H-TP10N-10	H-TP10N-10 5	1250	18/05/2023	CLAY	2	5.2	3.4	1.6	1	1	CRS Suite
13	H-TP10N-10	H-TP10N-10 5_Duplicated	1250	18/05/2023	CLAY	2	4.9	3.3	1.6	1	1	CRS Suite
14	H-TP10N-12	H-TP10N-12 1	250	16/05/2023	Clayey SAND	1b	5.9			2	1	CRS Suite
15	H-TP10N-12	H-TP10N-12 8	2000	16/05/2023	CLAY	2	6.9	7	-0.1	3	1	CRS Suite
16	H-TP10N-12	H-TP10N-12 11	2750	16/05/2023	CLAY	2	6.8	7.6	-0.8	3	1	CRS Suite
17	H-TP10N-14	H-TP10N-14 3	750	18/05/2023	CLAY	2	5.3		2.5	2	1	CRS Suite
18	H-TP10N-14	H-TP10N-14 5	1250	18/05/2023	CLAY	2	5.6	3.4	2.2	1	1	CRS Suite
19	H-TP10N-14	H-TP10N-14 7	1750	18/05/2023	CLAY	2	4.7	3.2	1.5	1	1	CRS Suite
20	H-TP10N-14	H-TP10N-14 9	2250	18/05/2023	CLAY	2	4.6	3.3	1.3	1	1	CRS Suite
21	H-TP10N-14	H-TP10N-14 11	2750	18/05/2023	CLAY	2	4.57	3.33	1.4	1	1	CRS Suite
22	H-TP10N-15	H-TP10N-15 3	750	19/05/2023	Sandy CLAY	2a	5.50	3.94	1.6	1	1	CRS Suite
23	H-TP10N-15	H-TP10N-15 5	1250	19/05/2023	Sandy CLAY	2a	5.0	3.4	1.6	1	1	CRS Suite
24	H-TP10N-15	H-TP10N-15 7	1750	19/05/2023	Sandy CLAY	2a	5.00		2.1	1	1	CRS Suite
25	H-TP10N-15	H-TP10N-15 9	2250	19/05/2023	Sandy CLAY	2a	4.8	3.3	1.5	1	1	CRS Suite
26	H-TP10N-15	H-TP10N-15 11	2750	19/05/2023	Sandy CLAY	2a	4.8	3.5	1.3	1	1	CRS Suite
27	H-TP10N-17	H-TP10N-17 2	500	16/05/2023	SAND	1	6.6	3.4		2	1	CRS Suite
28	H-TP10N-17	H-TP10N-17 9	2250	16/05/2023	CLAY	2	7	7.8	-0.8		1	CRS Suite
29	H-TP10N-18	H-TP10N-18 2	500	17/05/2023	CLAY	2	6.9	3.6		2	1	CRS Suite
30	H-TP10N-18	H-TP10N-18 9	2250	17/05/2023	CLAY	2	6.7	7.6	-0.9		1	CRS Suite
31	H-TP10N-19	H-TP10N-19 3	750	17/05/2023	CLAY	2	8.3	5.7	2.6	1	1	CRS Suite
32	H-TP10N-19	H-TP10N-19 6	1500	17/05/2023	CLAY	2	8.1	5.5	2.6	1	1	CRS Suite
33	H-TP10N-19	H-TP10N-19- Duplicated	2500	17/05/2023	CLAY	2	8.2	6.9	1.3		1	CRS Suite
34	H-TP10N-20	H-TP10N-20 2	500	16/05/2023	CLAY	2	6	3.2	2.8	1	1	CRS Suite
35	H-TP10N-21	H-TP10N-21 2	500	17/05/2023	Sandy CLAY	2a	6.1	3.9	2.8	2	1	CRS Suite
36	H-TP10N-22	H-TP10N-22 4	1000	18/05/2023	Sandy CLAY	2a	5.5	3.3	2.2	2	1	CRS Suite
37	H-TP10N-22	H-TP10N-22 6	1500	18/05/2023	CLAY	2	5	3.6	1.4	1	1	CRS Suite
38	H-TP10N-22	H-TP10N-22 8	2000	18/05/2023	CLAY	2	5.8		2.8	1	1	CRS Suite
39	H-TP10N-23	H-TP10N-23 4	1000	19/05/2023	Sandy CLAY	2a	5.1	3.4	1.6	1	1	CRS Suite
40	H-TP10N-23	H-TP10N-23 6	1500	19/05/2023	Sandy CLAY	2a	4.9	3.4	1.5	1	1	CRS Suite
41	H-TP10N-24	H-TP10N-24 4	1000	16/05/2023	CLAY	2	7.1	3.9		2	1	CRS Suite
42	H-TP10N-24	H-TP10N-24 9	2250	16/05/2023	CLAY	2	7	4		1	1	CRS Suite
43	H-TP10N-25	H-TP10N-25 2	500	16/05/2023	CLAY	2	5.8			2	1	CRS Suite
44	H-TP10N-27	H-TP10N-27 2	500	16/05/2023	Sandy CLAY	2a	6.2			2	1	CRS Suite
45	H-TP10N-27	H-TP10N-27 4	1000	16/05/2023	CLAY	2	5.6	3.9	2.9	2	1	CRS Suite
46	H-TP10N-27	H-TP10N-27 7	1750	16/05/2023	Sandy CLAY	2a	5	3.6	1.4	1	1	CRS Suite
47	H-TP10N-27	H-TP10N-27 9	2250	16/05/2023	Clayey SAND	1b	5.8		2.8	1	1	CRS Suite
48	H-TP10N-28	H-TP10N-28 3	750	18/05/2023	CLAY	2	5	3.2	1.8	1	1	CRS Suite
49	H-TP10N-28	H-TP10N-28 5	1250	18/05/2023	CLAY	2	4.9	3.3	1.6	1	1	CRS Suite
50	H-TP10N-28	H-TP10N-28 7	1750	18/05/2023	CLAY	2	5	3.3	1.7	1	1	CRS Suite
51	H-TP10N-28	H-TP10N-28 11	2750	18/05/2023	CLAY	2	7.1	3.9		2	1	CRS Suite
52	H-TP10N-29	H-TP10N-29 3	750	18/05/2023	CLAY	2	7	4		1	1	CRS Suite
53	H-TP10N-29	H-TP10N-29 8	2000	18/05/2023	CLAY	2	5.8			2	1	CRS Suite

	Soil Unit
SAND	1
Silty SAND	1a
Clayey SAND	1b
Sandy Clayey GRAVEL	1c
CLAY	2
Sandy Clay	2a
Sandy SILT	3

CHAIN OF CUSTODY

ALS Laboratory

CLIENT:	HATCH	RELINQUISHED BY: Jerry Zhang	RECEIVED BY: EG
PROJECT:	RSA 10N	DATE/TIME: 19/5/23 - 5pm	DATE/TIME: 22/05/23 15:56
SITE:	Wagerup	RELINQUISHED BY:	RECEIVED BY:
PURCHASE ORDER NO.:	368360-1	DATE/TIME:	DATE/TIME:
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917870	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
- ☐ Standard TAT (List due date):
- ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO: EP/SS/22

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

Environmental Division Perth
Work Order Reference
EP2306747

ALS USE ONLY	SAMPLE DETAILS (Water(W) MATRIX: Solid(S))			CONTAINER INFORMATION		ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHFOX	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHFOX + Note Acidified Option	CRS Only		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1 - 12	H-TP10N-1: 1 to 12			S							12			
13 - 25	H-TP10N-2: 1 to 12			S							12			
26 - 38	H-TP10N-3: 1 to 12			S							12			
39 - 50	H-TP10N-4: 1 to 8			S							8			
51 - 61	H-TP10N-5: 1 to 11			S							11			
	H-TP10N-6: 1 to 13			S							13			
	H-TP10N-7: 1 to 13			S							13			
	H-TP10N-8: 1 to 12			S							12			
	H-TP10N-9: 1 to 12			S							12			
	H-TP10N-10: 1 to 6			S							6			
	H-TP10N-11: 1 to 12			S							12			
	H-TP10N-12: 1 to 13			S							13			
	H-TP10N-13: 1 to 13			S							13			
	H-TP10N-14: 1 to 12			S							12			
	H-TP10N-15: 1 to 13			S							13			
	H-TP10N-16: 1 to 13			S							13			
	H-TP10N-17: 1 to 12			S							12			
	H-TP10N-18: 1 to 12			S							12			
	H-TP10N-19: 1 to 12			S							12			
	H-TP10N-20: 1 to 13			S							13			
	H-TP10N-21: 1 to 13			S							13			
	H-TP10N-22: 1 to 10			S							10			
	H-TP10N-23: 1 to 7			S							7			
	H-TP10N-24: 1 to 12			S							12			
	H-TP10N-25: 1 to 12			S							12			
	H-TP10N-26: 1 to 12			S							12			
	H-TP10N-27: 1 to 13			S							13			
	H-TP10N-28: 1 to 12			S							12			
	H-TP10N-29: 1 to 12			S							12			
	H-TP10N-30: 1 to 6			S							6			
	Borrow-1			W										Discard
	Borrow-2			W										Discard
	Borrow-3			W										Discard
	Borrow-4			W										Discard
				TOTAL							345			

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY: Jerry Zhang	DATE/TIME: 18/5/23 - 3pm	RECEIVED BY: EG	DATE/TIME: 22/05/23 @ 1536
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:

CLIENT:	HATCH
PROJECT:	RSA 10N
SITE:	Wagerup
PURCHASE ORDER NO.:	368360-1
PROJECT MANAGER:	Simon Hope — CONTACT PH: 0438817970
SAMPLER:	Jerry Zhang — SAMPLER MOBILE: 435228753
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com
SPECIAL HANDLING/STORAGE OR DISPOSAL:	ASS Samples were frozen on site.

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
- ☐ Standard TAT (List due date):
- ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO: EP/363/22

EMAIL INVOICE TO:

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

Environmental Division
Perth
Work Order Reference
EP2306752

ALS USE ONLY	SAMPLE DETAILS (Water[W], MATRIX: Soil[S])			CONTAINER INFORMATION		ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	nMS/Fox	ASSCW-1 Short Suite	ASSCW-2 Extended Suite	pH/FOX - Note Accredited Option	CRS Only		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10N-1: 1 to 12			S							12			
	H-TP10N-2: 1 to 12			S							12			
	H-TP10N-3: 1 to 12			S							12			
	H-TP10N-4: 1 to 8			S							8			
	H-TP10N-5: 1 to 11			S							11			
1-13	H-TP10N-6: 1 to 13			S							13			
14-24	H-TP10N-7: 1 to 13			S							13			
25-37	H-TP10N-8: 1 to 12			S							12			
38-49	H-TP10N-9: 1 to 12			S							12			
50-56	H-TP10N-10: 1 to 6			S							6			
	H-TP10N-11: 1 to 12			S							12			
	H-TP10N-12: 1 to 13			S							13			
	H-TP10N-13: 1 to 13			S							13			
	H-TP10N-14: 1 to 12			S							12			
	H-TP10N-15: 1 to 13			S							13			
	H-TP10N-16: 1 to 13			S							13			
	H-TP10N-17: 1 to 12			S							12			
	H-TP10N-18: 1 to 12			S							12			
	H-TP10N-19: 1 to 12			S							12			
	H-TP10N-20: 1 to 13			S							13			
	H-TP10N-21: 1 to 13			S							13			
	H-TP10N-22: 1 to 10			S							10			
	H-TP10N-23: 1 to 7			S							7			
	H-TP10N-24: 1 to 12			S							12			
	H-TP10N-25: 1 to 12			S							12			
	H-TP10N-26: 1 to 12			S							12			
	H-TP10N-27: 1 to 13			S							13			
	H-TP10N-28: 1 to 12			S							12			
	H-TP10N-29: 1 to 12			S							12			
	H-TP10N-30: 1 to 6			S							6			
	Borrow-1			W										Discard
	Borrow-2			W										Discard
	Borrow-3			W										Discard
	Borrow-4			W										Discard
					TOTAL						345			

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY: Jerry Zhang	DATE/TIME: 19/5/23 - 3pm	RECEIVED BY: EG	DATE/TIME: 22/05/23 @ 1556
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:

CLIENT:	HATCH
PROJECT:	RSA 10N
SITE:	Wagerup
PURCHASE ORDER NO.:	388380-1
PROJECT MANAGER:	Simon Hope
CONTACT PH:	0438917970
SAMPLER:	Jerry Zhang
SAMPLER MOBILE:	435228758
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com
EMAIL INVOICE TO:	

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
- ☐ Standard TAT (List due date):
- ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO EP/968/22

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free Ice / Frozen Ice blocks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

Environmental Division Perth
Work Order Reference
EP2306761

ALS USE ONLY: SAMPLE	SAMPLE DETAILS: NAME	DESCRIPTION	DATE / TIME	MATRIX: Water(W) Soil(S) — MATRIX	CONTAINER INFORMATION: TOTAL BOTTLES	ANALYSIS REQUIRED: SPOCAS	Cr-S Suite	pHFOx	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHFOx + Note Acidified option	CRS Only	Additional Information
	H-TP10N-1: 1 to 12			S							12		
	H-TP10N-2: 1 to 12			S							12		
	H-TP10N-3: 1 to 12			S							12		
	H-TP10N-4: 1 to 8			S							8		
	H-TP10N-5: 1 to 11			S							11		
	H-TP10N-6: 1 to 13			S							13		
	H-TP10N-7: 1 to 13			S							13		
	H-TP10N-8: 1 to 12			S							12		
	H-TP10N-9: 1 to 12			S							12		
	H-TP10N-10: 1 to 8			S							8		
	H-TP10N-11: 1 to 12			S							12		
	H-TP10N-12: 1 to 13			S							13		
	H-TP10N-13: 1 to 13			S							13		
	H-TP10N-14: 1 to 12			S							12		
	H-TP10N-15: 1 to 13			S							13		
1-13	H-TP10N-16: 1 to 13			S							13		
14-25	H-TP10N-17: 1 to 12			S							12		
26-37	H-TP10N-18: 1 to 12			S							12		
38-50	H-TP10N-19: 1 to 12			S							12		
51-64	H-TP10N-20: 1 to 13			S							13		
	H-TP10N-21: 1 to 13			S							13		
	H-TP10N-22: 1 to 10			S							10		
	H-TP10N-23: 1 to 7			S							7		
	H-TP10N-24: 1 to 12			S							12		
	H-TP10N-25: 1 to 12			S							12		
	H-TP10N-26: 1 to 12			S							12		
	H-TP10N-27: 1 to 13			S							13		
	H-TP10N-28: 1 to 12			S							12		
	H-TP10N-29: 1 to 12			S							12		
	H-TP10N-30: 1 to 6			S							6		
	Borrow-1			W									Discard
	Borrow-2			W									Discard
	Borrow-3			W									Discard
	Borrow-4			W									Discard
				TOTAL							345		

Please retain samples.

SPOCAS and CRS to be assigned following fieldFox results

CHAIN OF CUSTODY

ALS Laboratory

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1		
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917979	ALS QUOTE NO: EP/968/22
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com		EMAIL INVOICE TO:

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	EG		
DATE/TIME: 19/5/23 - 3pm	DATE/TIME: 22/05/23 @ 1536	DATE/TIME:	DATE/TIME:

FOR LABORATORY USE ONLY (Circle)

Custody seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comments:			

Environmental Division Perth

Work Order Reference

EP2306773

ALS USE ONLY	SAMPLE DETAILS (Water(W) / MATRIX: Solid(S))			CONTAINER INFORMATION		ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pH/Fox	ABSCM-1 Short Suite	ABSCM-2 Extended Suite	pH/Fox - Note Accredited Option	CRS Only		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10N-1: 1 to 12			S							12			
	H-TP10N-2: 1 to 12			S							12			
	H-TP10N-3: 1 to 12			S							12			
	H-TP10N-4: 1 to 8			S							8			
	H-TP10N-5: 1 to 11			S							11			
	H-TP10N-6: 1 to 13			S							13			
	H-TP10N-7: 1 to 13			S							13			
	H-TP10N-8: 1 to 12			S							12			
	H-TP10N-9: 1 to 12			S							12			
	H-TP10N-10: 1 to 6			S							6			
	H-TP10N-11: 1 to 12			S							12			
	H-TP10N-12: 1 to 13			S							13			
	H-TP10N-13: 1 to 13			S							13			
	H-TP10N-14: 1 to 12			S							12			
	H-TP10N-15: 1 to 13			S							13			
	H-TP10N-17: 1 to 12			S							12			
	H-TP10N-18: 1 to 12			S							12			
	H-TP10N-19: 1 to 12			S							12			
	H-TP10N-20: 1 to 13			S							13			
1-13	H-TP10N-21: 1 to 13			S							13			
14-24	H-TP10N-22: 1 to 10			S							10			
25-31	H-TP10N-23: 1 to 7			S							7			
32-43	H-TP10N-24: 1 to 12			S							12			
44-55	H-TP10N-25: 1 to 12			S							12			
	H-TP10N-26: 1 to 12			S							12			
	H-TP10N-27: 1 to 13			S							13			
	H-TP10N-28: 1 to 12			S							12			
	H-TP10N-29: 1 to 12			S							12			
	H-TP10N-30: 1 to 8			S							8			
	Borrow-1			W										Discard
	Borrow-2			W										Discard
	Borrow-3			W										Discard
	Borrow-4			W										Discard
			TOTAL								345			

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	EG		
DATE/TIME: 16/5/23 - 2pm	DATE/TIME: 22/05/23 @ 1556	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO: EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0408917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

Environmental Division Perth
Work Order Reference
EP2306774

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED								Additional Information
		Water(W)		MATRIX: Soil(S)										Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHFOX	ASSCW-1 Short Suite	ASSCW-2 Extended Suite	pHFOX - Note Acronym for Option	CRS Only		
	H-TP10N-1: 1 to 12			S							12			
	H-TP10N-2: 1 to 12			S							12			
	H-TP10N-3: 1 to 12			S							12			
	H-TP10N-4: 1 to 8			S							8			
	H-TP10N-5: 1 to 11			S							11			
	H-TP10N-6: 1 to 13			S							13			
	H-TP10N-7: 1 to 13			S							13			
	H-TP10N-8: 1 to 12			S							12			
	H-TP10N-9: 1 to 12			S							12			
	H-TP10N-10: 1 to 8			S							8			
	H-TP10N-11: 1 to 12			S							12			
	H-TP10N-12: 1 to 13			S							13			
	H-TP10N-13: 1 to 13			S							13			
	H-TP10N-14: 1 to 12			S							12			
	H-TP10N-15: 1 to 13			S							13			
	H-TP10N-16: 1 to 13			S							13			
	H-TP10N-17: 1 to 12			S							12			
	H-TP10N-18: 1 to 12			S							12			
	H-TP10N-19: 1 to 12			S							12			
	H-TP10N-20: 1 to 13			S							13			
	H-TP10N-21: 1 to 13			S							13			
	H-TP10N-22: 1 to 10			S							10			
	H-TP10N-23: 1 to 7			S							7			
	H-TP10N-24: 1 to 12			S							12			
	H-TP10N-25: 1 to 12			S							12			
1-M	H-TP10N-26: 1 to 12			S							12			
13-24	H-TP10N-27: 1 to 13			S							13			
25-~~36~~37	H-TP10N-28: 1 to 12			S							12			
38-49	H-TP10N-29: 1 to 12			S							12			
50-57	H-TP10N-30: 1 to 8			S							8			
	Borrow-1			W										Discard
	Borrow-2			W										Discard
	Borrow-3			W										Discard
	Borrow-4			W										Discard
				TOTAL							345			

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

Elea Gauliris

From: Zhang, Jerry <jerry.zhang@hatch.com>
Sent: Tuesday, 25 July 2023 11:48 AM
To: Samples Perth
Cc: Hope, Simon; Bodley, Andrew; Niven, Monica; David Brennan
Subject: [EXTERNAL] - Further ASS Test for selected Samples- Borrow Pit Area
Attachments: Further ASS Tests_RSA10N_BP.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Elea

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

Hi,
Good morning. Please refer to the attached for the 2nd batch laboratory testing samples. The test type is the same as before – CRS Suite.
Can you please provide an update about the testing progress for the previous batch? Thanks.

Jerry Zhang
Graduate Geotechnical Engineer

Email: jerry.zhang@hatch.com
Level 7, 10 Telethon Ave
Perth WA 6000
HATCH

Environmental Division
Perth
Work Order Reference
EP2310022

Telephone : +61-8-9406 1301

From: Zhang, Jerry
Sent: Thursday, June 15, 2023 11:19 AM
To: David Brennan <david.brennan@ALSGlobal.com>; Samples Perth <Samples.Perth@ALSGlobal.com>
Cc: Hope, Simon <simon.hope@hatch.com>; Bodley, Andrew <andrew.bodley@hatch.com>
Subject: Further ASS Test for selected Samples

Hi David,
Good morning. By now we have received the screening results for the first batch samples, thanks for that.
Based on the criteria form the DER 2015a and the latest national Acid Sulfate Soil Guidance, the total No. of 53 samples (refer to the attached) have been selected for further laboratory test – **CRS Suite (ALS Code: EA033-WA)**.
Please take note that the laboratory test method is **CRS Suite** only for all samples. If any query, please feel free to contact Simon or myself. Cheers.

Jerry Zhang
Graduate Geotechnical Engineer

Email: jerry.zhang@hatch.com
Level 7, 10 Telethon Ave
Perth WA 6000
HATCH

Table 1: ASS Field Analysis Results

Test Pit ID	Sample ID	Depth (mm)	Date	Soil Type	Soil Unit	pH (Field)	pH (Fox)	Delta pH (Field-Fox)	Reaction Rate	Total	Test Type
Units						pH units	pH units	pH units		53	
H-TP10B-01	H-TP10B-01 1	250	25/05/2023	Silty SAND	1a	5.2			2	1	CRS Suite
H-TP10B-01	H-TP10B-01 2	500	25/05/2023	CLAY	2	5.8	3.8	2	2	1	CRS Suite
H-TP10B-01	H-TP10B-01 11	2750	25/05/2023	Sandy CLAY	2a	6.6	4.6	2	1	1	CRS Suite
H-TP10B-03	H-TP10B-03 8	2000	24/05/2023	Sandy Gravelly CLAY	2b	6.2	4.2	2	1	1	CRS Suite
H-TP10B-04	H-TP10B-04 2	500	25/05/2023	SAND	1	6.1	3.6	2.5	1	1	CRS Suite
H-TP10B-04	H-TP10B-04 9	2250	25/05/2023	CLAY	2	6.4	6.6	-0.2		1	CRS Suite
H-TP10B-04	H-TP10B-04 12	3000	25/05/2023	CLAY	2	6.4	5.1	1.3		1	CRS Suite
H-TP10B-05	H-TP10B-05 6	1500	25/05/2023	CLAY	2	6.3	4.3	2	1	1	CRS Suite
H-TP10B-06	H-TP10B-06 1	250	25/05/2023	Silty SAND	1a	6.5			2	1	CRS Suite
H-TP10B-06	H-TP10B-06 8	2000	25/05/2023	CLAY	2	6.6	4.5	2.1	2	1	CRS Suite
H-TP10B-06	H-TP10B-06 11	2750	25/05/2023	CLAY	2	6.4	4.3	2.1	2	1	CRS Suite
H-TP10B-08	H-TP10B-08 1	250	25/05/2023	Silty SAND	1a	6.9	3.3		2	1	CRS Suite
H-TP10B-08	H-TP10B-08 2	500	25/05/2023	SAND	1	4.8	3.4	1.4	2	1	CRS Suite
H-TP10B-08	H-TP10B-08 12	3000	25/05/2023	Sandy Gravelly CLAY	2b	6.7	4.8	1.9	2	1	CRS Suite
H-TP10B-09	H-TP10B-09 5	1250	25/05/2023	Sandy Gravelly CLAY	2b	6.6	4.7	1.9	1	1	CRS Suite
H-TP10B-09	H-TP10B-09 10	2500	25/05/2023	Sandy Gravelly CLAY	2b	8	5.4	2.6	1	1	CRS Suite
H-TP10B-09	H-TP10B-09 Duplicated	1250	25/05/2023	Sandy Gravelly CLAY	2b	7.4	5.1	2.3	1	1	CRS Suite
H-TP10B-10	H-TP10B-10 7	1750	25/05/2023	Sandy Gravelly CLAY	2b	6	3.9	2.1	1	1	CRS Suite
H-TP10B-11	H-TP10B-11 1	250	24/05/2023	Silty SAND	1a	5.2		2.5	1	1	CRS Suite
H-TP10B-11	H-TP10B-11 5	1250	24/05/2023	Sandy Gravelly CLAY	2b	6.1	4	2.1	1	1	CRS Suite
H-TP10B-12	H-TP10B-12 5	1250	22/05/2023	CLAY	2	7.2	5.1	2.1	1	1	CRS Suite
H-TP10B-12	H-TP10B-12 11	2750	22/05/2023	Sandy Gravelly CLAY	2b	7.8	5.4	2.4	1	1	CRS Suite
H-TP10B-13	H-TP10B-13 5	1250	22/05/2023	CLAY	2	7.1	5	2.1	1	1	CRS Suite
H-TP10B-14	H-TP10B-14 2	500	23/05/2023	SAND	1	1.9	3.1	1.8	1	1	CRS Suite
H-TP10B-14	H-TP10B-14 9	2250	23/05/2023	Silty CLAY	2c	6.5	4.4	2.1	1	1	CRS Suite
H-TP10B-15	H-TP10B-15 2	500	23/05/2023	CLAY	2	6.7	4.6	2.1	1	1	CRS Suite
H-TP10B-15	H-TP10B-15 10	2500	23/05/2023	Silty CLAY	2c	7.8	5.3	2.5	1	1	CRS Suite
H-TP10B-16	H-TP10B-16 5	1250	22/05/2023	CLAY	2	7.6	5	2.6	1	1	CRS Suite
H-TP10B-17	H-TP10B-17 4	1000	23/05/2023	CLAY	2	7.3	4.9	2.4	1	1	CRS Suite
H-TP10B-17	H-TP10B-17 10	2500	23/05/2023	Sandy Gravelly CLAY	2b	7.6	5.1	2.5	2	1	CRS Suite
H-TP10B-18	H-TP10B-18 3	750	22/05/2023	CLAY	2	6.7	4.7	2	1	1	CRS Suite
H-TP10B-18	H-TP10B-18 8	2000	22/05/2023	Sandy Gravelly CLAY	2b	7.2				1	CRS Suite
H-TP10B-18	H-TP10B-18 12	3000	22/05/2023	Sandy Gravelly CLAY	2b	7.1	4.8	2.3	1	1	CRS Suite
H-TP10B-19	H-TP10B-19 2	500	22/05/2023	CLAY	2	7.4	4.9	2.5	1	1	CRS Suite
H-TP10B-19	H-TP10B-19 11	2750	22/05/2023	Sandy Gravelly CLAY	2b	7.9	5.2	2.7	1	1	CRS Suite
H-TP10B-19	H-TP10B-19 Duplicated	500	22/05/2023	CLAY	2	7.4	5	2.4	1	1	CRS Suite
H-TP10B-20	H-TP10B-20 5	1250	22/05/2023	Silty CLAY	2c	8	2.9		2	1	CRS Suite
H-TP10B-20	H-TP10B-20 6	1500	22/05/2023	Silty CLAY	2c	8.1	2.8		3	1	CRS Suite
H-TP10B-20	H-TP10B-20 11	2750	22/05/2023	Silty CLAY	2c	7.5	4.9	2.6	1	1	CRS Suite
H-TP10B-21	H-TP10B-21 2	500	23/05/2023	SAND	1	6.7	4.3	2.4	1	1	CRS Suite
H-TP10B-21	H-TP10B-21 Duplicated	1000	23/05/2023	Silty CLAY	2c	6.9	4.4	2.5	1	1	CRS Suite
H-TP10B-22	H-TP10B-22 2	500	22/05/2023	Sandy CLAY	2a	7.4	5.1	2.3	1	1	CRS Suite
H-TP10B-23	H-TP10B-23 1	250	23/05/2023	Clayey SAND	1b	7.3	5	2.3	1	1	CRS Suite
H-TP10B-23	H-TP10B-23 9	2250	23/05/2023	Sandy Gravelly CLAY	2b	7.6	5.1	2.5	1	1	CRS Suite
H-TP10B-23	H-TP10B-23 Duplicated	2250	23/05/2023	Sandy Gravelly CLAY	2b	7	4.9	2.1	1	1	CRS Suite
H-TP10B-24	H-TP10B-24 4	1000	23/05/2023	Sandy CLAY	2a	7.4	5.1	2.3	1	1	CRS Suite
H-TP10B-25	H-TP10B-25 6	1500	22/05/2023	Sandy CLAY	2a	7.2	5.1	2.1	1	1	CRS Suite
H-TP10B-25	H-TP10B-25 11	2750	22/05/2023	Sandy CLAY	2a	7.2	5	2.2	1	1	CRS Suite
H-TP10B-26	H-TP10B-26 12	3000	24/05/2023	Sandy Silty CLAY	2e	7.4	5.3	2.1	1	1	CRS Suite
H-TP10B-27	H-TP10B-27 5	1250	23/05/2023	CLAY	2	6.7	4.7	2	1	1	CRS Suite
H-TP10B-27	H-TP10B-27 9	2250	23/05/2023	Sandy Silty CLAY	2e	8.2	6.2	2	2	1	CRS Suite
H-TP10B-28	H-TP10B-28 1	250	24/05/2023	Silty Clay	2c	6.4			2	1	CRS Suite
H-TP10B-28	H-TP10B-28 2	500	24/05/2023	Gravelly Silty CLAY	2d	5.6	3	2.6	2	1	CRS Suite

	Soil Unit
SAND	1
Silty SAND	1a
Clayey SAND	1b
CLAY	2
Sandy Clay	2a
Sandy Gravelly CLAY	2b
Silty CLAY	2c
Gravelly Silty CLAY	2d
Sandy Silty CLAY	2e

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY: Jerry Zhang	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 29/5 1045	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH
PROJECT:	RSA 10N
SITE:	Wagerup
PURCHASE ORDER NO.:	368360-1
PROJECT MANAGER:	Simon Hope
CONTACT PH:	0438917870
SAMPLER:	Jerry Zhang
SAMPLER MOBILE:	435228768
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com
EMAIL INVOICE TO:	

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
- ☐ Standard TAT (List due date):
- ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO: EP1308722

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Freezer / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

Environmental Division Perth

Work Order Reference

EP2307162

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))			CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - NATA Accredited Option	CRS Only			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1-12	H-TP10B-01: 1 to 12			S							12				
13	H-TP10B-01 - Duplicated			S							1				
14-25	H-TP10B-02: 1 to 12			S							12				
26-37	H-TP10B-03: 1 to 12			S							12				
38	H-TP10B-03 - Duplicated			S							1				
39-50	H-TP10B-04: 1 to 12			S							12				
51	H-TP10B-04 - Duplicated			S							1				
52-65	H-TP10B-05: 1 to 12			S							12				
	H-TP10B-06: 1 to 12			S							12				
	H-TP10B-06 - Duplicated			S							1				
	H-TP10B-07: 1 to 12			S							12				
	H-TP10B-08: 1 to 12			S							12				
	H-TP10B-09: 1 to 12			S							12				
	H-TP10B-10: 1 to 12			S							12				
	H-TP10B-11: 1 to 12			S							12				
	H-TP10B-11 - Duplicated			S							1				
	H-TP10B-12: 1 to 12			S							12				
	H-TP10B-12 - Duplicated			S							1				
	H-TP10B-13: 1 to 12			S							12				
	H-TP10B-14: 1 to 12			S							12				
	H-TP10B-15: 1 to 12			S							12				
	H-TP10B-16: 1 to 12			S							13				
	H-TP10B-17: 1 to 12			S							12				
	H-TP10B-17 - Duplicated			S							1				
	H-TP10B-18: 1 to 12			S							12				
	H-TP10B-19: 1 to 12			S							12				
	H-TP10B-19 - Duplicated			S							1				
	H-TP10B-20: 1 to 12			S							12				
	H-TP10B-21: 1 to 12			S							12				
	H-TP10B-21 - Duplicated			S							1				
	H-TP10B-22: 1 to 12			S							12				
	H-TP10B-23: 1 to 12			S							12				
	H-TP10B-24: 1 to 12			S							12				
	H-TP10B-25: 1 to 12			S							12				
	H-TP10B-25 - Duplicated			S							1				
	H-TP10B-26: 1 to 12			S							12				
	H-TP10B-26 - Duplicated			S							1				
	H-TP10B-27: 1 to 12			S							12				
	H-TP10B-27 - Duplicated			S							1				
	H-TP10B-28: 1 to 12			S							12				
				TOTAL							348				

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	29/5		
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 1044	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
PROJECT:	RSA 10N		
SITE:	Wagerup		
PURCHASE ORDER NO.: 388360-4			
PROJECT MANAGER:	Simon Hope	CONTACT PH:	0438917976
SAMPLER:	Jerry Zhang	SAMPLER MOBILE:	438228758
EMAIL REPORTS TO:	simon.hope@hatch.com; jerryzhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	[redacted]

ALS QUOTE NO: EP/968/22

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))		MATRIX:	CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS $-/fe	pHFOX	ASSCW-1 Short Suite	ASSCW-2 Extended Suite	pHFOX - NATA Accredited Option	CRS Only			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10B-01: 1 to 12			S							12				
	H-TP10B-01 - Duplicated			S							1				
	H-TP10B-02: 1 to 12			S							12				
	H-TP10B-03: 1 to 12			S							12				
	H-TP10B-03 - Duplicated			S							1				
	H-TP10B-04: 1 to 12			S							12				
	H-TP10B-04 - Duplicated			S							1				
	H-TP10B-05: 1 to 12			S							12				
	H-TP10B-06: 1 to 12			S							12				
	H-TP10B-06 - Duplicated			S							1				
	H-TP10B-07: 1 to 12			S							12				
	H-TP10B-08: 1 to 12			S							12				
	H-TP10B-09: 1 to 12			S							12				
	H-TP10B-10: 1 to 12			S							12				
1 - 12	H-TP10B-11: 1 to 12			S							12				
13	H-TP10B-11 - Duplicated			S							1				
14 - 25	H-TP10B-12: 1 to 12			S							12				
26	H-TP10B-12 - Duplicated			S							1				
27 - 39	H-TP10B-13: 1 to 12			S							12				
40 - 51	H-TP10B-14: 1 to 12			S							12				
52 - 63	H-TP10B-15: 1 to 12			S							12				
	H-TP10B-16: 1 to 12			S							12				
	H-TP10B-17: 1 to 12			S							12				
	H-TP10B-17 - Duplicated			S							1				
	H-TP10B-18: 1 to 12			S							12				
	H-TP10B-19: 1 to 12			S							12				
	H-TP10B-19 - Duplicated			S							1				
	H-TP10B-20: 1 to 12			S							12				
	H-TP10B-21: 1 to 12			S							12				
	H-TP10B-21 - Duplicated			S							1				
	H-TP10B-22: 1 to 12			S							12				
	H-TP10B-23: 1 to 12			S							12				
	H-TP10B-24: 1 to 12			S							12				
	H-TP10B-25: 1 to 12			S							12				
	H-TP10B-25 - Duplicated			S							1				
	H-TP10B-26: 1 to 12			S							12				
	H-TP10B-26 - Duplicated			S							1				
	H-TP10B-27: 1 to 12			S							12				
	H-TP10B-27 - Duplicated			S							1				
	H-TP10B-28: 1 to 12			S							12				
				TOTAL							348				

Environmental Division
Perth
Work Order Reference
EP2307170

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	29/5		
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 1045	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non-Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	388369-1		
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917870	ALS QUOTE NO: EP/968/22
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435226756	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice blicks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

Environmental Division Perth

Work Order Reference

EP2307165

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))			CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pH/Fox	ASSCMY-1 Short Suite	ASSCMY-2 Extended Suite	pH/Fox + Note Accredited Option	CRS Only			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10B-01: 1 to 12			S							12				
	H-TP10B-01 - Duplicated			S							1				
	H-TP10B-02: 1 to 12			S							12				
	H-TP10B-03: 1 to 12			S							12				
	H-TP10B-03 - Duplicated			S							1				
	H-TP10B-04: 1 to 12			S							12				
	H-TP10B-04 - Duplicated			S							1				
	H-TP10B-05: 1 to 12			S							12				
1-12	H-TP10B-06: 1 to 12			S							12				
13	H-TP10B-06 - Duplicated			S							1				
14-25	H-TP10B-07: 1 to 12			S							12				
26-38	H-TP10B-08: 1 to 12			S							12				
39-51	H-TP10B-09: 1 to 12			S							12				
52-63	H-TP10B-10: 1 to 12			S							12				
	H-TP10B-11: 1 to 12			S							12				
	H-TP10B-11 - Duplicated			S							1				
	H-TP10B-12: 1 to 12			S							12				
	H-TP10B-12 - Duplicated			S							1				
	H-TP10B-13: 1 to 12			S							12				
	H-TP10B-14: 1 to 12			S							12				
	H-TP10B-15: 1 to 12			S							12				
	H-TP10B-16: 1 to 12			S							12				
	H-TP10B-17: 1 to 12			S							12				
	H-TP10B-17 - Duplicated			S							1				
	H-TP10B-18: 1 to 12			S							12				
	H-TP10B-19: 1 to 12			S							12				
	H-TP10B-19 - Duplicated			S							1				
	H-TP10B-20: 1 to 12			S							12				
	H-TP10B-21: 1 to 12			S							12				
	H-TP10B-21 - Duplicated			S							1				
	H-TP10B-22: 1 to 12			S							12				
	H-TP10B-23: 1 to 12			S							12				
	H-TP10B-24: 1 to 12			S							12				
	H-TP10B-25: 1 to 12			S							12				
	H-TP10B-25 - Duplicated			S							1				
	H-TP10B-26: 1 to 12			S							12				
	H-TP10B-26 - Duplicated			S							1				
	H-TP10B-27: 1 to 12			S							12				
	H-TP10B-27 - Duplicated			S							1				
	H-TP10B-28: 1 to 12			S							12				
				TOTAL							348				

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	29/5		
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 1045	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
PROJECT:	RSA 10N		
SITE:	Wagerup		
PURCHASE ORDER NO.:	388380-1	ALS QUOTE NO: EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438617970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice /frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))			MATRIX:	CONTAINER INFORMATION	ANALYSIS REQUIRED									Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHFOX	ASSDW-1 Short Suite	ASSDW-2 Extended Suite	pHSPOX + Nata Accredited Option	CRS Only			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10B-01: 1 to 12			S							12				
	H-TP10B-01 - Duplicated			S							1				
	H-TP10B-02: 1 to 12			S							12				
	H-TP10B-03: 1 to 12			S							12				
	H-TP10B-03 - Duplicated			S							1				
	H-TP10B-04: 1 to 12			S							12				
	H-TP10B-04 - Duplicated			S							1				
	H-TP10B-05: 1 to 12			S							12				
	H-TP10B-06: 1 to 12			S							12				
	H-TP10B-06 - Duplicated			S							1				
	H-TP10B-07: 1 to 12			S							12				
	H-TP10B-08: 1 to 12			S							12				
	H-TP10B-09: 1 to 12			S							12				
	H-TP10B-10: 1 to 12			S							12				
	H-TP10B-11: 1 to 12			S							12				
	H-TP10B-11 - Duplicated			S							1				
	H-TP10B-12: 1 to 12			S							12				
	H-TP10B-12 - Duplicated			S							1				
	H-TP10B-13: 1 to 12			S							12				
	H-TP10B-14: 1 to 12			S							12				
	H-TP10B-15: 1 to 12			S							12				
1-12	H-TP10B-16: 1 to 12			S							12				
13-25 24	H-TP10B-17: 1 to 12			S							12				
25	H-TP10B-17 - Duplicated			S							1				
26-37	H-TP10B-18: 1 to 12			S							12				
38-50 49	H-TP10B-19: 1 to 12			S							12				
50	H-TP10B-19 - Duplicated			S							1				
51-62	H-TP10B-20: 1 to 12			S							12				
	H-TP10B-21: 1 to 12			S							12				
	H-TP10B-21 - Duplicated			S							1				
	H-TP10B-22: 1 to 12			S							12				
	H-TP10B-23: 1 to 12			S							12				
	H-TP10B-24: 1 to 12			S							12				
	H-TP10B-25: 1 to 12			S							12				
	H-TP10B-25 - Duplicated			S							1				
	H-TP10B-26: 1 to 12			S							12				
	H-TP10B-26 - Duplicated			S							1				
	H-TP10B-27: 1 to 12			S							12				
	H-TP10B-27 - Duplicated			S							1				
	H-TP10B-28: 1 to 12			S							12				
				TOTAL							348				

Environmental Division
Perth
Work Order Reference
EP2307178

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	29/5		
DATE/TIME: 29/5/23 - 10:00am	DATE/TIME: 1045	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH
PROJECT:	RSA 10N
SITE:	Wagerup
PURCHASE ORDER NO.:	398360-1
PROJECT MANAGER:	Simon Hope
CONTACT PH:	0438917870
SAMPLER:	Jerry Zhang
SAMPLER MOBILE:	435228758
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com
EMAIL INVOICE TO:	

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
- ☐ Standard TAT (List due date):
- ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO: EP/068/22

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))			MATRIX:	CONTAINER INFORMATION	ANALYSIS REQUIRED								Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHFOX	ASSCW-1 Short Suite	ASSCW-1 Extended Suite	pHFOx - Note Accredited Option	CRS Only		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-TP10B-01: 1 to 12			S							12			
	H-TP10B-01 - Duplicated			S							1			
	H-TP10B-02: 1 to 12			S							12			
	H-TP10B-03: 1 to 12			S							12			
	H-TP10B-03 - Duplicated			S							1			
	H-TP10B-04: 1 to 12			S							12			
	H-TP10B-04 - Duplicated			S							1			
	H-TP10B-05: 1 to 12			S							12			
	H-TP10B-06: 1 to 12			S							12			
	H-TP10B-06 - Duplicated			S							1			
	H-TP10B-07: 1 to 12			S							12			
	H-TP10B-08: 1 to 12			S							12			
	H-TP10B-09: 1 to 12			S							12			
	H-TP10B-10: 1 to 12			S							12			
	H-TP10B-11: 1 to 12			S							12			
	H-TP10B-11 - Duplicated			S							1			
	H-TP10B-12: 1 to 12			S							12			
	H-TP10B-12 - Duplicated			S							1			
	H-TP10B-13: 1 to 12			S							12			
	H-TP10B-14: 1 to 12			S							12			
	H-TP10B-15: 1 to 12			S							12			
	H-TP10B-16: 1 to 12			S							12			
	H-TP10B-17: 1 to 12			S							12			
	H-TP10B-17 - Duplicated			S							1			
	H-TP10B-18: 1 to 12			S							12			
	H-TP10B-19: 1 to 12			S							12			
	H-TP10B-19 - Duplicated			S							1			
	H-TP10B-20: 1 to 12			S							12			
1-12	H-TP10B-21: 1 to 12			S							12			
13	H-TP10B-21 - Duplicated			S							1			
14-25	H-TP10B-22: 1 to 12			S							12			
26-38	H-TP10B-23: 1 to 12			S							12			
39-50	H-TP10B-24: 1 to 12			S							12			
51-62	H-TP10B-25: 1 to 12			S							12			
63	H-TP10B-25 - Duplicated			S							1			
64-75	H-TP10B-26: 1 to 12			S							12			
76	H-TP10B-26 - Duplicated			S							1			
77-88	H-TP10B-27: 1 to 12			S							12			
89	H-TP10B-27 - Duplicated			S							1			
90-101	H-TP10B-28: 1 to 12			S							12			
				TOTAL							388			

Environmental Division
Perth
Work Order Reference
EP2307183

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY: Jerry Zhang	RECEIVED BY: 30/11	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 30/11/23 - 10:00am	DATE/TIME: 10am	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1		
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	ALS QUOTE NO: EP/968/22
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com		EMAIL INVOICE TO: andrew.bodley@hatch.com

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comments:			

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED										Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX: Solid(S) Water(W) MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - Note Accredited Option	CRS Only				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1-5	H-MW-01: 1 to 5	Depth from 250mm to 1250mm	28/11/2023 (15:15 -15:35)	S							5					
6-10	H-MW-02: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (15:15 -15:25)	S							5					
11-14	H-MW-03: 3 to 6	Depth from 750mm to 1500mm	29/11/2023 (15:35 -15:50)	S							4					
15-18+51	H-MW-04: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (16:15 -16:30)	S							5					
19-22	H-MW-05: 2 to 5	Depth from 500mm to 1250mm	29/11/2023 (14:20 -14:30)	S							4					
23-027	H-MW-06: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (14:00 -14:10)	S							5					
28-031	H-MW-07: 2 to 5	Depth from 500mm to 1250mm	29/11/2023 (12:45 -15:00)	S							4					
32-36	H-MW-08: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (12:00 -12:20)	S							5					
37-041	H-MW-09: 1 to 5	Depth from 250mm to 1250mm	28/11/2023 (13:15 -13:30)	S							5					
42-45	H-MW-10: 3 to 6	Depth from 750mm to 1500mm	28/11/2023 (15:45 -16:00)	S							4					
46-050	H-MW-11: 2 to 6	Depth from 500mm to 1500mm	28/11/2023 (16:00 -16:25)	S							5					
	H-MW-12: 2 to 6	Depth from 500mm to 1500mm	28/11/2023 (08:30 -09:00)	S							5					
	H-MW-13: 4 to 6	Depth from 1000mm to 1500mm	29/11/2023 (09:00 -09:25)	S							3					
	H-MW-14: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (10:40 -11:00)	S							5					
	H-MW-15: 3 to 6	Depth from 750mm to 1500mm	29/11/2023 (11:05 -11:25)	S							4					
	H-MW-16: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (11:30 -11:50)	S							5					
	H-MW-17: 1 to 10	Depth from 250mm to 2500mm	28/11/2023 (10:30 -11:00)	S							10					
	H-MW-18: 1 to 10	Depth from 250mm to 2500mm	28/11/2023 (14:00 -14:30)	S							10					
	H-MW-19: 2 to 10	Depth from 500mm to 2500mm	29/11/2023 (13:15 -13:55)	S							9					
	H-MW-20: 1 to 10	Depth from 250mm to 2500mm	29/11/2023 (09:20 -10:00)	S							10					
				TOTAL							112					

Environmental Division
Perth
Work Order Reference
EP2317249

Telephone : +61-8-9406 1301

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	30/11		
DATE/TIME: 30/11/23 - 10:00am	DATE/TIME: 10am	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT (List due date):
PROJECT:	RSA 10N		☐ Non Standard or urgent TAT (List due date):
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO: EP/968/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO: andrew.bodley@hatch.com	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
	Solid(S) Water(W)			MATRIX:											
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pHF/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHF/Fox - Nata Accredited Option	CRS Only			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-MW-01: 1 to 5	Depth from 250mm to 1250mm	28/11/2023 (15:15 -15:35)	S							5				
	H-MW-02: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (15:15 -15:25)	S							5				
	H-MW-03: 3 to 6	Depth from 750mm to 1500mm	29/11/2023 (15:35 -15:50)	S							4				
	H-MW-04: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (16:15 -16:30)	S							5				
	H-MW-05: 2 to 5	Depth from 500mm to 1250mm	29/11/2023 (14:20 -14:30)	S							4				
	H-MW-06: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (14:00 -14:10)	S							5				
	H-MW-07: 2 to 5	Depth from 500mm to 1250mm	29/11/2023 (12:45 -15:00)	S							4				
	H-MW-08: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (12:00 -12:20)	S							5				
	H-MW-09: 1 to 5	Depth from 250mm to 1250mm	28/11/2023 (13:15 -13:30)	S							5				
	H-MW-10: 3 to 6	Depth from 750mm to 1500mm	28/11/2023 (15:45 -16:00)	S							4				
	H-MW-11: 2 to 6	Depth from 500mm to 1500mm	28/11/2023 (16:00 -16:25)	S							5				
001 to 005	H-MW-12: 2 to 6	Depth from 500mm to 1500mm	28/11/2023 (08:30 -09:00)	S							5				
006 to 008	H-MW-13: 4 to 6	Depth from 1000mm to 1500mm	29/11/2023 (09:00 -09:25)	S							3				
009 to 013	H-MW-14: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (10:40 -11:00)	S							5				
014 to 17	H-MW-15: 3 to 6	Depth from 750mm to 1500mm	29/11/2023 (11:05 -11:25)	S							4				
019 to 023	H-MW-16: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (11:30 -11:50)	S							5				
028 to 037	H-MW-17: 1 to 10	Depth from 250mm to 2500mm	28/11/2023 (10:30 -11:00)	S							10				
038 to 047	H-MW-18: 1 to 10	Depth from 250mm to 2500mm	28/11/2023 (14:00 -14:30)	S							10				
048 to 056	H-MW-19: 2 to 10	Depth from 500mm to 2500mm	29/11/2023 (13:15 -13:55)	S							9				
057 to 066	H-MW-20: 1 to 10	Depth from 250mm to 2500mm	29/11/2023 (09:20 -10:00)	S							10				
				TOTAL							112				

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

Environmental Division
Perth
Work Order Reference
EP2317262

Telephone : +61-8-9406 1301

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	EG.		
DATE/TIME: 30/11/23 - 10:00am	DATE/TIME: 2/12@1540	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
PROJECT:	RSA 10N		
SITE:	Wagerup		
PURCHASE ORDER NO.:	368360-1	ALS QUOTE NO: EP/868/22	
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438917970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228758	
EMAIL REPORTS TO:	simon.hope@hatch.com; monica.niven@hatch.com; andrew.bodley@hatch.com	EMAIL INVOICE TO:	

FOR LABORATORY USE ONLY (Circle)

Custody seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))			MATRIX:	CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pH/Fox	ASSGW-1 Short Suite	ASSGW-2 Extended Suite	pHFFox + Nata Accredited Option	CRS Only				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	H-MW-01: 1	Depth: 250 mm	28/11/2023	S			1									
2	H-MW-01: 3	Depth: 750 mm	28/11/2023	S			1									
3	H-MW02: 4	Depth: 1000 mm	29/11/2023	S			1									
4	H-MW02: 6	Depth: 1500 mm	29/11/2023	S			1									
5	H-MW-03: 3	Depth: 750 mm	29/11/2023	S			1									
6	H-MW-03: 5	Depth: 1250 mm	29/11/2023	S			1									
7	H-MW-03: 6	Depth: 1500 mm	29/11/2023	S			1									
8	H-MW-04: 3	Depth: 750 mm	29/11/2023	S			1									
9	H-MW-04: 6	Depth: 1500 mm	29/11/2023	S			1									
10	H-MW-05: 2	Depth: 500 mm	29/11/2023	S			1									
11	H-MW-05: 3	Depth: 750 mm	29/11/2023	S			1									
12	H-MW-06: 3	Depth: 750 mm	29/11/2023	S			1									
13	H-MW-07: 2	Depth: 500 mm	29/11/2023	S			1									
14	H-MW-07: 4	Depth: 1000 mm	29/11/2023	S			1									
15	H-MW-08: 2	Depth: 500 mm	29/11/2023	S			1									
16	H-MW-08: 4	Depth: 1000 mm	29/11/2023	S			1									
17	H-MW-09: 3	Depth: 750 mm	28/11/2023	S			1									
18	H-MW-10: 4	Depth: 1000 mm	28/11/2023	S			1									
19	H-MW-13: 4	Depth: 1000 mm	29/11/2023	S			1									
20	H-MW-14: 4	Depth: 1000 mm	29/11/2023	S			1									
21	H-MW-15: 4	Depth: 1000 mm	29/11/2023	S			1									
22	H-MW-15: 5	Depth: 1250 mm	29/11/2023	S			1									
23	H-MW-16: 2	Depth: 500 mm	29/11/2023	S			1									
24	H-MW-16: 3	Depth: 750 mm	29/11/2023	S			1									
25	H-MW-17: 2	Depth: 500 mm	28/11/2023	S			1									
26	H-MW-17: 3	Depth: 750 mm	28/11/2023	S			1									
27	H-MW-18: 3	Depth: 750 mm	28/11/2023	S			1									
28	H-MW-18: 4	Depth: 1000 mm	28/11/2023	S			1									
29	H-MW-19: 2	Depth: 500 mm	29/11/2023	S			1									
30	H-MW-20: 5	Depth: 1250 mm	29/11/2023	S			1									
					TOTAL						0					

Environmental Division
Perth
Work Order Reference
EP2401600

Telephone : +61-8-9406 1301

Elea Gauliris

From: ALS Enviro Perth
Sent: Monday, 5 February 2024 3:42 PM
To: Samples Perth
Cc: ALS Enviro Perth
Subject: rebatch request HATCH FW: [EXTERNAL] - FW: EP/968/22
Attachments: EP-968-22 COC_HatchLTR05.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Rebatch

Hi SR Team

Please find attached rebatch request for CRS, thanks.

Regards

David Brennan

Client Services Manager, Environmental

Australia

O: (08) 9406 1301
M: 0409 355 212
David.Brennan@alsglobal.com
26 Rigali Way
Wangara WA 6065

alsglobal.com

From: Hope, Simon <simon.hope@hatch.com>
Sent: Friday, February 2, 2024 3:40 PM
To: ALS Enviro Perth <ALSEnviro.Perth@ALSGlobal.com>
Cc: Niven, Monica <monica.niven@hatch.com>
Subject: FW: [EXTERNAL] - FW: EP/968/22

Hi David,
Can you please perform CRS testing on selected samples as per the attached LTR. These have been previously tested for pH/pHox.

Can you also add Monica (CCed) to the email distribution and remove Jerry. I have captured this on the CoC.

Thanks,
Simon

From: Zhang, Jerry <jerry.zhang@hatch.com>
Sent: Thursday, November 30, 2023 3:03 PM
To: ALS Enviro Perth <ALSEnviro.Perth@ALSGlobal.com>
Cc: Bodley, Andrew <andrew.bodley@hatch.com>; Hope, Simon <simon.hope@hatch.com>
Subject: RE: [EXTERNAL] - FW: EP/968/22

Hi David,
Here is the CoC for today's delivered samples. If any discrepancies found, please let me know.
We will do **pHF/Fox test– Nata Accredited Option** for those samples first, then will inform you which samples will be undergone CRS suit test.

By the way, I assume these samples will be tested within two batches maximum. Please let us know if this is NOT the case. Thanks.

Jerry Zhang
Graduate Geotechnical Engineer

Email: jerry.zhang@hatch.com
Level 7, 10 Telethon Ave
Perth WA 6000
HATCH

From: ALS Enviro Perth <ALSEnviro.Perth@ALSGlobal.com>
Sent: Thursday, November 23, 2023 8:47 AM
To: Hope, Simon <simon.hope@hatch.com>; Bottles Perth <bottles.perth@alsglobal.com>
Cc: Zhang, Jerry <jerry.zhang@hatch.com>
Subject: RE: [EXTERNAL] - FW: EP/968/22

** CAUTION: This email originated outside Hatch. Do not click links or open attachments unless you can authenticate the sender and the content

Hi Simon

Thanks! Delivery by Monday will be fine, have a good day.

Regards

right solutions. right partner.

David Brennan

Client Services Manager, Environmental

Australia

O: (08) 9406 1301
M: 0409 355 212
David.Brennan@alsglobal.com
26 Rigali Way
Wangara WA 6065

alsglobal.com

CHAIN OF CUSTODY

ALS Laboratory

CLIENT:	HATCH	RELINQUISHED BY: Jerry Zhang	RECEIVED BY: 30/11
PROJECT:	RSA 18N	DATE/TIME: 30/11/23 - 10:00am	DATE/TIME: 10am
SITE:	Wagerup	RELINQUISHED BY:	RECEIVED BY:
PURCHASE ORDER NO.:	369360-1	DATE/TIME:	DATE/TIME:
PROJECT MANAGER:	Simon Hope	CONTACT PH: 0438317970	
SAMPLER:	Jerry Zhang	SAMPLER MOBILE: 435228735	
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.badley@hatch.com		
SPECIAL HANDLING/STORAGE OR DISPOSAL:	ASS Samples were frozen on site.	EMAIL INVOICE TO:	

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
- ☐ Standard TAT (List due date):
- ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO: EP/966/22

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comments:			

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED										Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX: Soil(S) Water(W) MATRIX	TOTAL BOTTLES	SPOCAS	CRS Suite	pH/Fizz	ASS4W-1 Short Suite	ASS4W-2 Extended Suite	pH/Fizz - Note Acetate/Acid Option	CRS Only				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1-5	H-MW-01: 1 to 5	Depth from 250mm to 1250mm	28/11/2023 (15:15 -15:35)	S							5					
6-10	H-MW-02: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (15:15 -15:25)	S							5					
11-14	H-MW-03: 3 to 6	Depth from 750mm to 1500mm	29/11/2023 (15:35 -15:50)	S							4					
15-18+51	H-MW-04: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (16:15 -16:30)	S							5					
19-22	H-MW-05: 2 to 5	Depth from 500mm to 1250mm	29/11/2023 (14:20 -14:30)	S							4					
23-026	H-MW-06: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (14:00 -14:10)	S							5					
27-031	H-MW-07: 2 to 5	Depth from 500mm to 1250mm	29/11/2023 (12:45 -15:00)	S							4					
32-36	H-MW-08: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (12:00 -12:20)	S							5					
37-041	H-MW-09: 1 to 5	Depth from 250mm to 1250mm	28/11/2023 (13:15 -13:30)	S							4					
42-45	H-MW-10: 3 to 6	Depth from 750mm to 1500mm	28/11/2023 (15:45 -16:00)	S							5					
46-050	H-MW-11: 2 to 6	Depth from 500mm to 1500mm	28/11/2023 (16:00 -16:25)	S							4					
	H-MW-12: 2 to 6	Depth from 500mm to 1500mm	28/11/2023 (08:30 -09:00)	S							5					
	H-MW-13: 4 to 6	Depth from 1000mm to 1500mm	29/11/2023 (09:00 -09:25)	S							5					
	H-MW-14: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (10:40 -11:00)	S							3					
	H-MW-15: 3 to 6	Depth from 750mm to 1500mm	29/11/2023 (11:05 -11:25)	S							5					
	H-MW-16: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (11:30 -11:50)	S							4					
	H-MW-17: 1 to 10	Depth from 250mm to 2500mm	28/11/2023 (10:30 -11:00)	S							5					
	H-MW-18: 1 to 10	Depth from 250mm to 2500mm	28/11/2023 (14:00 -14:30)	S							10					
	H-MW-19: 2 to 10	Depth from 500mm to 2500mm	29/11/2023 (13:15 -13:55)	S							10					
	H-MW-20: 1 to 10	Depth from 250mm to 2500mm	29/11/2023 (09:20 -10:00)	S							9					
											10					
				TOTAL							112					

Environmental Division
Perth
Work Order Reference
EP2317249

Please retain samples.

SPOCAS and CRS to be assigned following field/fizz results

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Jerry Zhang	30/11		
DATE/TIME: 30/11/23 - 10:00am	DATE/TIME: 10am	DATE/TIME:	DATE/TIME:

CLIENT:	HATCH
PROJECT:	RBA 10N
SITE:	Wagerup
PURCHASE ORDER NO.:	368360-1
PROJECT MANAGER:	Simon Hope
CONTACT PH:	0438917970
SAMPLER:	Jerry Zhang
SAMPLER MOBILE:	435228758
EMAIL REPORTS TO:	simon.hope@hatch.com; jerry.zhang@hatch.com; andrew.bodley@hatch.com
EMAIL INVOICE TO:	[redacted]

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
- ☐ Standard TAT (List due date):
- ☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO: EP/068/22

FOR LABORATORY USE ONLY (Circle)

Custody seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: ASS Samples were frozen on site.

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED										Additional Information
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX (Solid[S] Water[W])	TOTAL BOTTLES	SPOCAS	CRS Suite	pH/FFox	ASSQW-1 Short Suite	ASSQW-2 Extended Suite	pH/FFox + Kota Acetate/Bed Option	CRS Only				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-MW-01: 1 to 5	Depth from 250mm to 1250mm	29/11/2023 (15:15 -15:35)	S							5					
	H-MW-02: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (15:15 -15:25)	S							5					
	H-MW-03: 3 to 6	Depth from 750mm to 1500mm	29/11/2023 (15:35 -15:50)	S							4					
	H-MW-04: 2 to 5	Depth from 500mm to 1500mm	29/11/2023 (16:15 -16:33)	S							5					
	H-MW-05: 2 to 5	Depth from 500mm to 1250mm	29/11/2023 (14:20 -14:30)	S							4					
	H-MW-06: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (14:00 -14:10)	S							5					
	H-MW-07: 2 to 5	Depth from 500mm to 1250mm	29/11/2023 (12:45 -15:00)	S							4					
	H-MW-08: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (12:00 -12:20)	S							5					
	H-MW-09: 1 to 5	Depth from 250mm to 1250mm	28/11/2023 (13:15 -13:30)	S							5					
	H-MW-10: 3 to 6	Depth from 750mm to 1500mm	28/11/2023 (15:45 -16:00)	S							4					
	H-MW-11: 2 to 6	Depth from 500mm to 1500mm	28/11/2023 (16:00 -16:25)	S							5					
001 to 005	H-MW-12: 2 to 6	Depth from 500mm to 1500mm	28/11/2023 (09:30 -09:50)	S							5					
006 to 008	H-MW-13: 4 to 6	Depth from 1000mm to 1500mm	29/11/2023 (09:00 -09:25)	S							3					
009 to 013	H-MW-14: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (10:40 -11:00)	S							5					
014 to 018	H-MW-15: 3 to 6	Depth from 750mm to 1500mm	29/11/2023 (11:05 -11:25)	S							4					
019 to 023	H-MW-16: 2 to 6	Depth from 500mm to 1500mm	29/11/2023 (11:30 -11:50)	S							5					
028 to 037	H-MW-17: 1 to 10	Depth from 250mm to 2500mm	28/11/2023 (10:30 -11:00)	S							10					
038 to 047	H-MW-18: 1 to 10	Depth from 250mm to 2500mm	28/11/2023 (14:00 -14:30)	S							10					
048 to 056	H-MW-19: 2 to 10	Depth from 500mm to 2500mm	29/11/2023 (13:15 -13:55)	S							9					
057 to 066	H-MW-20: 1 to 10	Depth from 250mm to 2500mm	29/11/2023 (09:20 -10:00)	S							10					
				TOTAL							112					

Environmental Division
Perth
Work Order Reference
EP2317262

Please retain samples.

SPOCAS and CRS to be assigned following field/fox results

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
ALBURY 7/8 Hereford Road Albury NSW 2640 Ph: 02 4044 0177 E: albury@alsglobal.com
NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 0742 E: samples.newcastle@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
MELBOURNE 3-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5630 E: gladstone@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 0739 E: mudgee.mail@alsglobal.com
PERTH 36 Rigali Way Wangara WA 6065 Ph: 08 9406 1301 E: samples.perth@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Hatch	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: 10 Telethon Avenue, Perth		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes / No / N/A
PROJECT: Wagerup RSA10N	ALS QUOTE NO.: EP/968/22	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
PURCHASE ORDER NUMBER: 368360-1	COUNTRY ORIGIN: AUSTRALIA	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Simon Hope	CONTACT PH: 0438917970	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Monica Niven	SAMPLER MOBILE: 0439235802	RELINQUISHED BY:	RECEIVED BY:
COC Emailed to ALS? (YES / NO) YES	EDD FORMAT (or default):	*Ben Lucas/ Monica Niven*	
Email Reports to: monica.niven@hatch.com; simon.hope@hatch.com		DATE/TIME:13/3/24 5pm	DATE/TIME:
Email Invoice to: simon.hope@hatch.com;			

RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: **Samples collected on 11-12/3/24 were frozen on site. Retaing samples for potential CRS tests.**

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE	TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	pH/pHox	CRS SUITE							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	MW-28-1	11/03/2024	1200	S	ASS	1	1								
2	MW-28-2	11/03/2024	1200	S	ASS	1	1								
3	MW-28-3	11/03/2024	1200	S	ASS	1	1								
4	MW-31-1	11/03/2024	1200	S	ASS	1	1								
5	MW-31-2	11/03/2024	1200	S	ASS	1	1								
6	MW-31-3	11/03/2024	1200	S	ASS	1	1								
7	MW-25-1	11/03/2024	1200	S	ASS	1	1								
8	MW-25-2	11/03/2024	1200	S	ASS	1	1								
9	MW-25-3	11/03/2024	1200	S	ASS	1	1								
10	MW-24-1	11/03/2024	1200	S	ASS	1	1								
11	MW-24-2	11/03/2024	1200	S	ASS	1	1								
12	MW-24-3	11/03/2024	1200	S	ASS	1	1								
13	MW-23-1	12/03/2024	1200	S	ASS	1	1								
14	MW-23-2	12/03/2024	1200	S	ASS	1	1								
15	MW-23-3	12/03/2024	1200	S	ASS	1	1								
16	MW-22-1	12/03/2024	1200	S	ASS	1	1								
17	MW-22-2	12/03/2024	1200	S	ASS	1	1								
18	MW-22-3	12/03/2024	1200	S	ASS	1	1								
19	MW-21-1	12/03/2024	1200	S	ASS	1	1								
20	MW-21-2	12/03/2024	1200	S	ASS	1	1								
SMR 21	MW-21-3	12/03/2024	1200	S	ASS	1	1								
22	MW-27-1	12/03/2024	1200	S	ASS	1	1								

Environmental Division
Perth
Work Order Reference
EP2403511

Telephone - 61-8-9406 1301

23	MW-27-2	12/03/2024	1200	S	ASS	1	1												
24	MW-27-3	12/03/2024	1200	S	ASS	1	1												
Repeats	MW-31-1	12/03/2024	1200	S	ASS	1	1												
	MW-31-2	12/03/2024	1200	S	ASS	1	1												
	MW-31-3	12/03/2024	1200	S	ASS	1	1												
25	MW-34-1	12/03/2024	1200	S	ASS	1	1												
26	MW-34-2	12/03/2024	1200	S	ASS	1	1												
27	MW-34-3	12/03/2024	1200	S	ASS	1	1												
SNR	MW-30-1	12/03/2024	1200	S	ASS	1	1												
28	MW-30-2	12/03/2024	1200	S	ASS	1	1												
29	MW-33-1	12/03/2024	1200	S	ASS	1	1												
30	MW-33-2	12/03/2024	1200	S	ASS	1	1												
31	MW-33-3	12/03/2024	1200	S	ASS	1	1												
SNR	MW-29-1	12/03/2024	1200	S	ASS	1	1												
SNR	MW-29-2	12/03/2024	1200	S	ASS	1	1												
32	DS-1	12/03/2024	1200	S	ASS	1	1												
33	DS-2	13/03/2024	1200	S	ASS	1	1												
34	MW-32-1	13/03/2024	1200	S	ASS	1	1												
35	MW-32-2	13/03/2024	1200	S	ASS	1	1												
36	MW-32-3	13/03/2024	1200	S	ASS	1	1												
37	MW-35-1	13/03/2024	1200	S	ASS	1	1												
38	MW-35-2	13/03/2024	1200	S	ASS	1	1												
39	MW-35-3	13/03/2024	1200	S	ASS	1	1												
40	MW-37-1	13/03/2024	1200	S	ASS	1	1												
41	MW-37-2	13/03/2024	1200	S	ASS	1	1												
42	MW-37-3	13/03/2024	1200	S	ASS	1	1												
[illegible] 43	MW-36-1	13/03/2024	1200	S	ASS	1	1												
SNR [illegible]	MW-36-2	13/03/2024	1200	S	ASS	1	1												
SNR [illegible]	MW-36-3	13/03/2024	1200	S	ASS	1	1												
46	MW-39-1	13/03/2024	1200	S	ASS	1	1												
47	MW-39-2	13/03/2024	1200	S	ASS	1	1												
48	MW-39-3	13/03/2024	1200	S	ASS	1	1												
49	MW-38-1	13/03/2024	1200	S	ASS	1	1												
50	MW-38-2	13/03/2024	1200	S	ASS	1	1												
51	MW-38-3	13/03/2024	1200	S	ASS	1	1												
					TOTAL														

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

S2 MW-26-1

S3 MW-26-2

S4 MW-26-3

S5 MW-30-3

S6 MW-29-3

S7 Unlabelled

S8 MW-36-2-a

S9 MW-36-2-b

CHAIN OF CUSTODY

ALS Laboratory: please tick → [illegible] QLD 4068 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

[illegible] Maryborough QLD 4740 E: [illegible]@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5800 E: gladstone@awtslab.com

NUDGEE 27 Sydney Road Nudgee NSW 2650 Ph: 02 3272 6700 E: nudgee.mail@alsglobal.com

DUBBO/CASTLE 5 Rose Gum Road Wiradbrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com

DUBBOURNE 2-4 Weerell Road Stapylton QLD 4207 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

PERTH 26 Rigali Way, Wangara WA 6065 Ph: 08 9406 1301 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Hatch	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☒ Standard TAT (List due date):	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: 10 Telethon Avenue, Perth		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: Wagerup RSA10N	**ALS QUOTE NO.:** EP/968/22	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes No N/A
PURCHASE ORDER NUMBER: 368360-1	**COUNTRY OF ORIGIN:** AUSTRALIA	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Simon Hope	**CONTACT PH:** 0438917970	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Monica Niven	**SAMPLER MOBILE:** 0439235802	**RELINQUISHED BY:**	**RECEIVED BY:**
COC Emailed to ALS? (YES / NO) YES	**EDD FORMAT (or default):**	*Monica Niven*	LB
Email Reports to: monica.niven@hatch.com; simon.hope@hatch.com		DATE/TIME: 15/3/24 1:30pm	DATE/TIME: 15/3 @ 1615.
Email Invoice to: simon.hope@hatch.com;		**RELINQUISHED BY:**	**RECEIVED BY:**
		DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Samples collected on 13-14/3/24 were frozen on site. Retaing samples for potential CRS tests.

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE	/ TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	pH/pHox	CRS SJITE							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	H-DP10B-04-:1	13/03/2024	12:00	S	ASS	1	1								
2	H-DP10B-04-:2	13/03/2024	12:00	S	ASS	1	1								
3	H-DP10B-04-:3	13/03/2024	12:00	S	ASS	1	1								
4	H-DP10B-04-:4	13/03/2024	12:00	S	ASS	1	1								
5	H-DP10B-04-:5	13/03/2024	12:00	S	ASS	1	1								
6	H-DP10B-04-:6	13/03/2024	12:00	S	ASS	1	1								
7	H-DP10B-04-:7	13/03/2024	12:00	S	ASS	1	1								
8	H-DP10B-04-:8	13/03/2024	12:00	S	ASS	1	1								
9	H-DP10B-04-:9	13/03/2024	12:00	S	ASS	1	1								
10	H-DP10B-04-:10	13/03/2024	12:00	S	ASS	1	1								
11	H-DP10B-03-:1	14/03/2024	12:00	S	ASS	1	1								
12	H-DP10B-03-:2	14/03/2024	12:00	S	ASS	1	1								
13	H-DP10B-03-:3	14/03/2024	12:00	S	ASS	1	1								
14	H-DP10B-03-:4	14/03/2024	12:00	S	ASS	1	1								
15	H-DP10B-03-:5	14/03/2024	12:00	S	ASS	1	1								
16	H-DP10B-03-:6	14/03/2024	12:00	S	ASS	1	1								
17	H-DP10B-03-:7	14/03/2024	12:00	S	ASS	1	1								
18	H-DP10B-03-:8	14/03/2024	12:00	S	ASS	1	1								
19	H-DP10B-03-:9	14/03/2024	12:00	S	ASS	1	1								
20	H-DP10B-03-:10	14/03/2024	12:00	S	ASS	1	1								
21	H-DP10B-01-:1	14/03/2024	12:00	S	ASS	1	1								
22	H-DP10B-01-:2	14/03/2024	12:00	S	ASS	1	1								

Environmental Division
Perth
Work Order Reference
EP2403707

Telephone – 61-8-9406 1301

23	H-DP10B-01-:3	14/03/2024	12:00	S	ASS	1	1									
24	H-DP10B-01-:4	14/03/2024	12:00	S	ASS	1	1									
25	H-DP10B-01-:5	14/03/2024	12:00	S	ASS	1	1									
26	H-DP10B-01-:6	14/03/2024	12:00	S	ASS	1	1									
27	H-DP10B-01-:7	14/03/2024	12:00	S	ASS	1	1									
28	H-DP10B-01-:8	14/03/2024	12:00	S	ASS	1	1									
29	H-DP10B-01-:9	14/03/2024	12:00	S	ASS	1	1									
30	H-DP10B-01-:10	14/03/2024	12:00	S	ASS	1	1									
31	H-DP10B-02-:1	14/03/2024	12:00	S	ASS	1	1									
32	H-DP10B-02-:2	14/03/2024	12:00	S	ASS	1	1									
33	H-DP10B-02-:3	14/03/2024	12:00	S	ASS	1	1									
34	H-DP10B-02-:4	14/03/2024	12:00	S	ASS	1	1									
35	H-DP10B-02-:5	14/03/2024	12:00	S	ASS	1	1									
36	H-DP10B-02-:6	14/03/2024	12:00	S	ASS	1	1									
37	H-DP10B-02-:7	14/03/2024	12:00	S	ASS	1	1									
38	H-DP10B-02-:8	14/03/2024	12:00	S	ASS	1	1									
39	H-DP10B-02-:9	14/03/2024	12:00	S	ASS	1	1									
40	H-DP10B-02-:10	14/03/2024	12:00	S	ASS	1	1									
41	H-DP10B-05-:1	14/03/2024	12:00	S	ASS	1	1									
42	H-DP10B-05-:2	14/03/2024	12:00	S	ASS	1	1									
43	H-DP10B-05-:3	14/03/2024	12:00	S	ASS	1	1									
44	H-DP10B-05-:4	14/03/2024	12:00	S	ASS	1	1									
45	H-DP10B-05-:5	14/03/2024	12:00	S	ASS	1	1									
46	H-DP10B-05-:6	14/03/2024	12:00	S	ASS	1	1									
47	H-DP10B-05-:7	14/03/2024	12:00	S	ASS	1	1									
48	H-DP10B-05-:8	14/03/2024	12:00	S	ASS	1	1									
49	H-DP10B-05-:9	14/03/2024	12:00	S	ASS	1	1									
50	H-DP10B-05-:10	14/03/2024	12:00	S	ASS	1	1									
51	DP-03	13/03/2024	12:00	S	ASS	1	1									
SNR	DP-03 (A)	14/03/2024	12:00	S	ASS	1	1									
52	DP-05	14/03/2024	12:00	S	ASS	1	1									
53	H-DP10B-08-:1	14/03/2024	12:00	S	ASS	1	1									
54	H-DP10B-08-:2	14/03/2024	12:00	S	ASS	1	1									
55	H-DP10B-08-:3	14/03/2024	12:00	S	ASS	1	1									
56	H-DP10B-08-:4	14/03/2024	12:00	S	ASS	1	1									
57	H-DP10B-08-:5	14/03/2024	12:00	S	ASS	1	1									
58	H-DP10B-08-:6	14/03/2024	12:00	S	ASS	1	1									
59	H-DP10B-08-:7	14/03/2024	12:00	S	ASS	1	1									
60	H-DP10B-08-:8	14/03/2024	12:00	S	ASS	1	1									
61	H-DP10B-08-:9	14/03/2024	12:00	S	ASS	1	1									
62	H-DP10B-08-:10	13/03/2024	12:00	S	ASS	1	1									
63	H-DP10B-08-:11	14/03/2024	12:00	S	ASS	1	1									
64	H-DP10B-08-:12	14/03/2024	12:00	S	ASS	1	1									
65	H-DP10B-08-:13	14/03/2024	12:00	S	ASS	1	1									
66	H-DP10B-08-:14	14/03/2024	12:00	S	ASS	1	1									
67	H-DP10B-08-:15	14/03/2024	12:00	S	ASS	1	1									
68	H-DP10B-08-:16	14/03/2024	12:00	S	ASS	1	1									

69	H-DP10B-08-:17	14/03/2024	12:00	S	ASS	1	1									
70	H-DP10B-08-:18	14/03/2024	12:00	S	ASS	1	1									
71	H-DP10B-08-:19	14/03/2024	12:00	S	ASS	1	1									
72	H-DP10B-08-:20	14/03/2024	12:00	S	ASS	1	1									
73	H-DP10B-08-:21	14/03/2024	12:00	S	ASS	1	1									
74	H-DP10B-08-:22	14/03/2024	12:00	S	ASS	1	1									
75	H-DP10B-08-:23	14/03/2024	12:00	S	ASS	1	1									
76	H-DP10B-08-:24	14/03/2024	12:00	S	ASS	1	1									
77	H-DP10B-08-:25	14/03/2024	12:00	S	ASS	1	1									
78	H-DP10B-08-:26	14/03/2024	12:00	S	ASS	1	1									
79	DP-07	14/03/2024	12:00	S	ASS	1	1									
80.	DP-08	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:1	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:2	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:3	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:4	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:5	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:6	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:7	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:8	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:9	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:10	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:11	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:12	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:13	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:14	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:15	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:16	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:17	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:18	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:19	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:20	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:21	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:22	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:23	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:24	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:25	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:26	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:27	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:28	14/03/2024	12:00	S	ASS	1	1									
	DP-09	14/03/2024	12:00	S	ASS	1	1									
	DP-10	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:1	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:2	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:3	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:4	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:5	15/03/2024	12:00	S	ASS	1	1									

	H-DP10B-06-:6	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:7	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:8	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:9	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:10	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:11	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:12	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:13	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:14	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:15	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:16	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:17	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:18	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:19	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:20	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:21	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:22	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:23	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:24	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:25	15/03/2024	12:00	S	ASS	1	1										
	H-DP10B-06-:26	15/03/2024	12:00	S	ASS	1	1										
	DP-11	15/03/2024	12:00	S	ASS	1	1										
	DP-12	15/03/2024	12:00	S	ASS	1	1										
	H-MW-36A-1	15/03/2024	12:00	S	ASS	1	1										
	H-MW-36A-2	15/03/2024	12:00	S	ASS	1	1										
	H-MW-36A-3	15/03/2024	12:00	S	ASS	1	1										
	DP-13	15/03/2024	12:00	S	ASS	1	1										
					TOTAL	143	143										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; U = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

CHAIN OF CUSTODY

ALS Laboratory: please tick → Brisbane QLD 4068 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5680 E: gladstone@alsglobal.com

MACKAY 78 Harbour Beach Drive Flacon QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: samples.wollongong@alsglobal.com

PERTH 26 Rigali Way, Wangara WA 6065 Ph: 08 9359 7201 E: samples.perth@alsglobal.com

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: samples.adelaide@alsglobal.com

ADELAIDE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

CLIENT: Hatch	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☒ Standard TAT (List due date):	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: 10 Telethon Avenue, Perth		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes / No / N/A
PROJECT: Wagerup RSA10N	**ALS QUOTE NO.:** EP/968/22	**COC SEQUENCE NUMBER (Circle)** COC: 1 2 3 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
PURCHASE ORDER NUMBER: 368360-1	**COUNTRY OF ORIGIN:** AUSTRALIA	OF: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Simon Hope	**CONTACT PH:** 0438917970		Other comment:
SAMPLER: Monica Niven	**SAMPLER MOBILE:** 0439235802	**RELINQUISHED BY:** Monica Niven	**RECEIVED BY:** LD
COC Emailed to ALS? (YES / NO) YES	**EDD FORMAT (or default):**	DATE/TIME: 15/3/24 1:30pm	DATE/TIME: 15/3 @ 1615.
Email Reports to: monica.niven@hatch.com; simon.hope@hatch.com		**RELINQUISHED BY:**	**RECEIVED BY:**
Email Invoice to: simon.hope@hatch.com;		DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Samples collected on 13-14/3/24 were frozen on site. Retaing samples for potential CRS tests.

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required: specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE	TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	pH/pHox	CRS SUITE							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-DP10B-04-:1	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:2	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:3	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:4	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:5	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:6	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:7	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:8	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:9	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:10	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:2	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:10	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:2	14/03/2024	12:00	S	ASS	1	1								

Environmental Division
Perth
Work Order Reference
EP2403718

Telephone : +61-8-9406 1301

	H-DP10B-01-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:10	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:2	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:10	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:2	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:10	14/03/2024	12:00	S	ASS	1	1								
	DP-03	13/03/2024	12:00	S	ASS	1	1								
	DP-03 (A)	14/03/2024	12:00	S	ASS	1	1								
	DP-05	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:2	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:10	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:11	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:12	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:13	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:14	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:15	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:16	14/03/2024	12:00	S	ASS	1	1								

	H-DP10B-08-:17	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:18	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:19	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:20	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:21	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:22	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:23	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:24	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:25	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:26	14/03/2024	12:00	S	ASS	1	1									
	DP-07	14/03/2024	12:00	S	ASS	1	1									
	DP-08	14/03/2024	12:00	S	ASS	1	1									
1	H-DP10B-07-:1	14/03/2024	12:00	S	ASS	1	1									
2	H-DP10B-07-:2	14/03/2024	12:00	S	ASS	1	1									
3	H-DP10B-07-:3	14/03/2024	12:00	S	ASS	1	1									
4	H-DP10B-07-:4	14/03/2024	12:00	S	ASS	1	1									
5	H-DP10B-07-:5	14/03/2024	12:00	S	ASS	1	1									
6	H-DP10B-07-:6	14/03/2024	12:00	S	ASS	1	1									
7	H-DP10B-07-:7	14/03/2024	12:00	S	ASS	1	1									
8	H-DP10B-07-:8	14/03/2024	12:00	S	ASS	1	1									
9	H-DP10B-07-:9	14/03/2024	12:00	S	ASS	1	1									
10	H-DP10B-07-:10	14/03/2024	12:00	S	ASS	1	1									
11	H-DP10B-07-:11	14/03/2024	12:00	S	ASS	1	1									
12	H-DP10B-07-:12	14/03/2024	12:00	S	ASS	1	1									
13	H-DP10B-07-:13	14/03/2024	12:00	S	ASS	1	1									
14	H-DP10B-07-:14	14/03/2024	12:00	S	ASS	1	1									
15	H-DP10B-07-:15	14/03/2024	12:00	S	ASS	1	1									
16	H-DP10B-07-:16	14/03/2024	12:00	S	ASS	1	1									
17	H-DP10B-07-:17	14/03/2024	12:00	S	ASS	1	1									
18	H-DP10B-07-:18	14/03/2024	12:00	S	ASS	1	1									
19	H-DP10B-07-:19	14/03/2024	12:00	S	ASS	1	1									
20	H-DP10B-07-:20	14/03/2024	12:00	S	ASS	1	1									
21	H-DP10B-07-:21	14/03/2024	12:00	S	ASS	1	1									
22	H-DP10B-07-:22	14/03/2024	12:00	S	ASS	1	1									
23	H-DP10B-07-:23	14/03/2024	12:00	S	ASS	1	1									
24	H-DP10B-07-:24	14/03/2024	12:00	S	ASS	1	1									
25	H-DP10B-07-:25	14/03/2024	12:00	S	ASS	1	1									
26	H-DP10B-07-:26	14/03/2024	12:00	S	ASS	1	1									
27	H-DP10B-07-:27	14/03/2024	12:00	S	ASS	1	1									
28	H-DP10B-07-:28	14/03/2024	12:00	S	ASS	1	1									
29	DP-09	14/03/2024	12:00	S	ASS	1	1									
30	DP-10	14/03/2024	12:00	S	ASS	1	1									
31	H-DP10B-06-:1	15/03/2024	12:00	S	ASS	1	1									
32	H-DP10B-06-:2	15/03/2024	12:00	S	ASS	1	1									
33	H-DP10B-06-:3	15/03/2024	12:00	S	ASS	1	1									
34	H-DP10B-06-:4	15/03/2024	12:00	S	ASS	1	1									
35	H-DP10B-06-:5	15/03/2024	12:00	S	ASS	1	1									

36	H-DP10B-06-:6	15/03/2024	12:00	S	ASS	1	1								
37	H-DP10B-06-:7	15/03/2024	12:00	S	ASS	1	1								
38	H-DP10B-06-:8	15/03/2024	12:00	S	ASS	1	1								
39	H-DP10B-06-:9	15/03/2024	12:00	S	ASS	1	1								
40	H-DP10B-06-:10	15/03/2024	12:00	S	ASS	1	1								
41	H-DP10B-06-:11	15/03/2024	12:00	S	ASS	1	1								
42	H-DP10B-06-:12	15/03/2024	12:00	S	ASS	1	1								
43	H-DP10B-06-:13	15/03/2024	12:00	S	ASS	1	1								
44	H-DP10B-06-:14	15/03/2024	12:00	S	ASS	1	1								
45	H-DP10B-06-:15	15/03/2024	12:00	S	ASS	1	1								
46	H-DP10B-06-:16	15/03/2024	12:00	S	ASS	1	1								
47	H-DP10B-06-:17	15/03/2024	12:00	S	ASS	1	1								
48	H-DP10B-06-:18	15/03/2024	12:00	S	ASS	1	1								
49	H-DP10B-06-:19	15/03/2024	12:00	S	ASS	1	1								
50	H-DP10B-06-:20	15/03/2024	12:00	S	ASS	1	1								
51	H-DP10B-06-:21	15/03/2024	12:00	S	ASS	1	1								
52	H-DP10B-06-:22	15/03/2024	12:00	S	ASS	1	1								
53	H-DP10B-06-:23	15/03/2024	12:00	S	ASS	1	1								
54	H-DP10B-06-:24	15/03/2024	12:00	S	ASS	1	1								
55	H-DP10B-06-:25	15/03/2024	12:00	S	ASS	1	1								
56	H-DP10B-06-:26	15/03/2024	12:00	S	ASS	1	1								
57	DP-11	15/03/2024	12:00	S	ASS	1	1								
58	DP-12	15/03/2024	12:00	S	ASS	1	1								
59	H-MW-36A-1	15/03/2024	12:00	S	ASS	1	1								
60	H-MW-36A-2	15/03/2024	12:00	S	ASS	1	1								
61	H-MW-36A-3	15/03/2024	12:00	S	ASS	1	1								
62	DP-13	15/03/2024	12:00	S	ASS	1	1								
					TOTAL	143	143								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: Hatch	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Client)	
OFFICE: 16 Teddington Avenue, Perth	Standard TAT may be longer for some tests (e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact?	Yes / No / N/A
PROJECT: Wagerup RSA16A	ALS QUOTE NO.:	Presence / Absence of suitable sample (soil)	Yes / No / N/A
PURCHASE ORDER NUMBER: 380386-2	COUNTRY OF ORIGIN: AUSTRALIA	Receipt Sample Temperature on Receipt:	°C
PROJECT MANAGER: Simon Hope	CONTACT PH: 0429217609	Other comments:	
SAMPLER: Marcus Niner	SAMPLER MOBILE: 0429217612		
COC Emailed to ALS? (YES / NO) YES	EDD FORMAT (or default):		
Email Reports to: marcus.niner@hatch.com; simon.hope@hatch.com			
Email Invoice to: simon.hope@hatch.com			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Dan Lucas / Monica Niner			
DATE/TIME: 12/09/24 3pm / 13/09/24 7am	DATE/TIME: 12/4 1453	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total/Dissolved/Both. If not specified, Dissolved will be reported	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (Refer to codes below)	TOTAL BOTTLES	CRU SUITE	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	B-MW-23-1	12/09/2024 12:00	S	ASS	1	1	
2	B-MW-22-1	12/09/2024 12:00	S	ASS	1	1	
3	B-MW-23-1	12/09/2024 13:00	S	ASS	1	1	
4	B-MW-24-1	13/09/2024 12:00	S	ASS	1	1	
5	B-MW-24-2	13/09/2024 12:00	S	ASS	1	1	
6	B-MW-25-1	13/09/2024 12:00	S	ASS	1	1	
7	MW-25-2	13/09/2024 12:00	S	ASS	1	1	
8	MW-25-2	13/09/2024 12:00	S	ASS	1	1	
9	MW-26-3	13/09/2024 12:00	S	ASS	1	1	
10	MW-26-2	13/09/2024 12:00	S	ASS	1	1	
11	MW-26-1	13/09/2024 12:00	S	ASS	1	1	
12	BD-2	13/09/2024 12:00	S	ASS	1	1	
13	MW-33-1	13/09/2024 12:00	S	ASS	1	1	
14	MW-34-2	13/09/2024 12:00	S	ASS	1	1	
15	MW-35-1	13/09/2024 12:00	S	ASS	1	1	
16	DP-10	13/09/2024 12:00	S	ASS	1	1	
17	B-MW-38A-1	13/09/2024 12:00	S	ASS	1	1	
18	MW-31-2	13/09/2024 12:00	S	ASS	1	1	
19	MW-38-2	13/09/2024 12:00	S	ASS	1	1	
20	MW-38-3	13/09/2024 12:00	S	ASS	1	1	
21	MW-38-1	13/09/2024 12:00	S	ASS	1	1	
22	MW-39-2	13/09/2024 12:00	S	ASS	1	1	
23	B-DP16B-61-1	14/09/2024 12:00	S	ASS	1	1	
24	B-DP16B-61-3	14/09/2024 12:00	S	ASS	1	1	
25	B-DP16B-61-7	14/09/2024 12:00	S	ASS	1	1	
26	B-DP16B-61-9	14/09/2024 12:00	S	ASS	1	1	
27	B-DP16B-62-1	14/09/2024 12:00	S	ASS	1	1	
28	B-DP16B-62-5	14/09/2024 12:00	S	ASS	1	1	
29	B-DP16B-63-2	14/09/2024 12:00	S	ASS	1	1	
30	B-DP16B-63-3	14/09/2024 12:00	S	ASS	1	1	
31	B-DP16B-63-4	14/09/2024 12:00	S	ASS	1	1	
32	B-DP16B-64-2	13/09/2024 12:00	S	ASS	1	1	
33	B-DP16B-64-3	13/09/2024 12:00	S	ASS	1	1	
34	B-DP16B-64-10	13/09/2024 12:00	S	ASS	1	1	
35	B-DP16B-65-1	14/09/2024 12:00	S	ASS	1	1	
36	B-DP16B-65-2	14/09/2024 12:00	S	ASS	1	1	
37	B-DP16B-65-3	14/09/2024 12:00	S	ASS	1	1	
38	B-DP16B-65-4	14/09/2024 12:00	S	ASS	1	1	
39	B-DP16B-66-7	14/09/2024 12:00	S	ASS	1	1	
40	B-DP16B-66-1	16/09/2024 12:00	S	ASS	1	1	
41	B-DP16B-66-2	15/09/2024 12:00	S	ASS	1	1	
42	B-DP16B-66-4	15/09/2024 12:00	S	ASS	1	1	
43	B-DP16B-66-11	15/09/2024 12:00	S	ASS	1	1	
44	B-DP16B-66-16	15/09/2024 12:00	S	ASS	1	1	
45	DP-11	15/09/2024 12:00	S	ASS	1	1	
46	B-DP16B-66-24	15/09/2024 12:00	S	ASS	1	1	
47	B-DP16B-67-1	14/09/2024 12:00	S	ASS	1	1	
48	B-DP16B-67-2	14/09/2024 12:00	S	ASS	1	1	
49	B-DP16B-67-5	14/09/2024 12:00	S	ASS	1	1	
50	B-DP16B-67-12	14/09/2024 12:00	S	ASS	1	1	
51	B-DP16B-67-21	14/09/2024 12:00	S	ASS	1	1	
52	B-DP16B-67-27	14/09/2024 12:00	S	ASS	1	1	
53	B-DP16B-68-1	14/09/2024 12:00	S	ASS	1	1	
54	B-DP16B-68-2	14/09/2024 12:00	S	ASS	1	1	
55	B-DP16B-68-5	14/09/2024 12:00	S	ASS	1	1	
56	B-DP16B-68-10	14/09/2024 12:00	S	ASS	1	1	
57	B-DP16B-68-17	14/09/2024 12:00	S	ASS	1	1	
58	B-DP16B-68-23	14/09/2024 12:00	S	ASS	1	1	
59	B-DP16B-68-25	14/09/2024 12:00	S	ASS	1	1	
60	DP-08	14/09/2024 12:00	S	ASS	1	1	
				TOTAL			

Environmental Division
Perth
Work Order Reference
EP2404889

Telephone : +61-8-9406 1301

Bottle Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VH = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sodium Preserved Plastic; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LN = Liquid Nitrogen Preserved Bottles; 2FT = Sodium Fluoride Preserved Bottle

Elea Gauliris

From: Niven, Monica <monica.niven@hatch.com>
Sent: Friday, 12 April 2024 2:53 PM
To: ALS Enviro Perth; Samples Perth
Cc: Hope, Simon
Subject: RE: [EXTERNAL] - Acid sulfate soils testing quote addition to EP/968/22
Attachments: 20240412 ALS COC - Wangara Phase 3 CRS Testing Suite.xls

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Rebatch

Hi Elea,

Attached COC form including samples selected for further CRS testing suite. Could you please provide estimate on when this can be completed?

Any questions please let me know.

Thanks

Monica Niven
Intermediate Geotechnical Engineer

Email: monica.niven@hatch.com
Level 7, 10 Telethon Ave
Perth WA 6000
HATCH

From: Samples Perth <Samples.Perth@ALSGlobal.com>
Sent: Thursday, April 4, 2024 6:03 PM
To: Niven, Monica <monica.niven@hatch.com>; Samples Perth <Samples.Perth@ALSGlobal.com>
Cc: Hope, Simon <simon.hope@hatch.com>; ALS Enviro Perth <ALSEnviro.Perth@ALSGlobal.com>
Subject: RE: [EXTERNAL] - Acid sulfate soils testing quote addition to EP/968/22

** CAUTION: This email originated outside Hatch. Do not click links or open attachments unless you can authenticate the sender and the content

Hi Monica,

I apologise for the delay in replying.

This work order was released today at 1634. If you have not received your reports, please let me know.

Have a lovely day!

Please note - ALS Environmental will be closed for the upcoming mandated ANZAC Day public holiday on Thursday 25th April.

Kind Regards,

CHAIN OF CUSTODY

ALS Laboratory: please tick→ ALS Brisbane | ALS Townsville | ALS Gladstone | ALS Mackay | ALS Perth | ALS Adelaide | ALS Melbourne | ALS Sydney | ALS Canberra | ALS Newcastle | ALS Albury | ALS Hobart | ALS Darwin | ALS Alice Springs

CLIENT: Hatch	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: 10 Telethon Avenue, Perth		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: Wagerup RSA10N	ALS QUOTE NO.: EP/968/22	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
PURCHASE ORDER NUMBER: 368360-1	COUNTRY OF ORIGIN: AUSTRALIA	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt °C
PROJECT MANAGER: Simon Hope	CONTACT PH: 0438917970	OF: 1 2 3 4 5 6 7	Other comments:
SAMPLER: Monica Niven	SAMPLER MOBILE: 0439235802	RELINQUISHED BY:	RECEIVED BY:
COC Emailed to ALS? (YES / NO) YES	EDD FORMAT (or default):	Monica Niven	LB
Email Reports to: monica.niven@hatch.com; simon.hope@hatch.com		DATE/TIME: 15/3/24 1:30pm	DATE/TIME: 15/3 @ 1615.
Email Invoice to: simon.hope@hatch.com;		RELINQUISHED BY:	RECEIVED BY:
		DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Samples collected on 13-14/3/24 were frozen on site. Retaing samples for potential CRS tests.

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (lab filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE	TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	pH/pHox	CRS SJITE							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	H-DP10B-04-:1	13/03/2024	12:00	S	ASS	1	1								
2	H-DP10B-04-:2	13/03/2024	12:00	S	ASS	1	1								
3	H-DP10B-04-:3	13/03/2024	12:00	S	ASS	1	1								
4	H-DP10B-04-:4	13/03/2024	12:00	S	ASS	1	1								
5	H-DP10B-04-:5	13/03/2024	12:00	S	ASS	1	1								
6	H-DP10B-04-:6	13/03/2024	12:00	S	ASS	1	1								
7	H-DP10B-04-:7	13/03/2024	12:00	S	ASS	1	1								
8	H-DP10B-04-:8	13/03/2024	12:00	S	ASS	1	1								
9	H-DP10B-04-:9	13/03/2024	12:00	S	ASS	1	1								
10	H-DP10B-04-:10	13/03/2024	12:00	S	ASS	1	1								
11	H-DP10B-03-:1	14/03/2024	12:00	S	ASS	1	1								
12	H-DP10B-03-:2	14/03/2024	12:00	S	ASS	1	1								
13	H-DP10B-03-:3	14/03/2024	12:00	S	ASS	1	1								
14	H-DP10B-03-:4	14/03/2024	12:00	S	ASS	1	1								
15	H-DP10B-03-:5	14/03/2024	12:00	S	ASS	1	1								
16	H-DP10B-03-:6	14/03/2024	12:00	S	ASS	1	1								
17	H-DP10B-03-:7	14/03/2024	12:00	S	ASS	1	1								
18	H-DP10B-03-:8	14/03/2024	12:00	S	ASS	1	1								
19	H-DP10B-03-:9	14/03/2024	12:00	S	ASS	1	1								
20	H-DP10B-03-:10	14/03/2024	12:00	S	ASS	1	1								
21	H-DP10B-01-:1	14/03/2024	12:00	S	ASS	1	1								
22	H-DP10B-01-:2	14/03/2024	12:00	S	ASS	1	1								

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23	H-DP10B-01-:3	14/03/2024	12:00	S	ASS	1	1									
24	H-DP10B-01-:4	14/03/2024	12:00	S	ASS	1	1									
25	H-DP10B-01-:5	14/03/2024	12:00	S	ASS	1	1									
26	H-DP10B-01-:6	14/03/2024	12:00	S	ASS	1	1									
27	H-DP10B-01-:7	14/03/2024	12:00	S	ASS	1	1									
28	H-DP10B-01-:8	14/03/2024	12:00	S	ASS	1	1									
29	H-DP10B-01-:9	14/03/2024	12:00	S	ASS	1	1									
30	H-DP10B-01-:10	14/03/2024	12:00	S	ASS	1	1									
31	H-DP10B-02-:1	14/03/2024	12:00	S	ASS	1	1									
32	H-DP10B-02-:2	14/03/2024	12:00	S	ASS	1	1									
33	H-DP10B-02-:3	14/03/2024	12:00	S	ASS	1	1									
34	H-DP10B-02-:4	14/03/2024	12:00	S	ASS	1	1									
35	H-DP10B-02-:5	14/03/2024	12:00	S	ASS	1	1									
36	H-DP10B-02-:6	14/03/2024	12:00	S	ASS	1	1									
37	H-DP10B-02-:7	14/03/2024	12:00	S	ASS	1	1									
38	H-DP10B-02-:8	14/03/2024	12:00	S	ASS	1	1									
39	H-DP10B-02-:9	14/03/2024	12:00	S	ASS	1	1									
40	H-DP10B-02-:10	14/03/2024	12:00	S	ASS	1	1									
41	H-DP10B-05-:1	14/03/2024	12:00	S	ASS	1	1									
42	H-DP10B-05-:2	14/03/2024	12:00	S	ASS	1	1									
43	H-DP10B-05-:3	14/03/2024	12:00	S	ASS	1	1									
44	H-DP10B-05-:4	14/03/2024	12:00	S	ASS	1	1									
45	H-DP10B-05-:5	14/03/2024	12:00	S	ASS	1	1									
46	H-DP10B-05-:6	14/03/2024	12:00	S	ASS	1	1									
47	H-DP10B-05-:7	14/03/2024	12:00	S	ASS	1	1									
48	H-DP10B-05-:8	14/03/2024	12:00	S	ASS	1	1									
49	H-DP10B-05-:9	14/03/2024	12:00	S	ASS	1	1									
50	H-DP10B-05-:10	14/03/2024	12:00	S	ASS	1	1									
51	DP-03	13/03/2024	12:00	S	ASS	1	1									
SNR	DP-03 (A)	14/03/2024	12:00	S	ASS	1	1									
52	DP-06	14/03/2024	12:00	S	ASS	1	1									
53	H-DP10B-08-:1	14/03/2024	12:00	S	ASS	1	1									
54	H-DP10B-08-:2	14/03/2024	12:00	S	ASS	1	1									
55	H-DP10B-08-:3	14/03/2024	12:00	S	ASS	1	1									
56	H-DP10B-08-:4	14/03/2024	12:00	S	ASS	1	1									
57	H-DP10B-08-:5	14/03/2024	12:00	S	ASS	1	1									
58	H-DP10B-08-:6	14/03/2024	12:00	S	ASS	1	1									
59	H-DP10B-08-:7	14/03/2024	12:00	S	ASS	1	1									
60	H-DP10B-08-:8	14/03/2024	12:00	S	ASS	1	1									
61	H-DP10B-08-:9	14/03/2024	12:00	S	ASS	1	1									
62	H-DP10B-08-:10	13/03/2024	12:00	S	ASS	1	1									
63	H-DP10B-08-:11	14/03/2024	12:00	S	ASS	1	1									
64	H-DP10B-08-:12	14/03/2024	12:00	S	ASS	1	1									
65	H-DP10B-08-:13	14/03/2024	12:00	S	ASS	1	1									
66	H-DP10B-08-:14	14/03/2024	12:00	S	ASS	1	1									
67	H-DP10B-08-:15	14/03/2024	12:00	S	ASS	1	1									
68	H-DP10B-08-:16	14/03/2024	12:00	S	ASS	1	1									

69	H-DP10B-08-:17	14/03/2024	12:00	S	ASS	1	1									
70	H-DP10B-08-:18	14/03/2024	12:00	S	ASS	1	1									
71	H-DP10B-08-:19	14/03/2024	12:00	S	ASS	1	1									
72	H-DP10B-08-:20	14/03/2024	12:00	S	ASS	1	1									
73	H-DP10B-08-:21	14/03/2024	12:00	S	ASS	1	1									
74	H-DP10B-08-:22	14/03/2024	12:00	S	ASS	1	1									
75	H-DP10B-08-:23	14/03/2024	12:00	S	ASS	1	1									
76	H-DP10B-08-:24	14/03/2024	12:00	S	ASS	1	1									
77	H-DP10B-08-:25	14/03/2024	12:00	S	ASS	1	1									
78	H-DP10B-08-:26	14/03/2024	12:00	S	ASS	1	1									
79	DP-07	14/03/2024	12:00	S	ASS	1	1									
80	DP-08	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:1	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:2	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:3	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:4	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:5	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:6	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:7	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:8	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:9	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:10	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:11	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:12	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:13	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:14	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:15	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:16	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:17	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:18	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:19	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:20	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:21	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:22	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:23	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:24	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:25	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:26	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:27	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-07-:28	14/03/2024	12:00	S	ASS	1	1									
	DP-09	14/03/2024	12:00	S	ASS	1	1									
	DP-10	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:1	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:2	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:3	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:4	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:5	15/03/2024	12:00	S	ASS	1	1									

	H-DP10B-06-:6	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:7	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:8	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:9	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:10	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:11	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:12	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:13	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:14	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:15	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:16	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:17	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:18	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:19	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:20	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:21	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:22	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:23	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:24	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:25	15/03/2024	12:00	S	ASS	1	1									
	H-DP10B-06-:26	15/03/2024	12:00	S	ASS	1	1									
	DP-11	15/03/2024	12:00	S	ASS	1	1									
	DP-12	15/03/2024	12:00	S	ASS	1	1									
	H-MW-36A-1	15/03/2024	12:00	S	ASS	1	1									
	H-MW-36A-2	15/03/2024	12:00	S	ASS	1	1									
	H-MW-36A-3	15/03/2024	12:00	S	ASS	1	1									
	DP-13	15/03/2024	12:00	S	ASS	1	1									
					TOTAL	143	143									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Add Sulphate Soils; B = Unpreserved Bag; U = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: Hatch	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☒ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: 10 Telethon Avenue, Perth		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: Wagerup RSA10N	ALS QUOTE NO.: EP/968/22	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
PURCHASE ORDER NUMBER: 368360-1	COUNTRY OF ORIGIN: AUSTRALIA	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Simon Hope	CONTACT PH: 0438917970	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Monica Niven	SAMPLER MOBILE: 0439235802		
COC Emailed to ALS? (YES / NO) YES	EDD FORMAT (or default):		
Email Reports to: monica.niven@hatch.com; simon.hope@hatch.com			
Email Invoice to: simon.hope@hatch.com;			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Monice Niven	LB		
DATE/TIME: 15/3/24 1:30pm	DATE/TIME: 15/3 @ 1615.	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Samples collected on 13-14/3/24 were frozen on site. Retaing samples for potential CRS tests.

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)								Additional Information
LAB ID	SAMPLE ID	DATE	TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	pH/pHox	CRS SUITE							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	H-DP10B-04-:1	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:2	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:3	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:4	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:5	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:6	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:7	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:8	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:9	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-04-:10	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:2	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-03-:10	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:2	14/03/2024	12:00	S	ASS	1	1								

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	H-DP10B-01-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-01-:10	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:2	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-02-:10	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:2	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-05-:10	14/03/2024	12:00	S	ASS	1	1								
	DP-03	13/03/2024	12:00	S	ASS	1	1								
	DP-03 (A)	14/03/2024	12:00	S	ASS	1	1								
	DP-05	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:1	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:2	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:3	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:4	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:5	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:6	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:7	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:8	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:9	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:10	13/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:11	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:12	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:13	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:14	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:15	14/03/2024	12:00	S	ASS	1	1								
	H-DP10B-08-:16	14/03/2024	12:00	S	ASS	1	1								

	H-DP10B-08-:17	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:18	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:19	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:20	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:21	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:22	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:23	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:24	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:25	14/03/2024	12:00	S	ASS	1	1									
	H-DP10B-08-:26	14/03/2024	12:00	S	ASS	1	1									
	DP-07	14/03/2024	12:00	S	ASS	1	1									
	DP-08	14/03/2024	12:00	S	ASS	1	1									
1	H-DP10B-07-:1	14/03/2024	12:00	S	ASS	1	1									
2	H-DP10B-07-:2	14/03/2024	12:00	S	ASS	1	1									
3	H-DP10B-07-:3	14/03/2024	12:00	S	ASS	1	1									
4	H-DP10B-07-:4	14/03/2024	12:00	S	ASS	1	1									
5	H-DP10B-07-:5	14/03/2024	12:00	S	ASS	1	1									
6	H-DP10B-07-:6	14/03/2024	12:00	S	ASS	1	1									
7	H-DP10B-07-:7	14/03/2024	12:00	S	ASS	1	1									
8	H-DP10B-07-:8	14/03/2024	12:00	S	ASS	1	1									
9	H-DP10B-07-:9	14/03/2024	12:00	S	ASS	1	1									
10	H-DP10B-07-:10	14/03/2024	12:00	S	ASS	1	1									
11	H-DP10B-07-:11	14/03/2024	12:00	S	ASS	1	1									
12	H-DP10B-07-:12	14/03/2024	12:00	S	ASS	1	1									
13	H-DP10B-07-:13	14/03/2024	12:00	S	ASS	1	1									
14	H-DP10B-07-:14	14/03/2024	12:00	S	ASS	1	1									
15	H-DP10B-07-:15	14/03/2024	12:00	S	ASS	1	1									
16	H-DP10B-07-:16	14/03/2024	12:00	S	ASS	1	1									
17	H-DP10B-07-:17	14/03/2024	12:00	S	ASS	1	1									
18	H-DP10B-07-:18	14/03/2024	12:00	S	ASS	1	1									
19	H-DP10B-07-:19	14/03/2024	12:00	S	ASS	1	1									
20	H-DP10B-07-:20	14/03/2024	12:00	S	ASS	1	1									
21	H-DP10B-07-:21	14/03/2024	12:00	S	ASS	1	1									
22	H-DP10B-07-:22	14/03/2024	12:00	S	ASS	1	1									
23	H-DP10B-07-:23	14/03/2024	12:00	S	ASS	1	1									
24	H-DP10B-07-:24	14/03/2024	12:00	S	ASS	1	1									
25	H-DP10B-07-:25	14/03/2024	12:00	S	ASS	1	1									
26	H-DP10B-07-:26	14/03/2024	12:00	S	ASS	1	1									
27	H-DP10B-07-:27	14/03/2024	12:00	S	ASS	1	1									
28	H-DP10B-07-:28	14/03/2024	12:00	S	ASS	1	1									
29	DP-09	14/03/2024	12:00	S	ASS	1	1									
30	DP-10	14/03/2024	12:00	S	ASS	1	1									
31	H-DP10B-06-:1	15/03/2024	12:00	S	ASS	1	1									
32	H-DP10B-06-:2	15/03/2024	12:00	S	ASS	1	1									
33	H-DP10B-06-:3	15/03/2024	12:00	S	ASS	1	1									
34	H-DP10B-06-:4	15/03/2024	12:00	S	ASS	1	1									
35	H-DP10B-06-:5	15/03/2024	12:00	S	ASS	1	1									

36	H-DP10B-06-:6	15/03/2024	12:00	S	ASS	1	1								
37	H-DP10B-06-:7	15/03/2024	12:00	S	ASS	1	1								
38	H-DP10B-06-:8	15/03/2024	12:00	S	ASS	1	1								
39	H-DP10B-06-:9	15/03/2024	12:00	S	ASS	1	1								
40	H-DP10B-06-:10	15/03/2024	12:00	S	ASS	1	1								
41	H-DP10B-06-:11	15/03/2024	12:00	S	ASS	1	1								
42	H-DP10B-06-:12	15/03/2024	12:00	S	ASS	1	1								
43	H-DP10B-06-:13	15/03/2024	12:00	S	ASS	1	1								
44	H-DP10B-06-:14	15/03/2024	12:00	S	ASS	1	1								
45	H-DP10B-06-:15	15/03/2024	12:00	S	ASS	1	1								
46	H-DP10B-06-:16	15/03/2024	12:00	S	ASS	1	1								
47	H-DP10B-06-:17	15/03/2024	12:00	S	ASS	1	1								
48	H-DP10B-06-:18	15/03/2024	12:00	S	ASS	1	1								
49	H-DP10B-06-:19	15/03/2024	12:00	S	ASS	1	1								
50	H-DP10B-06-:20	15/03/2024	12:00	S	ASS	1	1								
51	H-DP10B-06-:21	15/03/2024	12:00	S	ASS	1	1								
52	H-DP10B-06-:22	15/03/2024	12:00	S	ASS	1	1								
53	H-DP10B-06-:23	15/03/2024	12:00	S	ASS	1	1								
54	H-DP10B-06-:24	15/03/2024	12:00	S	ASS	1	1								
55	H-DP10B-06-:25	15/03/2024	12:00	S	ASS	1	1								
56	H-DP10B-06-:26	15/03/2024	12:00	S	ASS	1	1								
57	DP-11	15/03/2024	12:00	S	ASS	1	1								
58	DP-12	15/03/2024	12:00	S	ASS	1	1								
59	H-MW-36A-1	15/03/2024	12:00	S	ASS	1	1								
60	H-MW-36A-2	15/03/2024	12:00	S	ASS	1	1								
61	H-MW-36A-3	15/03/2024	12:00	S	ASS	1	1								
62	DP-13	15/03/2024	12:00	S	ASS	1	1								
					TOTAL	143	143								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; U = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: Hatch	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):		FOR LABORATORY USE ONLY (Circle)
OFFICE: 10 Telethon Avenue, Perth			Custody Seal Intact? Yes No N/A
PROJECT: Wagerup RSA10N	ALS QUOTE NO.: EP/968/22	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
PURCHASE ORDER NUMBER: 368360-1	COUNTRY OF ORIGIN: AUSTRALIA	coc: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Simon Hope	CONTACT PH: 0438917970	of: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Monica Niven	SAMPLER MOBILE: 0439235802	RELINQUISHED BY:	RECEIVED BY:
COC Emailed to ALS? (YES / NO) YES	EDD FORMAT (or default):	*Ben Lucas/ Monica Niven*	
Email Reports to: monica.niven@hatch.com; simon.hope@hatch.com		DATE/TIME:13/3/24 5pm	DATE/TIME:
Email Invoice to: simon.hope@hatch.com;			

RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Samples collected on 11-12/3/24 were frozen on site. Retaing samples for potential CRS tests.

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)								Additional Information
							Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								
LAB ID	SAMPLE ID	DATE	TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	pH/pHox	CRS SUITE							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	MW-28-1	11/03/2024	1200	S	ASS	1	1								
2	MW-28-2	11/03/2024	1200	S	ASS	1	1								
3	MW-28-3	11/03/2024	1200	S	ASS	1	1								
4	MW-31-1	11/03/2024	1200	S	ASS	1	1								
5	MW-31-2	11/03/2024	1200	S	ASS	1	1								
6	MW-31-3	11/03/2024	1200	S	ASS	1	1								
7	MW-25-1	11/03/2024	1200	S	ASS	1	1								
8	MW-25-2	11/03/2024	1200	S	ASS	1	1								
9	MW-25-3	11/03/2024	1200	S	ASS	1	1								
10	MW-24-1	11/03/2024	1200	S	ASS	1	1								
11	MW-24-2	11/03/2024	1200	S	ASS	1	1								
12	MW-24-3	11/03/2024	1200	S	ASS	1	1								
13	MW-23-1	12/03/2024	1200	S	ASS	1	1								
14	MW-23-2	12/03/2024	1200	S	ASS	1	1								
15	MW-23-3	12/03/2024	1200	S	ASS	1	1								
16	MW-22-1	12/03/2024	1200	S	ASS	1	1								
17	MW-22-2	12/03/2024	1200	S	ASS	1	1								
18	MW-22-3	12/03/2024	1200	S	ASS	1	1								
19	MW-21-1	12/03/2024	1200	S	ASS	1	1								
20	MW-21-2	12/03/2024	1200	S	ASS	1	1								
~~21~~	MW-21-3	12/03/2024	1200	S	ASS	1	1								
22	MW-27-1	12/03/2024	1200	S	ASS	1	1								

Environmental Division
Perth
Work Order Reference
EP2403511

23	MW-27-2	12/03/2024	1200	S	ASS	1	1												
24	MW-27-3	12/03/2024	1200	S	ASS	1	1												
Repeats	MW-31-1	12/03/2024	1200	S	ASS	1	1												
	MW-31-2	12/03/2024	1200	S	ASS	1	1												
	MW-31-3	12/03/2024	1200	S	ASS	1	1												
25	MW-34-1	12/03/2024	1200	S	ASS	1	1												
26	MW-34-2	12/03/2024	1200	S	ASS	1	1												
27	MW-34-3	12/03/2024	1200	S	ASS	1	1												
SNR	MW-30-1	12/03/2024	1200	S	ASS	1	1												
29	MW-30-2	12/03/2024	1200	S	ASS	1	1												
29	MW-33-1	12/03/2024	1200	S	ASS	1	1												
30	MW-33-2	12/03/2024	1200	S	ASS	1	1												
31	MW-33-3	12/03/2024	1200	S	ASS	1	1												
SNR	MW-29-1	12/03/2024	1200	S	ASS	1	1												
SNR	MW-29-2	12/03/2024	1200	S	ASS	1	1												
32	DS-1	12/03/2024	1200	S	ASS	1	1												
33	DS-2	13/03/2024	1200	S	ASS	1	1												
34	MW-32-1	13/03/2024	1200	S	ASS	1	1												
35	MW-32-2	13/03/2024	1200	S	ASS	1	1												
36	MW-32-3	13/03/2024	1200	S	ASS	1	1												
37	MW-35-1	13/03/2024	1200	S	ASS	1	1												
38	MW-35-2	13/03/2024	1200	S	ASS	1	1												
39	MW-35-3	13/03/2024	1200	S	ASS	1	1												
40	MW-37-1	13/03/2024	1200	S	ASS	1	1												
41	MW-37-2	13/03/2024	1200	S	ASS	1	1												
42	MW-37-3	13/03/2024	1200	S	ASS	1	1												
[redacted] 43	MW-36-1	13/03/2024	1200	S	ASS	1	1												
SNR [redacted]	MW-36-2	13/03/2024	1200	S	ASS	1	1												
[redacted]	MW-36-3	13/03/2024	1200	S	ASS	1	1												
46	MW-39-1	13/03/2024	1200	S	ASS	1	1												
47	MW-39-2	13/03/2024	1200	S	ASS	1	1												
48	MW-39-3	13/03/2024	1200	S	ASS	1	1												
49	MW-38-1	13/03/2024	1200	S	ASS	1	1												
50	MW-38-2	13/03/2024	1200	S	ASS	1	1												
51	MW-38-3	13/03/2024	1200	S	ASS	1	1												
					TOTAL														

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; U = Ultra Low Preserved Bottles; SIT = Sterile Sodium Thiosulfate Preserved Bottles

52 MW-26-1

53 MW-26-2

54 MW-26-3

55 MW-30-3

56 MW-29-3

57 Unlabelled

58 MW-36-2-a

59 MW-36-2-b

Appendix C
ASS Test Results

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Table C-1: Summary of pH Field and pH Fox Results

Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-1 250 mm	250	6.3	3.8	2.5	2
H-TP10N-1 500 mm	500	5.9	3.6	2.3	2
H-TP10N-1 750 mm	750	6.9	4.8	2.1	1
H-TP10N-1 1000 mm	1000	6.6	4.7	1.9	1
H-TP10N-1 1250 mm	1250	6.4	4.7	1.7	1
H-TP10N-1 1500 mm	1500	6.8	5	1.8	1
H-TP10N-1 1750 mm	1750	6.7	4.8	1.9	1
H-TP10N-1 2000 mm	2000	6.8	5.2	1.6	1
H-TP10N-1 2250 mm	2250	6.9	5.2	1.7	1
H-TP10N-1 2500 mm	2500	6.9	5.1	1.8	1
H-TP10N-1 2750 mm	2750	6.9	5.2	1.7	1
H-TP10N-1 3000 mm	3000	6.9	5.5	1.4	1
H-TP10N-2 1	250	6.4	4.0	2.4	2
H-TP10N-2 2	500	6	4.1	1.9	1
H-TP10N-2 3	750	6	3.9	2.1	2
H-TP10N-2 4	1000	5.8	3.9	1.9	1
H-TP10N-2 5	1250	5.7	4.1	1.6	1
H-TP10N-2 6	1500	5.6	4.1	1.5	1
H-TP10N-2 7	1750	6.4	5.1	1.3	1
H-TP10N-2 8	2000	5.8	4.3	1.5	1
H-TP10N-2 9	2250	6.7	5.1	1.6	1
H-TP10N-2 10	2500	6.6	5.3	1.3	1
H-TP10N-2 11	2750	6.6	5.2	1.4	1
H-TP10N-2 12	3000	6.7	5.1	1.6	1
H-TP10N-2 7_Duplicated	1750	6.6	5.3	1.3	1
H-TP10N-3 1	250	5.9	3.4	2.5	2
H-TP10N-3 2	500	6	3.6	2.4	1
H-TP10N-3 3	750	6.6	4.8	1.8	1
H-TP10N-3 4	1000	5.7	3.8	1.9	1
H-TP10N-3 5	1250	5.3	3.9	1.4	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-3 6	1500	5.0	3.9	1.1	1
H-TP10N-3 7	1750	5.3	4.3	1	1
H-TP10N-3 8	2000	5.0	4	1	1
H-TP10N-3 9	2250	5.5	4.5	1	1
H-TP10N-3 10	2500	5.5	4.4	1.1	1
H-TP10N-3 11	2750	5.4	4.4	1	1
H-TP10N-3 12	3000	5.1	4.3	0.8	1
H-TP10N-3 8_Duplicated	2000	5.1	3.9	1.2	1
H-TP10N-4 1	250	5.4	3.1	2.3	1
H-TP10N-4 2	500	5.2	3.1	2.1	1
H-TP10N-4 3	750	4.9	3.1	1.8	1
H-TP10N-4 4	1000	4.9	3.4	1.5	1
H-TP10N-4 5	1250	4.8	3.3	1.5	1
H-TP10N-4 6	1500	4.7	3.4	1.3	1
H-TP10N-4 7	1750	4.4	3.2	1.2	1
H-TP10N-4 8	2000	4.4	3.3	1.1	1
H-TP10N-4 9	2250	4.4	3.2	1.2	1
H-TP10N-4 10	2500	4.5	3.6	0.9	1
H-TP10N-4 11	2750	4.5	3.0	1.5	1
H-TP10N-4 12	3000	4.5	3.4	1.1	1
H-TP10N-5 1	250	5.0	2.2	2.8	2
H-TP10N-5 2	500	5.4	2.5	2.9	2
H-TP10N-5 3	750	5.4	3.4	2	2
H-TP10N-5 4	1000	5.5	3.9	1.6	1
H-TP10N-5 5	1250	5.1	3.2	1.9	1
H-TP10N-5 6	1500	5.0	3.3	1.7	1
H-TP10N-5 7	1750	4.4	2.5	1.9	1
H-TP10N-5 8	2000	4.5	2.8	1.7	1
H-TP10N-5 9	2250	4.5	3.1	1.4	1
H-TP10N-5 10	2500	4.6	3.5	1.1	1
H-TP10N-5 5_Duplicated	1250	5.1	3.3	1.8	1
H-TP10N-6 1	250	6.4	3.1	3.3	2
H-TP10N-6 2	500	6.7	4.8	1.9	1
H-TP10N-6 3	750	7.5	5.4	2.1	1
H-TP10N-6 4	1000	7.6	5.6	2	1
H-TP10N-6 5	1250	7.5	5.7	1.8	1
H-TP10N-6 6	1500	7.6	5.4	2.2	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-6 7	1750	7.6	5.9	1.7	1
H-TP10N-6 8	2000	7.6	5.7	1.9	1
H-TP10N-6 9	2250	7.6	5.6	2	1
H-TP10N-6 10	2500	7.1	5.4	1.7	1
H-TP10N-6 11	2750	7	5.3	1.7	1
H-TP10N-6 12	3000	7.1	5.3	1.8	1
H-TP10N-6 13	3000	7.2	5.1	2.1	1
H-TP10N-7 1	250	6.2	3.4	2.8	2
H-TP10N-7 2	500	6.6	3.7	2.9	2
H-TP10N-7 3	750	6.7	4.6	2.1	1
H-TP10N-7 4	1000	6.4	4.4	2	1
H-TP10N-7 5	1250	6.3	4.6	1.7	1
H-TP10N-7 6	1500	6.9	5.2	1.7	1
H-TP10N-7 7	1750	6.7	4.6	2.1	1
H-TP10N-7 8	2000	7.1	5.3	1.8	1
H-TP10N-7 9	2250	6.8	5.1	1.7	1
H-TP10N-7 10	2500	7.6	5.5	2.1	1
H-TP10N-7 11	2750	6.9	4.9	2	1
H-TP10N-8 1	250	6.7	4.2	2.5	2
H-TP10N-8 2	500	7.3	4.7	2.6	2
H-TP10N-8 3	750	7.7	5.6	2.1	1
H-TP10N-8 4	1000	7.4	5.2	2.2	2
H-TP10N-8 5	1250	7.4	5.5	1.9	1
H-TP10N-8 6	1500	7.4	5.5	1.9	1
H-TP10N-8 7	1750	7	5.5	1.5	1
H-TP10N-8 8	2000	7	5.3	1.7	1
H-TP10N-8 9	2250	7.3	5.6	1.7	1
H-TP10N-8 10	2500	6.9	5.6	1.3	1
H-TP10N-8 11	2750	6.8	5.6	1.2	1
H-TP10N-8 12	3000	6.7	5.6	1.1	1
H-TP10N-8 6_Duplicate	1500	7.4	5.5	1.9	1
H-TP10N-9 1	250	6.7	3.8	2.9	1
H-TP10N-9 2	500	7.3	4.5	2.8	2
H-TP10N-9 3	750	6.2	4.6	1.6	1
H-TP10N-9 4	1000	6.3	4.6	1.7	1
H-TP10N-9 5	1250	6.2	4.7	1.5	1
H-TP10N-9 6	1500	6	4.4	1.6	1
H-TP10N-9 7	1750	5.8	4.5	1.3	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-9 8	2000	5.9	4.4	1.5	1
H-TP10N-9 9	2250	6.4	5.1	1.3	1
H-TP10N-9 10	2500	6.3	4.9	1.4	1
H-TP10N-9 11	2750	6.4	4.9	1.5	1
H-TP10N-9 12	3000	6.4	5.1	1.3	1
H-TP10N-10 1	250	6	2.6	3.4	2
H-TP10N-10 2	500	5.7	3.1	2.6	1
H-TP10N-10 3	750	5	3.2	1.8	1
H-TP10N-10 4	1000	4.9	3.1	1.8	1
H-TP10N-10 5	1250	5	3.4	1.6	1
H-TP10N-10 6	1500	4.8	3.6	1.2	1
H-TP10N-10 5_Duplicated	1250	4.9	3.3	1.6	1
H-TP10N-11 1	250	5.9	2.7	3.2	2
H-TP10N-11 2	500	7.2	4.8	2.4	2
H-TP10N-11 3	750	6.9	4.7	2.2	1
H-TP10N-11 4	1000	7.2	5.1	2.1	2
H-TP10N-11 5	1250	6.9	5	1.9	1
H-TP10N-11 6	1500	7.0	5.1	1.9	1
H-TP10N-11 7	1750	7	5.2	1.8	1
H-TP10N-11 8	2000	7.2	5.2	2	1
H-TP10N-11 9	2250	7	5.1	1.9	1
H-TP10N-11 10	2500	6.9	5.2	1.7	1
H-TP10N-11 11	2750	6.9	4.8	2.1	1
H-TP10N-11 12	3000	7.3	4.8	2.5	1
H-TP10N-12 1	250	5.9	2.9	3	2
H-TP10N-12 2	500	7.5	5.1	2.4	1
H-TP10N-12 3	750	8	5.4	2.6	1
H-TP10N-12 4	1000	8.1	5.6	2.5	1
H-TP10N-12 5	1250	7.2	5.2	2	1
H-TP10N-12 6	1500	7.3	5.3	2	1
H-TP10N-12 7	1750	7	5.3	1.7	1
H-TP10N-12 8	2000	6.9	7	-0.1	3
H-TP10N-12 9	2250	6.8	6.2	0.6	3
H-TP10N-12 10	2500	6.8	5.6	1.2	2
H-TP10N-12 11	2750	6.8	7.6	-0.8	3
H-TP10N-12 12	3000	6.6	7.8	-1.2	3
H-TP10N-12 7_Duplicate	1750	6.7	5.4	1.3	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-13 1	250	6.8	3.8	3	2
H-TP10N-13 2	500	6.8	4.4	2.4	2
H-TP10N-13 3	750	7.5	5.2	2.3	1
H-TP10N-13 4	1000	7.6	5.4	2.2	1
H-TP10N-13 5	1250	7.4	5.4	2	1
H-TP10N-13 6	1500	7.4	5.4	2	1
H-TP10N-13 7	1750	6.9	5.2	1.7	1
H-TP10N-13 8	2000	7.0	5.4	1.6	1
H-TP10N-13 9	2250	6.9	5.2	1.7	1
H-TP10N-13 10	2500	6.8	5.3	1.5	1
H-TP10N-13 11	2750	6.6	5.2	1.4	1
H-TP10N-13 12	3000	6.4	4.9	1.5	1
H-TP10N-13 5_Duplicate	1250	7.3	5.4	1.9	1
H-TP10N-14 1	250	7.4	4.7	2.7	2
H-TP10N-14 2	500	5.5	2.7	2.8	2
H-TP10N-14 3	750	5.3	2.8	2.5	2
H-TP10N-14 4	1000	5.2	2.6	2.6	2
H-TP10N-14 5	1250	5.6	3.4	2.2	1
H-TP10N-14 6	1500	4.8	3.1	1.7	1
H-TP10N-14 7	1750	4.7	3.2	1.5	1
H-TP10N-14 8	2000	4.9	3.4	1.5	1
H-TP10N-14 9	2250	4.6	3.3	1.3	1
H-TP10N-14 10	2500	4.7	3.2	1.5	1
H-TP10N-14 11	2750	4.7	3.3	1.4	1
H-TP10N-14 12	3000	4.5	3.3	1.2	1
H-TP10N-15 1	250	5.1	2.8	2.3	2
H-TP10N-15 2	500	4.9	3.5	1.4	1
H-TP10N-15 3	750	5.0	3.4	1.6	1
H-TP10N-15 4	1000	4.9	3.5	1.4	1
H-TP10N-15 5	1250	5.0	3.4	1.6	1
H-TP10N-15 6	1500	5.4	3.5	1.9	1
H-TP10N-15 7	1750	5.0	3.0	2	1
H-TP10N-15 8	2000	5.2	3.3	1.9	1
H-TP10N-15 9	2250	4.8	3.3	1.5	1
H-TP10N-15 10	2500	4.6	3.2	1.4	1
H-TP10N-15 11	2750	4.8	3.5	1.3	1
H-TP10N-15 12	3000	4.7	3.4	1.3	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-15 3_Duplicate	750	4.8	3.1	1.7	1
H-TP10N-16 1	250	6.9	5.3	1.6	2
H-TP10N-16 2	500	7.2	5.1	2.1	2
H-TP10N-16 3	750	7.3	5.4	1.9	1
H-TP10N-16 4	1000	7.3	5.3	2	1
H-TP10N-16 5	1250	7.1	5.2	1.9	1
H-TP10N-16 6	1500	7.3	5.2	2.1	1
H-TP10N-16 7	1750	6.8	5.3	1.5	1
H-TP10N-16 8	2000	6.5	5	1.5	1
H-TP10N-16 9	2250	7.8	5.8	2	1
H-TP10N-16 10	2500	6.7	5.1	1.6	1
H-TP10N-16 11	2750	6.5	5	1.5	1
H-TP10N-16 12	3000	6.7	5.1	1.6	1
H-TP10N-16 _Duplicate	3000	6.8	4.8	2	1
H-TP10N-17 1	250	6.3	3	3.3	2
H-TP10N-17 2	500	6.6	3.4	3.2	2
H-TP10N-17 3	750	6.9	4.8	2.1	2
H-TP10N-17 4	1000	7.6	5.3	2.3	1
H-TP10N-17 5	1250	7.1	5.4	1.7	1
H-TP10N-17 6	1500	7.1	5.5	1.6	1
H-TP10N-17 7	1750	7	7.8	-0.8	3
H-TP10N-17 8	2000	6.8	5.2	1.6	1
H-TP10N-17 9	2250	7	7.8	-0.8	3
H-TP10N-17 10	2500	6.9	7.9	-1	3
H-TP10N-17 11	2750	7.1	5.9	1.2	1
H-TP10N-17 12	3000	6.8	7.8	-1	3
H-TP10N-18 1	250	5.8	3.2	2.6	1
H-TP10N-18 2	500	6.9	3.6	3.3	2
H-TP10N-18 3	750	6.3	4.7	1.6	1
H-TP10N-18 4	1000	6.1	4.5	1.6	1
H-TP10N-18 5	1250	6.7	5	1.7	1
H-TP10N-18 6	1500	6.8	5.1	1.7	1
H-TP10N-18 7	1750	6.6	5	1.6	1
H-TP10N-18 8	2000	6.7	5.2	1.5	1
H-TP10N-18 9	2250	6.7	7.6	-0.9	3
H-TP10N-18 10	2500	6.7	5.2	1.5	1
H-TP10N-18 11	2750	6.8	5.1	1.7	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-18 12	3000	6.7	7.3	-0.6	1
H-TP10N-19 1	250	7.5	5.3	2.2	2
H-TP10N-19 2	500	8.1	6	2.1	1
H-TP10N-19 3	750	8.3	5.7	2.6	1
H-TP10N-19 4	1000	8.2	5.5	2.7	1
H-TP10N-19 5	1250	7.8	6.5	1.3	1
H-TP10N-19 6	1500	8.1	5.5	2.6	1
H-TP10N-19 7	1750	7	7.3	-0.3	3
H-TP10N-19 8	2000	7	5.5	1.5	3
H-TP10N-19 9	2250	7.8	6.4	1.4	3
H-TP10N-19 10	2500	8	6.8	1.2	3
H-TP10N-19 11	2750	8.4	7.4	1	3
H-TP10N-19 12	3000	8.1	6.3	1.8	3
H-TP10N-19-Duplicate	2500	8.2	6.9	1.3	3
H-TP10N-20 1	250	6.3	2.7	3.6	2
H-TP10N-20 2	500	6	3.2	2.8	1
H-TP10N-20 3	750	5.8	3.7	2.1	1
H-TP10N-20 4	1000	5.5	3.9	1.6	1
H-TP10N-20 5	1250	5.6	4.4	1.2	1
H-TP10N-20 6	1500	5.6	4.2	1.4	1
H-TP10N-20 7	1750	5.5	4.1	1.4	1
H-TP10N-20 8	2000	5.8	4.4	1.4	1
H-TP10N-20 9	2250	5.9	4.6	1.3	1
H-TP10N-20 10	2500	5.8	4.6	1.2	1
H-TP10N-20 11	2750	5.9	4.6	1.3	1
H-TP10N-20 12	3000	6	4.9	1.1	1
H-TP10N-20 11_Duplicate	2750	5.8	4.7	1.1	1
H-TP10N-20 12_Duplicate	3000	6.4	5.1	1.3	1
H-TP10N-21 1	250	6	2.5	3.5	2
H-TP10N-21 2	500	6.1	3.3	2.8	2
H-TP10N-21 3	750	6.5	3.8	2.7	2
H-TP10N-21 4	1000	6.6	4.5	2.1	1
H-TP10N-21 5	1250	6.5	4.8	1.7	1
H-TP10N-21 6	1500	6.5	4.6	1.9	1
H-TP10N-21 7	1750	6.5	4.6	1.9	1
H-TP10N-21 8	2000	6.6	4.8	1.8	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-21 9	2250	6.5	4.9	1.6	1
H-TP10N-21 10	2500	6.4	4.6	1.8	1
H-TP10N-21 11	2750	6.3	4.5	1.8	1
H-TP10N-21 12	3000	6.4	4.6	1.8	1
H-TP10N-21 11_Duplicate	2750	6.4	4.6	1.8	1
H-TP10N-22 1	250	6.2	2.4	3.8	2
H-TP10N-22 2	500	5.9	3.1	2.8	2
H-TP10N-22 3	750	5.6	3.3	2.3	2
H-TP10N-22 4	1000	5.5	3.3	2.2	2
H-TP10N-22 5	1250	5	3.2	1.8	1
H-TP10N-22 6	1500	5	3.6	1.4	1
H-TP10N-22 7	1750	5	3.5	1.5	1
H-TP10N-22 8	2000	5.8	3	2.8	1
H-TP10N-22 9	2250	5.2	3.5	1.7	1
H-TP10N-22 10	2500	5.6	4.1	1.5	1
H-TP10N-22 9_Duplicate	2250	5.2	3.8	1.4	1
H-TP10N-23 1	250	5.3	3.2	2.1	1
H-TP10N-23 2	500	5.3	3.4	1.9	1
H-TP10N-23 3	750	5	3.2	1.8	1
H-TP10N-23 4	1000	5	3.4	1.6	1
H-TP10N-23 5	1250	4.9	3.3	1.6	1
H-TP10N-23 6	1500	4.9	3.4	1.5	1
H-TP10N-23 4_Duplicate	1000	5	3.3	1.7	1
H-TP10N-24 1	250	6.4	3.5	2.9	2
H-TP10N-24 2	500	7.3	4.8	2.5	1
H-TP10N-24 3	750	7	4.9	2.1	1
H-TP10N-24 4	1000	7.1	3.9	3.2	2
H-TP10N-24 5	1250	6.8	5.1	1.7	1
H-TP10N-24 6	1500	7.1	5.2	1.9	1
H-TP10N-24 7	1750	7.3	5.4	1.9	1
H-TP10N-24 8	2000	6.5	6.8	-0.3	3
H-TP10N-24 9	2250	7	4	3	1
H-TP10N-24 10	2500	7.6	5.5	2.1	2
H-TP10N-24 11	2750	6.6	4.8	1.8	1
H-TP10N-24 12	3000	6.5	5.4	1.1	1
H-TP10N-25 1	250	5.8	3.3	2.5	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-25 2	500	5.8	2.7	3.1	2
H-TP10N-25 3	750	6.5	4.2	2.3	1
H-TP10N-25 4	1000	6	4.4	1.6	1
H-TP10N-25 5	1250	6	4.7	1.3	1
H-TP10N-25 6	1500	6.2	4.8	1.4	1
H-TP10N-25 7	1750	6.2	4.8	1.4	1
H-TP10N-25 8	2000	6.5	5	1.5	1
H-TP10N-25 9	2250	6.3	4.9	1.4	1
H-TP10N-25 10	2500	6.3	4.7	1.6	1
H-TP10N-25 11	2750	6.4	4.9	1.5	1
H-TP10N-25 12	3000	6.4	4.8	1.6	1
H-TP10N-26 1	250	6	2.5	3.5	2
H-TP10N-26 2	500	6.1	3.3	2.8	2
H-TP10N-26 3	750	6.5	3.8	2.7	2
H-TP10N-26 4	1000	6.6	4.5	2.1	1
H-TP10N-26 5	1250	6.5	4.8	1.7	1
H-TP10N-26 6	1500	6.5	4.6	1.9	1
H-TP10N-26 7	1750	6.5	4.6	1.9	1
H-TP10N-26 8	2000	6.6	4.8	1.8	1
H-TP10N-26 9	2250	6.5	4.9	1.6	1
H-TP10N-26 10	2500	6.4	4.6	1.8	1
H-TP10N-26 11	2750	6.3	4.5	1.8	1
H-TP10N-26 12	3000	6.4	4.6	1.8	1
H-TP10N-27 1	250	6.4	4.6	1.8	1
H-TP10N-27 2	500	6.2	2.4	3.8	2
H-TP10N-27 3	750	5.9	3.1	2.8	2
H-TP10N-27 4	1000	5.6	3.3	2.3	2
H-TP10N-27 5	1250	5.5	3.3	2.2	2
H-TP10N-27 6	1500	5	3.2	1.8	1
H-TP10N-27 7	1750	5	3.6	1.4	1
H-TP10N-27 8	2000	5	3.5	1.5	1
H-TP10N-27 9	2250	5.8	3	2.8	1
H-TP10N-27 10	2500	5.2	3.5	1.7	1
H-TP10N-27 11	2750	5.6	4.1	1.5	1
H-TP10N-27 12	3000	5.2	3.8	1.4	1
H-TP10N-28 1	250	5.3	3.2	2.1	1
H-TP10N-28 2	500	5.3	3.4	1.9	1
H-TP10N-28 3	750	5	3.2	1.8	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10N-28 4	1000	5	3.4	1.6	1
H-TP10N-28 5	1250	4.9	3.3	1.6	1
H-TP10N-28 6	1500	4.9	3.4	1.5	1
H-TP10N-28 7	1750	5	3.3	1.7	1
H-TP10N-28 8	2000	6.4	3.5	2.9	2
H-TP10N-28 9	2250	7.3	4.8	2.5	1
H-TP10N-28 10	2500	7	4.9	2.1	1
H-TP10N-28 11	2750	7.1	3.9	3.2	2
H-TP10N-28 12	3000	6.8	5.1	1.7	1
H-TP10N-28 4_Duplicate	1000	7.1	5.2	1.9	1
H-TP10N-29 1	250	7.3	5.4	1.9	1
H-TP10N-29 2	500	6.5	6.8	-0.3	3
H-TP10N-29 3	750	7	4	3	1
H-TP10N-29 4	1000	7.6	5.5	2.1	2
H-TP10N-29 5	1250	6.6	4.8	1.8	1
H-TP10N-29 6	1500	6.5	5.4	1.1	1
H-TP10N-29 7	1750	5.8	3.3	2.5	1
H-TP10N-29 8	2000	5.8	2.7	3.1	2
H-TP10N-29 9	2250	6.5	4.2	2.3	1
H-TP10N-29 10	2500	6	4.4	1.6	1
H-TP10N-29 11	2750	6	4.7	1.3	1
H-TP10N-29 12	3000	6.2	4.8	1.4	1
H-TP10N-30 1	250	6.2	4.8	1.4	1
H-TP10N-30 2	500	6.5	5	1.5	1
H-TP10N-30 3	750	6.3	4.9	1.4	1
H-TP10N-30 4	1000	6.3	4.7	1.6	1
H-TP10N-30 5	1250	6.4	4.9	1.5	1
H-TP10N-30 6	1500	6.4	4.8	1.6	1
H-TP10B-01 1	250	5.2	2.2	3	2
H-TP10B-01 2	500	5.8	3.8	2	2
H-TP10B-01 3	750	5.8	4.1	1.7	2
H-TP10B-01 4	1000	5.9	4.3	1.6	1
H-TP10B-01 5	1250	6.3	4.3	2	1
H-TP10B-01 6	1500	6.3	4.5	1.8	1
H-TP10B-01 7	1750	6.3	4.5	1.8	1
H-TP10B-01 8	2000	6	4.4	1.6	1
H-TP10B-01 9	2250	6.1	4.6	1.5	1
H-TP10B-01 10	2500	6.2	4.6	1.6	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-01 11	2750	6.6	4.6	2	1
H-TP10B-01 12	3000	6.5	4.7	1.8	1
H-TP10B-01 Duplicated	1000	6.4	4.5	1.9	1
H-TP10B-02 1	250	5.4	2.4	3	2
H-TP10B-02 2	500	5.5	3.7	1.8	1
H-TP10B-02 3	750	5.9	4.1	1.8	1
H-TP10B-02 4	1000	6	4.3	1.7	1
H-TP10B-02 5	1250	5.7	4.3	1.4	1
H-TP10B-02 6	1500	6.1	4.4	1.7	1
H-TP10B-02 7	1750	6.2	4.3	1.9	1
H-TP10B-02 8	2000	6.2	4.4	1.8	1
H-TP10B-02 9	2250	6.2	4.3	1.9	1
H-TP10B-02 10	2500	6	4.3	1.7	1
H-TP10B-02 11	2750	6.1	4.2	1.9	1
H-TP10B-02 12	3000	6.2	4.4	1.8	1
H-TP10B-03 1	250	5.8	2.4	3.4	2
H-TP10B-03 2	500	5.9	3.8	2.1	1
H-TP10B-03 3	750	5.8	4	1.8	1
H-TP10B-03 4	1000	5.9	4	1.9	1
H-TP10B-03 5	1250	6.2	4.3	1.9	1
H-TP10B-03 6	1500	6	4.4	1.6	1
H-TP10B-03 7	1750	6.1	4.4	1.7	1
H-TP10B-03 8	2000	6.2	4.2	2	1
H-TP10B-03 9	2250	6.3	4.3	2	1
H-TP10B-03 10	2500	6.1	4.2	1.9	1
H-TP10B-03 11	2750	5.9	4.3	1.6	1
H-TP10B-03 12	3000	5.9	4.2	1.7	1
H-TP10B-03 Duplicated	1500	6.3	4.4	1.9	1
H-TP10B-04 1	250	5.9	2.4	3.5	2
H-TP10B-04 2	500	6.1	3.6	2.5	1
H-TP10B-04 3	750	6.2	4.4	1.8	1
H-TP10B-04 4	1000	6.2	4.4	1.8	1
H-TP10B-04 5	1250	6.3	4.4	1.9	1
H-TP10B-04 6	1500	6.3	4.4	1.9	1
H-TP10B-04 7	1750	6.2	4.4	1.8	1
H-TP10B-04 8	2000	6.3	4.4	1.9	1
H-TP10B-04 9	2250	6.4	6.6	-0.2	3

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-04 10	2500	6.3	5.4	0.9	3
H-TP10B-04 11	2750	6.5	4.6	1.9	1
H-TP10B-04 12	3000	6.4	5.1	1.3	3
H-TP10B-04 Duplicated	1500	6.2	4.5	1.7	1
H-TP10B-05 1	250	6	2.5	3.5	2
H-TP10B-05 2	500	5.9	4	1.9	1
H-TP10B-05 3	750	6	4.3	1.7	1
H-TP10B-05 4	1000	5.9	3.8	2.1	1
H-TP10B-05 5	1250	6.2	4.4	1.8	1
H-TP10B-05 6	1500	6.3	4.3	2	1
H-TP10B-05 7	1750	6.3	4.4	1.9	1
H-TP10B-05 8	2000	6.2	4.5	1.7	1
H-TP10B-05 9	2250	6.3	4.9	1.4	1
H-TP10B-05 10	2500	7	5	2	1
H-TP10B-05 11	2750	7.1	5	2.1	1
H-TP10B-05 12	3000	7.1	5.1	2	1
H-TP10B-06 1	250	6.5	2.6	3.9	2
H-TP10B-06 2	500	6.2	3.5	2.7	2
H-TP10B-06 3	750	6.3	4	2.3	1
H-TP10B-06 4	1000	6.2	3.9	2.3	1
H-TP10B-06 5	1250	6.5	4.6	1.9	2
H-TP10B-06 6	1500	6.6	4.5	2.1	1
H-TP10B-06 7	1750	6.6	4.5	2.1	2
H-TP10B-06 8	2000	6.6	4.5	2.1	2
H-TP10B-06 9	2250	6.4	4.5	1.9	2
H-TP10B-06 10	2500	6.4	4.4	2	1
H-TP10B-06 11	2750	6.4	4.3	2.1	2
H-TP10B-06 12	3000	6.1	4.2	1.9	1
H-TP10B-06 Duplicated	1000	6.4	4.5	1.9	1
H-TP10B-07 1	250	5.9	2.7	3.2	2
H-TP10B-07 2	500	5.3	3.5	1.8	2
H-TP10B-07 3	750	5.9	3.9	2	1
H-TP10B-07 4	1000	5.7	4	1.7	1
H-TP10B-07 5	1250	6	4.3	1.7	1
H-TP10B-07 6	1500	5.5	4.3	1.2	1
H-TP10B-07 7	1750	6.1	4.3	1.8	1
H-TP10B-07 8	2000	6.1	4.3	1.8	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-07 9	2250	5.9	4.4	1.5	1
H-TP10B-07 10	2500	5.5	4.4	1.1	1
H-TP10B-07 11	2750	5.4	4.3	1.1	1
H-TP10B-07 12	3000	6.4	4.6	1.8	1
H-TP10B-08 1	250	6.9	3.3	3.6	2
H-TP10B-08 2	500	4.8	3.4	1.4	2
H-TP10B-08 3	750	5.6	4.2	1.4	1
H-TP10B-08 4	1000	6.3	4.2	2.1	1
H-TP10B-08 5	1250	6.4	4.4	2	1
H-TP10B-08 6	1500	5.8	4.2	1.6	1
H-TP10B-08 7	1750	6.5	4.4	2.1	1
H-TP10B-08 8	2000	6.4	4.4	2	1
H-TP10B-08 9	2250	6.4	4.4	2	1
H-TP10B-08 10	2500	6.4	4.3	2.1	1
H-TP10B-08 11	2750	6.4	4.2	2.2	1
H-TP10B-08 12	3000	6.7	4.8	1.9	2
H-TP10B-08 Duplicated	1750	6.5	4.4	2.1	1
H-TP10B-09 1	250	5.1	2.3	2.8	2
H-TP10B-09 2	500	5.7	3.4	2.3	1
H-TP10B-09 3	750	6.1	4.3	1.8	1
H-TP10B-09 4	1000	6.3	4.4	1.9	1
H-TP10B-09 5	1250	6.6	4.7	1.9	1
H-TP10B-09 6	1500	7	4.9	2.1	1
H-TP10B-09 7	1750	6.4	4.6	1.8	1
H-TP10B-09 8	2000	6.8	4.7	2.1	1
H-TP10B-09 9	2250	7.6	5.2	2.4	1
H-TP10B-09 10	2500	8	5.4	2.6	1
H-TP10B-09 11	2750	7.8	5.4	2.4	1
H-TP10B-09 12	3000	7.9	5.5	2.4	1
H-TP10B-09 Duplicated	1250	7.4	5.1	2.3	1
H-TP10B-10 1	250	6.3	3.2	3.1	2
H-TP10B-10 2	500	4.7	3.1	1.6	1
H-TP10B-10 3	750	5.3	3.8	1.5	1
H-TP10B-10 4	1000	6	4	2	1
H-TP10B-10 5	1250	6.2	4	2.2	1
H-TP10B-10 6	1500	6.1	4	2.1	1
H-TP10B-10 7	1750	6	3.9	2.1	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-10 8	2000	5.8	3.9	1.9	1
H-TP10B-10 9	2250	5.9	4	1.9	1
H-TP10B-10 10	2500	5.9	4.2	1.7	1
H-TP10B-10 11	2750	6	4.2	1.8	1
H-TP10B-10 12	3000	6	4.4	1.6	1
H-TP10B-11 1	250	5.2	2.7	2.5	1
H-TP10B-11 2	500	5.3	3.3	2	1
H-TP10B-11 3	750	5.6	3.6	2	1
H-TP10B-11 4	1000	6	4	2	1
H-TP10B-11 5	1250	6.1	4	2.1	1
H-TP10B-11 6	1500	6	4.2	1.8	1
H-TP10B-11 7	1750	6.1	4	2.1	1
H-TP10B-11 8	2000	5.6	3.8	1.8	1
H-TP10B-11 9	2250	5.7	3.9	1.8	1
H-TP10B-11 10	2500	5.8	3.9	1.9	1
H-TP10B-11 11	2750	5.4	3.8	1.6	1
H-TP10B-11 12	3000	5.4	3.8	1.6	1
H-TP10B-11 Duplicated	1500	6.1	4.2	1.9	1
H-TP10B-12 1	250	7	4.9	2.1	1
H-TP10B-12 2	500	7.2	5.3	1.9	1
H-TP10B-12 3	750	7.2	5.3	1.9	1
H-TP10B-12 4	1000	7.2	5.3	1.9	1
H-TP10B-12 5	1250	7.2	5.1	2.1	1
H-TP10B-12 6	1500	7.1	5.2	1.9	1
H-TP10B-12 7	1750	8	5.6	2.4	1
H-TP10B-12 8	2000	7.5	5.2	2.3	1
H-TP10B-12 9	2250	7.2	5.3	1.9	1
H-TP10B-12 10	2500	7	5.2	1.8	1
H-TP10B-12 11	2750	7.8	5.4	2.4	1
H-TP10B-12 12	3000	7.4	5.2	2.2	1
H-TP10B-12 Duplicated	2000	7.3	5.3	2	1
H-TP10B-13 1	250	6.8	4.9	1.9	1
H-TP10B-13 2	500	6.8	5	1.8	1
H-TP10B-13 3	750	6.8	4.9	1.9	1
H-TP10B-13 4	1000	7.1	5.2	1.9	1
H-TP10B-13 5	1250	7.1	5	2.1	1
H-TP10B-13 6	1500	7.2	5.2	2	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-13 7	1750	7.2	5.4	1.8	1
H-TP10B-13 8	2000	7.2	5.2	2	1
H-TP10B-13 9	2250	7.4	5.3	2.1	1
H-TP10B-13 10	2500	7.4	5.3	2.1	1
H-TP10B-13 11	2750	7.2	4.9	2.3	1
H-TP10B-13 12	3000	7.1	5	2.1	1
H-TP10B-13 Duplicated	1250	7.1	5.1	2	1
H-TP10B-14 1	250	5.5	3.6	1.9	1
H-TP10B-14 2	500	4.9	3.1	1.8	1
H-TP10B-14 3	750	5.6	4.1	1.5	1
H-TP10B-14 4	1000	5.7	3.6	2.1	1
H-TP10B-14 5	1250	5.9	4	1.9	1
H-TP10B-14 6	1500	6.1	4.1	2	1
H-TP10B-14 7	1750	6.1	4.4	1.7	1
H-TP10B-14 8	2000	6.2	4.2	2	1
H-TP10B-14 9	2250	6.5	4.4	2.1	1
H-TP10B-14 10	2500	6.4	4.5	1.9	1
H-TP10B-14 11	2750	6.3	4.3	2	1
H-TP10B-14 12	3000	5.9	4.1	1.8	1
H-TP10B-15 1	250	6.6	4.8	1.8	1
H-TP10B-15 2	500	6.7	4.6	2.1	1
H-TP10B-15 3	750	6.7	4.8	1.9	1
H-TP10B-15 4	1000	6.9	5.2	1.7	1
H-TP10B-15 5	1250	7	5	2	1
H-TP10B-15 6	1500	7	5.3	1.7	1
H-TP10B-15 7	1750	7.6	5.6	2	1
H-TP10B-15 8	2000	6.9	5.2	1.7	1
H-TP10B-15 9	2250	7.4	5.6	1.8	1
H-TP10B-15 10	2500	7.8	5.3	2.5	1
H-TP10B-15 11	2750	7.6	5.3	2.3	1
H-TP10B-15 12	3000	7.4	5	2.4	1
H-TP10B-16 1	250	7.3	5	2.3	1
H-TP10B-16 2	500	7.5	5.1	2.4	1
H-TP10B-16 3	750	7.4	4.9	2.5	1
H-TP10B-16 4	1000	7.4	5.1	2.3	1
H-TP10B-16 5	1250	7.6	5	2.6	1
H-TP10B-16 6	1500	7.4	5.1	2.3	1
H-TP10B-16 7	1750	7.6	5.2	2.4	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-16 8	2000	7.7	5.5	2.2	1
H-TP10B-16 9	2250	7.6	5.1	2.5	1
H-TP10B-16 10	2500	7.6	5	2.6	1
H-TP10B-16 11	2750	7.7	5	2.7	1
H-TP10B-16 12	3000	7.5	4.9	2.6	1
H-TP10B-17 1	250	7.3	5	2.3	1
H-TP10B-17 2	500	7.1	4.6	2.5	1
H-TP10B-17 3	750	7.1	4.8	2.3	1
H-TP10B-17 4	1000	7.3	4.9	2.4	1
H-TP10B-17 5	1250	7.1	5	2.1	1
H-TP10B-17 6	1500	7	4.7	2.3	1
H-TP10B-17 7	1750	7.1	4.8	2.3	1
H-TP10B-17 8	2000	7.6	5.2	2.4	1
H-TP10B-17 9	2250	7.7	5.3	2.4	1
H-TP10B-17 10	2500	7.6	5.1	2.5	2
H-TP10B-17 11	2750	7.3	4.7	2.6	2
H-TP10B-17 12	3000	7.2	4.7	2.5	2
H-TP10B-17 Duplicated	1500	6.9	4.7	2.2	1
H-TP10B-18 1	250	6.4	4.5	1.9	1
H-TP10B-18 2	500	6.4	4.4	2	1
H-TP10B-18 3	750	6.7	4.7	2	1
H-TP10B-18 4	1000	6.6	4.5	2.1	1
H-TP10B-18 5	1250	7.1	5	2.1	1
H-TP10B-18 6	1500	7	4.8	2.2	1
H-TP10B-18 7	1750	7	4.8	2.2	1
H-TP10B-18 8	2000	7.2	2.4	4.8	3
H-TP10B-18 9	2250	7.1	4.9	2.2	1
H-TP10B-18 10	2500	7.3	4.7	2.6	1
H-TP10B-18 11	2750	7	4.6	2.4	1
H-TP10B-18 12	3000	7.1	4.8	2.3	1
H-TP10B-19 1	250	7.5	5	2.5	1
H-TP10B-19 2	500	7.4	4.9	2.5	1
H-TP10B-19 3	750	7.7	4.8	2.9	1
H-TP10B-19 4	1000	7.6	5	2.6	1
H-TP10B-19 5	1250	7.6	5.3	2.3	1
H-TP10B-19 6	1500	7.7	5.3	2.4	1
H-TP10B-19 7	1750	7.8	5.4	2.4	1
H-TP10B-19 8	2000	7.6	5.2	2.4	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-19 9	2250	7.4	5.3	2.1	1
H-TP10B-19 10	2500	7.3	4.9	2.4	1
H-TP10B-19 11	2750	7.9	5.2	2.7	1
H-TP10B-19 12	3000	7.1	4.7	2.4	1
H-TP10B-19 Duplicated	500	7.4	5	2.4	1
H-TP10B-20 1	250	7.4	5.2	2.2	1
H-TP10B-20 2	500	7.2	4.8	2.4	1
H-TP10B-20 3	750	7.3	5.1	2.2	1
H-TP10B-20 4	1000	7.2	4.9	2.3	1
H-TP10B-20 5	1250	8	2.9	5.1	2
H-TP10B-20 6	1500	8.1	2.8	5.3	3
H-TP10B-20 7	1750	7.6	4.5	3.1	1
H-TP10B-20 8	2000	7.6	4.6	3	1
H-TP10B-20 9	2250	7.4	4.9	2.5	1
H-TP10B-20 10	2500	7.3	4.7	2.6	1
H-TP10B-20 11	2750	7.5	4.9	2.6	1
H-TP10B-20 12	3000	7.1	4.8	2.3	1
H-TP10B-21 1	250	5.4	3.1	2.3	2
H-TP10B-21 2	500	6.7	4.3	2.4	1
H-TP10B-21 3	750	5.5	3.9	1.6	1
H-TP10B-21 4	1000	5.7	4.1	1.6	1
H-TP10B-21 5	1250	5.9	4.2	1.7	1
H-TP10B-21 6	1500	5.9	4.3	1.6	1
H-TP10B-21 7	1750	5.9	4.3	1.6	1
H-TP10B-21 8	2000	5.8	4.3	1.5	1
H-TP10B-21 9	2250	5.6	4.4	1.2	1
H-TP10B-21 10	2500	5.6	4.4	1.2	1
H-TP10B-21 11	2750	6.2	4.3	1.9	1
H-TP10B-21 12	3000	5.9	4.3	1.6	1
H-TP10B-21 Duplicated	1000	6.9	4.4	2.5	1
H-TP10B-22 1	250	7.2	5.1	2.1	1
H-TP10B-22 2	500	7.4	5.1	2.3	1
H-TP10B-22 3	750	7.3	4.9	2.4	1
H-TP10B-22 4	1000	7.1	5	2.1	1
H-TP10B-22 5	1250	7.4	5.1	2.3	1
H-TP10B-22 6	1500	7	5	2	1
H-TP10B-22 7	1750	7.3	5.2	2.1	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-22 8	2000	7.7	5.4	2.3	1
H-TP10B-22 9	2250	7	5	2	1
H-TP10B-22 10	2500	7	5.1	1.9	1
H-TP10B-22 11	2750	6.9	4.7	2.2	1
H-TP10B-22 12	3000	6.9	4.9	2	1
H-TP10B-23 1	250	7.3	5	2.3	1
H-TP10B-23 2	500	7.2	5	2.2	1
H-TP10B-23 3	750	7	4.9	2.1	1
H-TP10B-23 4	1000	7.1	4.9	2.2	1
H-TP10B-23 5	1250	7.4	5.1	2.3	1
H-TP10B-23 6	1500	7.1	5	2.1	1
H-TP10B-23 7	1750	7	5	2	1
H-TP10B-23 8	2000	7.1	4.9	2.2	1
H-TP10B-23 9	2250	7.6	5.1	2.5	1
H-TP10B-23 10	2500	7.8	5.2	2.6	1
H-TP10B-23 11	2750	7.7	5.5	2.2	1
H-TP10B-23 12	3000	7.4	5.5	1.9	1
H-TP10B-23 Duplicated	2250	7	4.9	2.1	1
H-TP10B-24 1	250	6.7	4.9	1.8	1
H-TP10B-24 2	500	7.3	5.1	2.2	1
H-TP10B-24 3	750	7.3	4.9	2.4	1
H-TP10B-24 4	1000	7.4	5.1	2.3	1
H-TP10B-24 5	1250	7.5	5.2	2.3	1
H-TP10B-24 6	1500	7.9	5.4	2.5	1
H-TP10B-24 7	1750	7.4	5.3	2.1	1
H-TP10B-24 8	2000	7.5	5.4	2.1	1
H-TP10B-24 9	2250	7.6	5.3	2.3	1
H-TP10B-24 10	2500	7.2	5.2	2	1
H-TP10B-24 11	2750	7.5	5	2.5	1
H-TP10B-24 12	3000	7.5	5.2	2.3	1
H-TP10B-25 1	250	6.7	4.8	1.9	1
H-TP10B-25 2	500	6.9	5.1	1.8	1
H-TP10B-25 3	750	6.9	5.2	1.7	1
H-TP10B-25 4	1000	6.9	5.2	1.7	1
H-TP10B-25 5	1250	6.8	5	1.8	1
H-TP10B-25 6	1500	7.2	5.1	2.1	1
H-TP10B-25 7	1750	7.5	5.4	2.1	1
H-TP10B-25 8	2000	7.2	5.1	2.1	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-25 9	2250	7	5.1	1.9	1
H-TP10B-25 10	2500	7.1	5.1	2	1
H-TP10B-25 11	2750	7.2	5	2.2	1
H-TP10B-25 12	3000	7.2	5	2.2	1
H-TP10B-25 Duplicated	2500	7.2	5.2	2	1
H-TP10B-26 1	250	6.2	2.9	3.3	2
H-TP10B-26 2	500	5.4	3.6	1.8	1
H-TP10B-26 3	750	5.9	4	1.9	1
H-TP10B-26 4	1000	5.8	3.9	1.9	1
H-TP10B-26 5	1250	6	4.3	1.7	1
H-TP10B-26 6	1500	6	4.4	1.6	1
H-TP10B-26 7	1750	6.4	4.4	2	1
H-TP10B-26 8	2000	6.4	4.4	2	1
H-TP10B-26 9	2250	6.5	4.7	1.8	1
H-TP10B-26 10	2500	7.1	5.2	1.9	1
H-TP10B-26 11	2750	5.4	4.7	0.7	1
H-TP10B-26 12	3000	7.4	5.3	2.1	1
H-TP10B-26 Duplicated	1250	6.1	4.5	1.6	1
H-TP10B-27 1	250	6.3	4.6	1.7	1
H-TP10B-27 2	500	6.2	4.8	1.4	1
H-TP10B-27 3	750	6.5	4.8	1.7	1
H-TP10B-27 4	1000	6.5	4.8	1.7	1
H-TP10B-27 5	1250	6.7	4.7	2	1
H-TP10B-27 6	1500	6.5	4.9	1.6	1
H-TP10B-27 7	1750	6.9	4.3	2.6	1
H-TP10B-27 8	2000	6.9	5.4	1.5	1
H-TP10B-27 9	2250	8.2	6.2	2	2
H-TP10B-27 10	2500	7.8	5.4	2.4	2
H-TP10B-27 11	2750	7.2	5.1	2.1	1
H-TP10B-27 12	3000	7.1	4.9	2.2	1
H-TP10B-27 Duplicated	750	6.6	4.6	2	1
H-TP10B-28 1	250	6.4	2.5	3.9	2
H-TP10B-28 2	500	5.6	3	2.6	2
H-TP10B-28 3	750	6.3	4.3	2	1
H-TP10B-28 4	1000	6.3	4.2	2.1	1
H-TP10B-28 5	1250	6.5	4.3	2.2	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-TP10B-28 6	1500	6.7	4.4	2.3	1
H-TP10B-28 7	1750	6.8	4.6	2.2	1
H-TP10B-28 8	2000	6.9	5	1.9	1
H-TP10B-28 9	2250	6.7	4.9	1.8	1
H-TP10B-28 10	2500	6.9	5.1	1.8	1
H-TP10B-28 11	2750	7	4.8	2.2	1
H-TP10B-28 12	3000	7.2	5	2.2	1
H-MW-01: 1	250	6.7	3.6	3.1	2
H-MW-01: 2	500	7.8	5.2	2.6	1
H-MW-01: 3	750	8.3	5.3	3	1
H-MW-01: 4	1000	8.5	5.4	3.1	1
H-MW-01: 5	1250	8.6	5.4	3.2	1
H-MW02: 2	500	8.2	5.5	2.7	1
H-MW02: 3	750	8.4	5.5	2.9	1
H-MW02: 4	1000	8.5	5.3	3.2	1
H-MW02: 5	1250	8	5.6	2.4	1
H-MW02: 6	1500	7.7	5.3	2.4	1
H-MW-03: 3	750	4.6	2.8	1.8	1
H-MW-03: 4	1000	5.2	3.9	1.3	1
H-MW-03: 5	1250	6.6	3.2	3.4	1
H-MW-03: 6	1500	4.9	2.8	2.1	1
H-MW-04: 2	500	7.2	4.7	2.5	1
H-MW-04: 3	750	6.8	4	2.8	1
H-MW-04: 4	1000	7.3	6	1.3	1
H-MW-04: 5	1250	6	3.6	1.9	2
H-MW-04: 6	1500	6.3	4.2	2.1	1
H-MW-05: 2	500	6	2.9	3.1	2
H-MW-05: 3	750	5.6	3.5	2.1	2
H-MW-05: 4	1000	6.3	4.6	1.7	1
H-MW-05: 5	1250	6.7	5.3	1.4	1
H-MW-06: 2	500	5.8	3.4	2.4	2
H-MW-06: 3	750	5.5	3.7	1.8	2
H-MW-06: 4	1000	5.3	4	1.3	1
H-MW-06: 5	1250	5.1	4	1.1	1
H-MW-06: 6	1500	5.6	4.4	1.2	1
H-MW-07: 2	500	5.5	2.6	2.9	1
H-MW-07: 3	750	5.4	3.3	2.1	1
H-MW-07: 4	1000	5	3.6	1.4	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-MW-07: 5	1250	4.9	3.9	1	1
H-MW-08: 2	500	6.2	2.4	3.8	3
H-MW-08: 3	750	6.8	3.9	2.9	1
H-MW-08: 4	1000	5.8	3.8	2	1
H-MW-08: 5	1250	5.1	3.5	1.6	1
H-MW-08: 6	1500	5.2	3.8	1.4	1
H-MW-09: 1	250	8	6	2	3
H-MW-09: 2	500	7.3	5.3	2	3
H-MW-09: 3	750	6.6	2.7	3.9	2
H-MW-09: 4	1000	7.9	5.9	2	3
H-MW-09: 5	1250	8.2	5.9	2.3	1
H-MW-10: 3	750	5.4	3.2	2.2	1
H-MW-10: 4	1000	5	3.7	1.3	1
H-MW-10: 5	1250	4.8	3.9	0.9	1
H-MW-10: 6	1500	4.9	4	0.9	1
H-MW-11: 2	500	6.6	3.8	2.8	1
H-MW-11: 3	750	5.4	3.8	1.6	1
H-MW-11: 4	1000	5.3	3.8	1.5	1
H-MW-11: 5	1250	5.5	4	1.5	1
H-MW-11: 6	1500	5.5	4.3	1.2	1
H-MW-12: 2	500	5.7	3.6	2.1	1
H-MW-12: 3	750	6	4.6	1.4	1
H-MW-12: 4	1000	6	4.6	1.4	1
H-MW-12: 5	1250	6.2	5	1.2	1
H-MW-12: 6	1500	6.3	5	1.3	1
H-MW-13: 4	1000	5.5	3.2	2.3	1
H-MW-13: 5	1250	4.9	3.5	1.4	1
H-MW-13: 6	1500	4.8	3.4	1.4	1
H-MW-14: 2	500	5.6	3.4	2.2	1
H-MW-14: 3	750	5.4	3.7	1.7	1
H-MW-14: 4	1000	5.3	3.5	1.8	1
H-MW-14: 5	1250	5.3	3.7	1.6	1
H-MW-14: 6	1500	5.4	4	1.4	1
H-MW-15: 3	750	6.2	3.1	3.1	1
H-MW-15: 4	1000	6.2	3.2	3	1
H-MW-15: 5	1250	6	4	2	1
H-MW-15: 6	1500	5.8	4.3	1.5	1
H-MW-16: 2	500	5.7	3.1	2.6	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-MW-16: 3	750	5.6	3.4	2.2	1
H-MW-16: 4	1000	5	3.1	1.9	1
H-MW-16: 5	1250	5	3.8	1.2	1
H-MW-16: 6	1500	5.2	4.2	1	1
H-MW-17: 1	250	6.1	3	3.1	2
H-MW-17: 2	500	6.9	2.8	4.1	2
H-MW-17: 3	750	6.6	3.9	2.7	2
H-MW-17: 4	1000	8	6.3	1.7	2
H-MW-17: 5	1250	7.9	5.7	2.2	1
H-MW-17: 6	1500	7.3	5.4	1.9	1
H-MW-17: 7	1750	7.4	5.4	2	1
H-MW-17: 8	2000	7.3	5.5	1.8	1
H-MW-17: 9	2250	7.2	5.4	1.8	1
H-MW-17: 10	2500	6.7	5.4	1.3	1
H-MW-18: 1	250	6.9	3.2	3.7	2
H-MW-18: 2	500	7.8	5.3	2.5	1
H-MW-18: 3	750	8.7	5.6	3.1	1
H-MW-18: 4	1000	8.6	5.5	3.1	1
H-MW-18: 5	1250	8.4	5.6	2.8	1
H-MW-18: 6	1500	8.2	5.3	2.9	1
H-MW-18: 7	1750	7.7	5.5	2.2	1
H-MW-18: 8	2000	7.2	5.2	2	1
H-MW-18: 9	2250	7.1	5.3	1.8	1
H-MW-18: 10	2500	6.8	4.9	1.9	1
H-MW-19: 2	500	6.2	3.7	2.5	2
H-MW-19: 3	750	5.8	4	1.8	1
H-MW-19: 4	1000	5.7	4.2	1.5	1
H-MW-19: 5	1250	5.9	4.3	1.6	1
H-MW-19: 6	1500	6	4.9	1.1	1
H-MW-19: 7	1750	6.3	4.9	1.4	1
H-MW-19: 8	2000	6.8	5.3	1.5	1
H-MW-19: 9	2250	6.8	5.3	1.5	1
H-MW-19: 10	2500	6.7	5.4	1.3	1
H-MW-20: 1	250	6.3	3.5	2.8	1
H-MW-20: 2	500	6	3.8	2.2	1
H-MW-20: 3	750	5.4	3.6	1.8	1
H-MW-20: 4	1000	5.2	3.6	1.6	1
H-MW-20: 5	1250	5	3.6	1.4	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-MW-20: 6	1500	5.1	3.7	1.4	1
H-MW-20: 7	1750	5.1	3.7	1.4	1
H-MW-20: 8	2000	5.5	4.3	1.2	1
H-MW-20: 9	2250	5.8	4.5	1.3	1
H-MW-20: 10	2500	5.9	4.6	1.3	1
MW-21-1	500	6.7	3.7	3	2
MW-21-2	1000	6	7.4	-1.4	4
MW-22-1	500	5.3	3.3	2	1
MW-22-2	1000	5	3.7	1.3	1
DS-1	1000	5	3.9	1.1	1
MW-22-3	1500	5	4	1	1
MW-23-1	500	6.1	3.6	2.5	2
MW-23-2	1000	6.1	4.4	1.7	1
MW-23-3	1500	6.8	5.4	1.4	1
MW-24-1	500	6.3	3.2	3.1	2
MW-24-2	1000	5.4	3.9	1.5	1
MW-24-3	1500	5.8	4.5	1.3	1
MW-25-1	500	6.4	3.3	3.1	2
MW-25-2	1000	6.7	5	1.7	1
MW-25-3	1500	6.9	5.1	1.8	1
MW-26-1	500	4.8	3.5	1.3	1
MW-26-2	1000	6.6	4.6	2	1
MW-26-3	1500	7.2	5.6	1.6	1
MW-27-1	500	6.9	5	1.9	2
MW-27-2	1000	5.7	4.3	1.4	1
MW-27-3	1500	5.3	4.4	0.9	1
MW-28-1	500	7.4	7.6	-0.2	3
MW-28-2	1000	6	7.8	-1.8	3
MW-28-3	1500	6.2	4.6	1.6	1
H-MW-29-2	1000	5.3	3.1	2.2	1
MW-29-3	1500	5.1	3.7	1.4	1
MW-30-2	1000	6.2	2.8	3.4	2
MW-30-3	1500	5.3	3.4	1.9	1
MW-31-1	500	5.7	3.5	2.2	1
MW-31-2	1000	5.9	4.3	1.6	1
MW-31-3	1500	5.5	4.3	1.2	1
MW-32-1	500	5	3.5	1.5	1
MW-32-2	1000	5.6	3.9	1.7	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
DS-2	1000	5.5	3.7	1.8	2
MW-32-3	1500	5.8	4	1.8	1
MW-33-1	500	5.8	3	2.8	2
MW-33-2	1000	6.7	4.9	1.8	1
MW-33-3	1500	5.6	4.3	1.3	1
MW-34-1	500	5.8	2.9	2.9	2
MW-34-2	1000	5	3.6	1.4	1
MW-34-3	1500	4.6	3.5	1.1	1
MW-35-1	500	5.6	3	2.6	2
MW-35-2	1000	5.4	3.5	1.9	1
MW-35-3	1500	5.2	3.7	1.5	1
MW-36-1	500	5	3.7	1.3	1
H-MW-36A-1	500	5.1	2.4	2.7	2
H-MW-36A-2	1000	5.3	3.3	2	1
DP-13	1000	5.1	2.5	2.6	2
H-MW-36A-3	1500	5.2	2.4	2.8	2
MW-37-1	500	5.6	3.5	2.1	2
MW-37-2	1000	5.2	3.5	1.7	2
MW-37-3	1500	5.8	4	1.8	1
MW-38-1	500	5.1	4	1.1	1
MW-38-2	1000	7.1	4	3.1	1
MW-38-3	1500	6.5	4.2	2.3	2
MW-39-1	500	5.1	2.4	2.7	2
MW-39-2	1000	6.3	4	2.3	1
MW-39-3	1500	5.3	3.4	1.9	1
H-DP10B-01-:1	500	6.2	3.1	3.1	2
H-DP10B-01-:2	1000	6.4	3.5	2.9	2
DP-04	1000	6.7	3.6	3.1	2
H-DP10B-01-:3	1500	6.2	4.2	2	1
H-DP10B-01-:4	2000	6.2	4.4	1.8	1
H-DP10B-01-:5	2500	6.2	4.4	1.8	1
H-DP10B-01-:6	3000	6.4	4.4	2	1
H-DP10B-01-:7	3500	6.4	4.5	1.9	1
H-DP10B-01-:8	4000	6.6	4.6	2	1
H-DP10B-01-:9	4500	6.6	4.4	2.2	1
H-DP10B-01-:10	5000	6.6	4.5	2.1	1
H-DP10B-02-:1	500	6.6	3.2	3.4	2
H-DP10B-02-:2	1000	6.8	4	2.8	2

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-DP10B-02-:3	1500	6.4	3.8	2.6	2
H-DP10B-02-:4	2000	6.5	3.9	2.6	2
H-DP10B-02-:5	2500	6.4	3.9	2.5	2
H-DP10B-02-:6	3000	6.4	4.2	2.2	1
H-DP10B-02-:7	3500	6.5	4.1	2.4	1
H-DP10B-02-:8	4000	6.6	4.5	2.1	1
H-DP10B-02-:9	4500	7.4	5.4	2	1
H-DP10B-02-:10	5000	7.6	5.4	2.2	1
H-DP10B-03-:1	500	5.6	2.8	2.8	3
H-DP10B-03-:2	1000	5.8	3	2.8	3
H-DP10B-03-:3	1500	7.4	5.2	2.2	3
H-DP10B-03-:4	2000	7.4	4.3	3.1	2
H-DP10B-03-:5	2500	7.6	4.5	3.1	2
H-DP10B-03-:6	3000	7.7	5.3	2.4	1
H-DP10B-03-:7	3500	7.7	5.4	2.3	1
H-DP10B-03-:8	4000	7.6	5.3	2.3	1
H-DP10B-03-:9	4500	7.6	5.3	2.3	1
H-DP10B-03-:10	5000	7.4	5.3	2.1	1
H-DP10B-04-:1	250	6	3.3	2.7	2
H-DP10B-04-:2	500	4.7	2	2.7	2
H-DP10B-04-:3	750	5.2	2.7	2.5	2
H-DP10B-04-:4	1000	6.2	4.4	1.8	1
H-DP10B-04-:5	1250	6.8	4.6	2.2	1
H-DP10B-04-:6	1500	7.2	4.8	2.4	1
H-DP10B-04-:7	1750	7.6	5.2	2.4	1
H-DP10B-04-:8	2000	7.7	5.2	2.5	1
H-DP10B-04-:9	2250	7.7	5.3	2.4	1
H-DP10B-04-:10	2500	7.2	5	2.2	1
H-DP10B-04-:11	2750	7	4.9	2.1	1
H-DP10B-04-:12	3000	6.9	4.7	2.2	1
H-DP10B-04-:13	3250	7.2	5.1	2.1	1
H-DP10B-04-:14	3500	7.7	5.2	2.5	1
H-DP10B-04-:15	3750	7.7	5.2	2.5	1
DP-03	3750	7.6	5.2	2.4	1
H-DP10B-04-:16	4000	7.7	5.3	2.4	1
H-DP10B-04-:17	4250	7.8	5.3	2.5	1
H-DP10B-04-:18	4500	7.7	5.2	2.5	1
H-DP10B-04-:19	4750	7.7	5.1	2.6	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-DP10B-04-:20	5000	7.6	5.4	2.2	1
H-DP10B-05-:1	500	5.7	2.2	3.5	2
H-DP10B-05-:2	1000	5.9	2.6	3.3	2
H-DP10B-05-:3	1500	5.3	2.3	3	2
H-DP10B-05-:4	2000	5.3	3.1	2.2	1
H-DP10B-05-:5	2500	5.5	3.6	1.9	1
H-DP10B-05-:6	3000	5.7	3.2	2.5	1
DP-05	3000	5.6	3.1	2.5	1
H-DP10B-05-:7	3500	6.3	4.2	2.1	1
H-DP10B-05-:8	4000	6.7	4.4	2.3	1
H-DP10B-05-:9	4500	7.2	4.6	2.6	1
H-DP10B-05-:10	5000	7.4	4.8	2.6	1
H-DP10B-06:1	500	5.4	2.5	2.9	2
H-DP10B-06:2	1000	5.4	3	2.4	1
H-DP10B-06:3	1500	5.9	3.6	2.3	1
H-DP10B-06:4	2000	6.2	3.9	2.3	1
H-DP10B-06:5	2500	6.3	4.1	2.2	1
H-DP10B-06:6	3000	6.4	4.3	2.1	1
H-DP10B-06:7	3500	6.3	4.2	2.1	1
H-DP10B-06:8	4000	6.3	4.4	1.9	1
H-DP10B-06:9	4500	6.4	4.3	2.1	1
H-DP10B-06:10	5000	6.7	4.9	1.8	1
H-DP10B-06:11	5500	6.3	4.1	2.2	1
H-DP10B-06:12	6000	7	4.7	2.3	1
H-DP10B-06:13	6500	6.9	4.8	2.1	1
H-DP10B-06:14	7000	7.4	5.2	2.2	1
H-DP10B-06:15	7500	7.2	5.2	2	1
H-DP10B-06:16	8000	7.4	5.2	2.2	1
H-DP10B-06:17	8500	7.4	5.2	2.2	1
H-DP10B-06:18	9000	7.3	5.3	2	1
DP-11	9000	7.4	5.1	2.3	1
H-DP10B-06:19	9500	7.4	5.3	2.1	1
H-DP10B-06:20	10000	7.3	5.3	2	1
H-DP10B-06:21	10500	7.4	5.2	2.2	1
DP-12	10500	7.4	5.3	2.1	1
H-DP10B-06:22	11000	7.4	5.2	2.2	1
H-DP10B-06:23	11500	7.4	5.3	2.1	1
H-DP10B-06:24	12000	7.3	5.2	2.1	1

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-DP10B-06:25	12500	7.1	5.2	1.9	1
H-DP10B-06:26	13000	7.1	4.9	2.2	1
H-DP10B-07-:1	500	6.3	3.1	3.2	2
H-DP10B-07-:2	1000	6.3	3.2	3.1	2
H-DP10B-07-:3	1500	6.2	3.4	2.8	2
H-DP10B-07-:4	2000	6.4	4.1	2.3	1
H-DP10B-07-:5	2500	6.3	4.2	2.1	1
H-DP10B-07-:6	3000	6.2	3.9	2.3	1
H-DP10B-07-:7	3500	6.2	3.9	2.3	1
H-DP10B-07-:8	4000	6.9	4.7	2.2	1
H-DP10B-07-:9	4500	7.2	4.6	2.6	1
H-DP10B-07-:10	5000	7.3	4.9	2.4	1
H-DP10B-07-:11	5500	7.4	5.1	2.3	1
H-DP10B-07-:12	6000	7.4	5.1	2.3	1
H-DP10B-07-:13	6500	7.5	5.1	2.4	1
H-DP10B-07-:14	7000	7.8	5.4	2.4	1
H-DP10B-07-:15	7500	7.7	5.4	2.3	1
H-DP10B-07-:16	8000	7.8	5.3	2.5	1
H-DP10B-07-:17	8500	7.6	5.1	2.5	1
DP-09	8500	7.7	5.3	2.4	1
H-DP10B-07-:18	9000	7.4	5.2	2.2	1
H-DP10B-07-:19	9500	7	5.1	1.9	1
H-DP10B-07-:20	10000	7.6	5.1	2.5	1
H-DP10B-07-:21	10500	7.7	5	2.7	1
H-DP10B-07-:22	11000	7.6	5.3	2.3	1
H-DP10B-07-:23	11500	7.5	5.2	2.3	1
H-DP10B-07-:24	12000	7.7	5.4	2.3	1
H-DP10B-07-:25	12500	7.7	5.5	2.2	1
H-DP10B-07-:26	13000	7.4	5.1	2.3	1
H-DP10B-07-:27	13500	7.4	5	2.4	1
H-DP10B-07-:28	14000	7.6	5.2	2.4	1
DP-10	14000	7.7	5.3	2.4	1
H-DP10B-08-:1	500	6.5	3	3.5	2
H-DP10B-08-:2	1000	7.2	3.1	4.1	2
H-DP10B-08-:3	1500	6.7	4	2.7	2
H-DP10B-08-:4	2000	7.1	4.5	2.6	1
H-DP10B-08-:5	2500	7.3	4.7	2.6	1
H-DP10B-08-:6	3000	6.9	4	2.9	2

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Sample ID	Depth (mm bgl)	pH (Field)	pH (Fox)	Delta pH (Field – Fox)	Reaction Rate
H-DP10B-08-:7	3500	7.3	5.1	2.2	1
H-DP10B-08-:8	4000	7	4.1	2.9	2
H-DP10B-08-:9	4500	6.8	3.8	3	1
H-DP10B-08-:10	5000	6.8	4.7	2.1	1
H-DP10B-08-:11	5500	6.7	4.6	2.1	1
H-DP10B-08-:12	6000	6.7	4.4	2.3	2
DP-07	6000	6.7	4.1	2.6	2
H-DP10B-08-:13	6500	6.7	4.8	1.9	1
H-DP10B-08-:14	7000	6.7	4.7	2	1
H-DP10B-08-:15	7500	6.8	5.1	1.7	1
H-DP10B-08-:16	8000	6.7	5	1.7	1
H-DP10B-08-:17	8500	6.6	5	1.6	1
H-DP10B-08-:18	9000	6.7	5.1	1.6	1
H-DP10B-08-:19	9500	6.9	4.8	2.1	1
H-DP10B-08-:20	10000	7	5.1	1.9	1
H-DP10B-08-:21	10500	7.3	5.5	1.8	1
H-DP10B-08-:22	11000	6.7	5	1.7	1
H-DP10B-08-:23	11500	6.9	5.2	1.7	1
H-DP10B-08-:24	12000	6.9	5.2	1.7	1
H-DP10B-08-:25	12500	6.3	4.3	2	1
DP-08	12500	6	4.2	1.8	1
H-DP10B-08-:26	13000	6.4	4.3	2.1	1

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Table C-2: Secondary Screening Results for Samples Taken for Proposed RSA 10N Footprint

Sample ID	Soil Type	pH KCl	TAA	S_{CR}	Net Acidity	Net Acidity	Liming Rate	Net Acidity excluding ANC	Net Acidity excluding ANC	Liming Rates excluding ANC
Units		pH unit	Mole H+/t	%S	%S	Mole H+/t	Kg Ca CO3/t	%S	Mole H+/t	Kg Ca CO3/t
Limit of reporting			<2	<0.005	<0.02			<0.02		
Assessment criteria				0.03	0.03			0.03		
H-TP10N-3 6	CLAY	5.2	41	<0.005	0.07	42	3	0.07	42	3
H-TP10N-4 3	CLAY	5.6	36	<0.005	0.06	36	3	0.06	36	3
H-TP10N-4 5	CLAY	5.4	39	<0.005	0.06	40	3	0.06	40	3
H-TP10N-4 7	CLAY	5.1	50	<0.005	0.08	51	4	0.08	51	4
H-TP10N-4 9	Sandy Clayey GRAVEL	5.2	36	<0.005	0.06	37	3	0.06	37	3
H-TP10N-4 11	Sandy Clayey GRAVEL	5.4	34	<0.005	0.06	34	3	0.06	34	3
H-TP10N-5 3	Sandy SILT	5.1	16	<0.005	0.03	17	1	0.03	17	1
H-TP10N-5 5	Clayey SAND	4.5	21	<0.005	0.03	22	2	0.03	22	2
H-TP10N-5 7	Clayey SAND	4.6	28	<0.005	0.04	28	2	0.04	28	2
H-TP10N-5 9	Clayey SAND	4.4	24	<0.005	0.04	27	2	0.04	27	2
H-TP10N-10 3	CLAY	4.6	16	<0.005	0.03	16	1	0.03	16	1
H-TP10N-10 5	CLAY	4.9	22	<0.005	0.04	23	2	0.04	23	2
H-TP10N-10 5_Duplicated	CLAY	5	22	<0.005	0.04	24	2	0.04	24	2
H-TP10N-12 1	Clayey SAND	4.7	20	<0.005	0.04	22	2	0.04	22	2
H-TP10N-12 8	CLAY	5.4	21	<0.005	0.04	22	2	0.04	22	2
H-TP10N-12 11	CLAY	5.3	5	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10N-14 3	CLAY	4.6	18	<0.005	0.03	19	1	0.03	19	1
H-TP10N-14 5	CLAY	4.9	16	<0.005	0.03	18	1	0.03	18	1
H-TP10N-14 7	CLAY	4.5	30	<0.005	0.04	28	2	0.04	28	2
H-TP10N-14 9	CLAY	4.4	31	<0.005	0.06	35	3	0.06	35	3
H-TP10N-14 11	Sandy CLAY	4.3	34	<0.005	0.05	34	3	0.05	34	3
H-TP10N-15 3	Sandy CLAY	4.8	21	<0.005	0.03	22	2	0.03	22	2

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Sample ID	Soil Type	pH KCl	TAA	S_{CR}	Net Acidity	Net Acidity	Liming Rate	Net Acidity excluding ANC	Net Acidity excluding ANC	Liming Rates excluding ANC
H-TP10N-15 5	Sandy CLAY	4.7	14	<0.005	0.03	16	1	0.03	16	1
H-TP10N-15 7	Sandy CLAY	4.7	18	<0.005	0.03	19	1	0.03	19	1
H-TP10N-15 9	Sandy CLAY	4.5	20	<0.005	0.04	22	2	0.04	22	2
H-TP10N-15 11	SAND	4.7	20	<0.005	0.03	20	2	0.03	20	2
H-TP10N-17 2	CLAY	4.7	12	<0.005	0.02	13	1	0.02	13	1
H-TP10N-17 9	CLAY	5.7	5	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10N-18 2	CLAY	5	12	<0.005	0.02	13	1	0.02	13	1
H-TP10N-18 9	CLAY	5.5	5	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10N-19 3	CLAY	5.9	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10N-19 6	CLAY	6.1	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10N-19- Duplicated	CLAY	5.7	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10N-20 2	CLAY	4.5	29	<0.005	0.05	32	2	0.05	32	2
H-TP10N-21 2	Sandy CLAY	4.7	20	<0.005	0.03	20	2	0.03	20	2
H-TP10N-22 4	Sandy CLAY	4.6	24	<0.005	0.04	25	2	0.04	25	2
H-TP10N-22 6	CLAY	4.4	28	<0.005	0.05	30	2	0.05	30	2
H-TP10N-22 8	CLAY	4.6	26	<0.005	0.04	27	2	0.04	27	2
H-TP10N-23 4	Sandy CLAY	4.4	16	<0.005	0.04	24	2	0.04	24	2
H-TP10N-23 6	Sandy CLAY	4.6	21	<0.005	0.03	22	2	0.03	22	2
H-TP10N-24 4	CLAY	4.9	14	<0.005	0.02	14	1	0.02	14	1
H-TP10N-24 9	CLAY	4.9	11	<0.005	0.02	11	1	0.02	11	1
H-TP10N-25 2	CLAY	4.6	25	<0.005	0.04	26	2	0.04	26	2
H-TP10N-27 2	Sandy CLAY	5.8	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10N-27 4	CLAY	6	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10N-27 7	Sandy CLAY	5.3	8	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10N-27 9	Clayey SAND	5.3	8	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10N-28 3	CLAY	5	10	<0.005	0.02	10	1	0.02	10	1
H-TP10N-28 5	CLAY	5.4	6	<0.005	<0.02	<10	<1	<0.02	<10	<1

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Sample ID	Soil Type	pH KCl	TAA	S_{CR}	Net Acidity	Net Acidity	Liming Rate	Net Acidity excluding ANC	Net Acidity excluding ANC	Liming Rates excluding ANC
H-TP10N-28 7	CLAY	5.2	8	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10N-28 11	CLAY	5.2	9	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10N-29 3	CLAY	4.7	26	<0.005	0.04	26	2	0.04	26	2
H-TP10N-29 8	CLAY	4.9	16	<0.005	0.03	17	1	0.03	17	1
H-MW-01: 1	Sandy CLAY	5.9	18	0.011	0.04	26	2	0.04	26	2
H-MW-01: 3	CLAY	5.9	10	0.010	0.03	16	1	0.03	16	1
H-MW02: 4	CLAY	6.0	9	<0.005	0.02	11	1	0.02	11	1
H-MW02: 6	CLAY	5.6	10	0.006	0.02	14	1	0.02	14	1
H-MW-03: 3	CLAY	4.8	73	0.009	0.13	79	6	0.13	79	6
H-MW-03: 5	CLAY	5.4	17	0.012	0.04	25	2	0.04	25	2
H-MW-03: 6	CLAY	5.8	17	0.007	0.03	22	2	0.03	22	2
H-MW-04: 3	CLAY	5.4	15	0.014	0.04	24	2	0.04	24	2
H-MW-04: 6	CLAY	5.5	25	0.008	0.05	30	2	0.05	30	2
H-MW-05: 2	CLAY	5.8	20	0.007	0.04	24	2	0.04	24	2
H-MW-05: 3	CLAY	5.6	21	0.007	0.04	25	2	0.04	25	2
H-MW-06: 3	CLAY	5.3	30	0.009	0.06	35	3	0.06	35	3
H-MW-07: 2	CLAY	5.4	27	0.013	0.06	35	3	0.06	35	3
H-MW-07: 4	CLAY	5.2	28	0.012	0.06	36	3	0.06	36	3
H-MW-08: 2	CLAY	5.6	25	0.011	0.05	31	2	0.05	31	2
H-MW-08: 4	CLAY	5.0	33	<0.005	0.06	36	3	0.06	36	3
H-MW-09: 3	CLAY	6.8	<2	0.016	<0.02	<10	<1	0.02	10	1
H-MW-10: 4	CLAY	5.2	27	0.010	0.05	34	3	0.05	34	3
H-MW-13: 4	CLAY	6.2	5	0.014	0.02	14	1	0.02	14	1
H-MW-14: 4	CLAY	5.1	30	0.007	0.05	34	3	0.05	34	3
H-MW-15: 4	CLAY	5.6	18	0.008	0.04	24	2	0.04	24	2
H-MW-15: 5	CLAY	5.5	24	0.006	0.04	27	2	0.04	27	2
H-MW-16: 2	CLAY	5.3	34	0.009	0.06	40	3	0.06	40	3

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Sample ID	Soil Type	pH KCl	TAA	S_{CR}	Net Acidity	Net Acidity	Liming Rate	Net Acidity excluding ANC	Net Acidity excluding ANC	Liming Rates excluding ANC
H-MW-16: 3	CLAY	5.3	33	0.007	0.06	37	3	0.06	37	3
H-MW-17: 2	CLAY	6.5	<2	0.012	<0.02	<10	1	<0.02	<10	1
H-MW-17: 3	CLAY	5.2	33	0.012	0.07	41	3	0.07	41	3
H-MW-18: 3	CLAY	5.7	16	0.008	0.03	21	2	0.03	21	2
H-MW-18: 4	CLAY	5.8	22	0.008	0.04	27	2	0.04	27	2
H-MW-19: 2	CLAY	5.3	31	0.010	0.06	37	3	0.06	37	3
H-MW-20: 5	CLAY	5.2	26	0.008	0.05	30	2	0.05	30	2
MW-21-1	Silty CLAY	5.7	32	0.005	0.04	26	2	0.04	26	2
MW-22-1	Silty CLAY	5.6	62	0.007	0.03	17	1	0.03	17	1
MW-23-1	Sandy Silty CLAY	5.7	29	<0.005	0.06	34	3	0.06	34	3
MW-24-1	Silty CLAY	5.4	53	<0.005	0.11	66	5	0.11	66	5
MW-24-2	CLAY	5.4	54	<0.005	0.05	31	2	0.05	31	2
MW-25-1	Sandy Silty CLAY	5.9	28	<0.005	0.09	55	4	0.09	55	4
MW-26-2	Silty CLAY	5.6	20	<0.005	0.09	55	4	0.09	55	4
MW-28-2	Silty CLAY	5.4	35	0.006	0.05	30	2	0.05	30	2
MW-29-3	Sandy CLAY	5.7	39	0.006	0.04	22	2	0.04	22	2
MW-30-2	Silty Clayey SAND	6.7	<2	<0.005	0.06	39	3	0.06	39	3
MW-31-1	Silty CLAY	5.8	35	<0.005	0.07	43	3	0.07	43	3
DS-2	Sandy CLAY	5.6	19	<0.005	<0.02	<10	<1	<0.02	<10	<1
MW-33-1	Sandy CLAY	5.9	11	<0.005	0.06	38	3	0.06	38	3
MW-34-2	Silty CLAY	5.7	37	<0.005	0.03	20	1	0.03	20	1
MW-35-1	Silty CLAY	5.5	47	0.005	0.02	11	1	0.02	11	1
DP-13	CLAY	5.6	32	<0.005	0.06	39	3	0.06	39	3
H-MW-36A-3	CLAY	5.4	46	<0.005	0.08	50	4	0.08	50	4
MW-37-2	CLAY	5.5	39	0.005	0.05	33	2	0.05	33	2
MW-38-2	Sandy CLAY	5.9	21	<0.005	0.07	47	3	0.07	47	3
MW-38-3	CLAY	5	39	<0.005	0.07	42	3	0.07	42	3

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Sample ID	Soil Type	pH KCl	TAA	S_{CR}	Net Acidity	Net Acidity	Liming Rate	Net Acidity excluding ANC	Net Acidity excluding ANC	Liming Rates excluding ANC
MW-39-1	Sandy CLAY	5.8	21	<0.005	0.04	23	2	0.04	23	2
MW-39-2	Silty CLAY	5.2	34	<0.005	0.07	41	3	0.07	41	3

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Table C-3: Secondary Screening Results for Samples Taken for Borrow Pit Areas

Sample ID	Soil Type	pH KCl	TAA	S_{CR}	Net Acidity	Net Acidity	Liming Rate	Net Acidity excluding ANC	Net Acidity excluding ANC	Liming Rates excluding ANC
Units		pH unit	Mole H+/t	%S	%S	Mole H+ /t	Kg Ca CO3/t	%S	Mole H+ / t	Kg Ca CO3/t
Limit of reporting			<2	<0.005	<0.02			<0.02		
Assessment criteria				0.03	0.03			0.03		
H-TP10B-01	Silty SAND	5.8	6	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10B-01	CLAY	5.3	24	<0.005	0.04	24	2	0.04	24	2
H-TP10B-01	Sandy CLAY	5.6	14	<0.005	0.02	15	1	0.02	15	1
H-TP10B-03	Sandy Gravelly CLAY	6	10	<0.005	0.02	11	1	0.02	11	1
H-TP10B-04	SAND	5.8	10	<0.005	0.02	11	1	0.02	11	1
H-TP10B-04	CLAY	5.5	14	<0.005	0.03	16	1	0.03	16	1
H-TP10B-04	CLAY	5.6	9	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10B-05	CLAY	5.6	15	<0.005	0.03	17	1	0.03	17	1
H-TP10B-06	Silty SAND	5.9	4	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10B-06	CLAY	5.6	14	<0.005	0.02	15	1	0.02	15	1
H-TP10B-06	CLAY	5.7	11	<0.005	0.02	12	1	0.02	12	1
H-TP10B-08	Silty SAND	6	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10B-08	SAND	6	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10B-08	Sandy Gravelly CLAY	5.6	14	<0.005	0.02	14	1	0.02	14	1
H-TP10B-09	Sandy Gravelly CLAY	5.6	12	<0.005	0.02	14	1	0.02	14	1
H-TP10B-09	Sandy Gravelly CLAY	6.2	4	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10B-09	Sandy Gravelly CLAY	5.8	6	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10B-10	Sandy Gravelly CLAY	5.8	10	<0.005	0.02	11	1	0.02	11	1
H-TP10B-11	Silty SAND	5.8	4	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10B-11	Sandy Gravelly CLAY	5.8	10	<0.005	0.02	12	1	0.02	12	1
H-TP10B-12	CLAY	5.6	15	<0.005	0.03	17	1	0.03	17	1
H-TP10B-12	Sandy Gravelly CLAY	5.7	5	<0.005	<0.02	<10	1	<0.02	<10	1

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Sample ID	Soil Type	pH KCl	TAA	S_{CR}	Net Acidity	Net Acidity	Liming Rate	Net Acidity excluding ANC	Net Acidity excluding ANC	Liming Rates excluding ANC
H-TP10B-13	CLAY	5.3	11	<0.005	0.02	13	1	0.02	13	1
H-TP10B-14	SAND	5.2	26	<0.005	0.04	28	2	0.04	28	2
H-TP10B-14	Silty CLAY	5.5	18	<0.005	0.03	21	2	0.03	21	2
H-TP10B-15	CLAY	5.3	22	<0.005	0.04	24	2	0.04	24	2
H-TP10B-15	Silty CLAY	5.8	7	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10B-16	CLAY	5.6	14	<0.005	0.03	16	1	0.03	16	1
H-TP10B-17	CLAY	5.4	17	<0.005	0.03	17	1	0.03	17	1
H-TP10B-17	Sandy Gravelly CLAY	5.5	15	<0.005	0.03	17	1	0.03	17	1
H-TP10B-18	CLAY	5.5	15	<0.005	0.03	16	1	0.03	16	1
H-TP10B-18	Sandy Gravelly CLAY	5.5	10	0.039	0.06	34	3	0.06	34	3
H-TP10B-18	Sandy Gravelly CLAY	6	5	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10B-19	CLAY	5.6	11	<0.005	0.02	12	1	0.02	12	1
H-TP10B-19	Sandy Gravelly CLAY	5.7	7	<0.005	0.02	10	1	0.02	10	1
H-TP10B-19	CLAY	5.8	12	<0.005	0.02	12	1	0.02	12	1
H-TP10B-20	Silty CLAY	5.4	16	0.033	0.06	37	3	0.06	37	3
H-TP10B-20	Silty CLAY	5.5	5	0.029	0.04	23	2	0.04	23	2
H-TP10B-20	Silty CLAY	5.8	6	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10B-21	SAND	6.1	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10B-21	Silty CLAY	6.1	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-TP10B-22	Sandy CLAY	5.4	21	<0.005	0.03	21	2	0.03	21	2
H-TP10B-23	Clayey SAND	5.4	10	<0.005	0.02	10	1	0.02	10	1
H-TP10B-23	Sandy Gravelly CLAY	5.7	15	<0.005	0.03	16	1	0.03	16	1
H-TP10B-23	Sandy Gravelly CLAY	5.4	18	<0.005	0.03	19	1	0.03	19	1
H-TP10B-24	Sandy CLAY	5.6	14	<0.005	0.02	14	1	0.02	14	1
H-TP10B-25	Sandy CLAY	5.4	10	<0.005	0.02	11	1	0.02	11	1
H-TP10B-25	Sandy CLAY	5.4	11	<0.005	0.02	12	1	0.02	12	1
H-TP10B-26	Sandy Silty CLAY	5.6	14	<0.005	0.02	14	1	0.02	14	1

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Sample ID	Soil Type	pH KCl	TAA	S_{CR}	Net Acidity	Net Acidity	Liming Rate	Net Acidity excluding ANC	Net Acidity excluding ANC	Liming Rates excluding ANC
H-TP10B-27	CLAY	5.7	11	<0.005	0.02	12	1	0.02	12	1
H-TP10B-27	Sandy Silty CLAY	5.5	11	<0.005	0.02	12	1	0.02	12	1
H-TP10B-28	Silty Clay	5.7	6	<0.005	<0.02	<10	1	<0.02	<10	1
H-TP10B-28	Gravelly Silty CLAY	5.5	17	<0.005	0.03	19	1	0.03	19	1
H-DP10B-01-:1	Silty Clayey SAND	6.3	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-DP10B-01-:3	Silty CLAY	5.6	15	<0.005	0.02	15	1	0.02	15	1
H-DP10B-01-:7	CLAY	5.8	15	<0.005	0.02	15	1	0.02	15	1
H-DP10B-01-:9	Silty CLAY	5.8	15	<0.005	0.02	15	1	0.02	15	1
H-DP10B-02-:1	SAND	6.4	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-DP10B-02-:5	Sandy CLAY	6.1	10	<0.005	0.02	11	1	0.02	11	1
H-DP10B-03-:2	Gravelly CLAY	6	7	<0.005	0.02	<10	1	0.02	<10	1
H-DP10B-03-:3	Clayey SAND	6.1	9	<0.005	0.02	10	1	0.02	10	1
H-DP10B-03-:4	Clayey SAND	6	12	<0.005	0.02	13	1	0.02	13	1
H-DP10B-04-:2	Silty SAND	5.7	7	<0.005	<0.02	<10	1	<0.02	<10	1
H-DP10B-04-:3	Silty SAND	5.8	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-DP10B-04-:19	Sandy Gravelly CLAY	5.9	12	<0.005	0.02	13	1	0.02	13	1
H-DP10B-05-:1	SAND	5.7	5	<0.005	<0.02	<10	1	<0.02	<10	1
H-DP10B-05-:2	Clayey SAND	5.6	8	<0.005	<0.02	<10	1	<0.02	<10	1
H-DP10B-05-:3	Clayey SAND	5.6	14	<0.005	0.02	14	1	0.02	14	1
H-DP10B-05-:4	Sandy CLAY	6.1	11	<0.005	0.02	11	1	0.02	11	1
H-DP10B-05-:7	Sandy CLAY	5.8	14	<0.005	0.02	14	1	0.02	14	1
H-DP10B-06:1	Clayey SAND	6.2	5	<0.005	<0.02	<10	1	<0.02	<10	1
H-DP10B-06:2	Clayey SAND	6.4	<2	0.005	<0.02	<10	<1	<0.02	<10	<1
H-DP10B-06:4	Sandy CLAY	6.1	11	<0.005	0.02	12	1	0.02	12	1
H-DP10B-06:11	CLAY	5.9	11	<0.005	0.02	13	1	0.02	13	1
H-DP10B-06:18	CLAY	5.8	19	<0.005	0.03	19	1	0.03	19	1
DP-11	CLAY	5.7	20	<0.005	0.04	22	2	0.04	22	2

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Sample ID	Soil Type	pH KCl	TAA	S_{CR}	Net Acidity	Net Acidity	Liming Rate	Net Acidity excluding ANC	Net Acidity excluding ANC	Liming Rates excluding ANC
H-DP10B-06:24	CLAY	6	14	<0.005	0.02	14	1	0.02	14	1
H-DP10B-07-:1	Silty SAND	6.4	<2	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-DP10B-07-:2	Silty Clayey SAND	6	9	0.005	0.02	12	1	0.02	12	1
H-DP10B-07-:6	Sandy CLAY	6	10	0.005	0.02	12	1	0.02	12	1
H-DP10B-07-:12	Sandy CLAY	6	9	<0.005	<0.02	<10	1	<0.02	<10	1
H-DP10B-07-:21	Sandy CLAY	5.9	12	<0.005	0.02	14	1	0.02	14	1
H-DP10B-07-:27	Clayey SAND	6.1	9	<0.005	0.02	12	1	0.02	12	1
H-DP10B-08-:1	Silty SAND	5.8	4	0.005	<0.02	<10	<1	<0.02	<10	<1
H-DP10B-08-:2	Silty SAND	5.8	5	<0.005	<0.02	<10	<1	<0.02	<10	<1
H-DP10B-08-:9	Sandy CLAY	5.9	16	<0.005	0.03	17	1	0.03	17	1
H-DP10B-08-:13	CLAY	6.2	10	<0.005	0.02	12	1	0.02	12	1
H-DP10B-08-:17	CLAY	5.9	10	<0.005	0.02	15	1	0.02	15	1
H-DP10B-08-:22	CLAY	5.8	19	0.008	0.03	21	2	0.03	21	2
H-DP10B-08-:25	Sandy Gravelly CLAY	5.9	13	<0.005	0.03	18	1	0.03	18	1
DP-08	Sandy Gravelly CLAY	5.9	16	0.009	0.03	21	2	0.03	21	2

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CERTIFICATE OF ANALYSIS

Work Order	: **EP2306747**	Page	: 1 of 15
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	22-May-2023 15:56
Order number	: 368360-1	Date Analysis Commenced	: 24-May-2023
C-O-C number	: ----	Issue Date	: 26-May-2023 10:31
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 61		
No. of samples analysed	61		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-1 250mm	H-TP10N-1 500mm	H-TP10N-1 750mm	H-TP10N-1 1000mm	H-TP10N-1 1250mm
			Sampling date / time	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-001	EP2306747-002	EP2306747-003	EP2306747-004	EP2306747-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	5.9	6.9	6.6	6.4
pH (Fox)	----	0.1	pH Unit	3.8	3.6	4.8	4.7	4.7
Reaction Rate	----	1	Reaction Unit	2	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-1 1500mm	H-TP10N-1 1750mm	H-TP10N-1 2000mm	H-TP10N-1 2250mm	H-TP10N-1 2500mm
			Sampling date / time	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-006	EP2306747-007	EP2306747-008	EP2306747-009	EP2306747-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	6.7	6.8	6.9	6.9
pH (Fox)	----	0.1	pH Unit	5.0	4.8	5.2	5.2	5.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-1 2750mm	H-TP10N-1 3000mm	H-TP10N-2 1	H-TP10N-2 2	H-TP10N-2 3
			Sampling date / time	15-May-2023 00:00	15-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-011	EP2306747-012	EP2306747-013	EP2306747-014	EP2306747-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.9	6.9	6.4	6.0	6.0
pH (Fox)	----	0.1	pH Unit	5.2	5.5	4.0	4.1	3.9
Reaction Rate	----	1	Reaction Unit	1	1	2	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-2 4	H-TP10N-2 5	H-TP10N-2 6	H-TP10N-2 7	H-TP10N-2 8
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-016	EP2306747-017	EP2306747-018	EP2306747-019	EP2306747-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.8	5.7	5.6	6.4	5.8
pH (Fox)	----	0.1	pH Unit	3.9	4.1	4.1	5.1	4.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-2 9	H-TP10N-2 10	H-TP10N-2 11	H-TP10N-2 12	H-TP10N-2 7_Duplicated
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-021	EP2306747-022	EP2306747-023	EP2306747-024	EP2306747-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.7	6.6	6.6	6.7	6.6
pH (Fox)	----	0.1	pH Unit	5.1	5.3	5.2	5.1	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-3 1	H-TP10N-3 2	H-TP10N-3 3	H-TP10N-3 4	H-TP10N-3 5
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-026	EP2306747-027	EP2306747-028	EP2306747-029	EP2306747-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	6.0	6.6	5.7	5.3
pH (Fox)	----	0.1	pH Unit	3.4	3.6	4.8	3.8	3.9
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-3 6	H-TP10N-3 7	H-TP10N-3 8	H-TP10N-3 9	H-TP10N-3 10
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-031	EP2306747-032	EP2306747-033	EP2306747-034	EP2306747-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.0	5.3	5.0	5.5	5.5
pH (Fox)	----	0.1	pH Unit	3.9	4.3	4.0	4.5	4.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-3 11	H-TP10N-3 12	H-TP10N-3 8_Duplicated	H-TP10N-4 1	H-TP10N-4 2
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-036	EP2306747-037	EP2306747-038	EP2306747-039	EP2306747-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.4	5.1	5.1	5.4	5.2
pH (Fox)	----	0.1	pH Unit	4.4	4.3	3.9	3.1	3.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-4 3	H-TP10N-4 4	H-TP10N-4 5	H-TP10N-4 6	H-TP10N-4 7
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-041	EP2306747-042	EP2306747-043	EP2306747-044	EP2306747-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.9	4.9	4.8	4.7	4.4
pH (Fox)	----	0.1	pH Unit	3.1	3.4	3.3	3.4	3.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-4 8	H-TP10N-4 9	H-TP10N-4 10	H-TP10N-4 11	H-TP10N-4 12
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-046	EP2306747-047	EP2306747-048	EP2306747-049	EP2306747-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.4	4.4	4.5	4.5	4.5
pH (Fox)	----	0.1	pH Unit	3.3	3.2	3.6	3.0	3.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-5 1	H-TP10N-5 2	H-TP10N-5 3	H-TP10N-5 4	H-TP10N-5 5
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-051	EP2306747-052	EP2306747-053	EP2306747-054	EP2306747-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.0	5.4	5.4	5.5	5.1
pH (Fox)	----	0.1	pH Unit	2.2	2.5	3.4	3.9	3.2
Reaction Rate	----	1	Reaction Unit	2	2	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-5 6	H-TP10N-5 7	H-TP10N-5 8	H-TP10N-5 9	H-TP10N-5 10
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306747-056	EP2306747-057	EP2306747-058	EP2306747-059	EP2306747-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.0	4.4	4.5	4.5	4.6
pH (Fox)	----	0.1	pH Unit	3.3	2.5	2.8	3.1	3.5
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-5 5_Duplicated	----	----	----	----
			Sampling date / time	18-May-2023 00:00	---	---	---	---
Compound	CAS Number	LOR	Unit	EP2306747-061	--------	--------	--------	--------
				Result	---	---	---	---
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**5.1**	---	---	---	---
pH (Fox)	----	0.1	pH Unit	**3.3**	**---**	**---**	**---**	**---**
Reaction Rate	----	1	Reaction Unit	1	---	---	---	---

CERTIFICATE OF ANALYSIS

Work Order	: **EP2306752**	Page	: 1 of 14
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	22-May-2023 15:56
Order number	: 368360-1	Date Analysis Commenced	: 25-May-2023
C-O-C number	: ----	Issue Date	: 26-May-2023 10:58
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 56		
No. of samples analysed	56		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

General Comments

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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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-6 1	H-TP10N-6 2	H-TP10N-6 3	H-TP10N-6 4	H-TP10N-6 5
			Sampling date / time	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-001	EP2306752-002	EP2306752-003	EP2306752-004	EP2306752-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.7	7.5	7.6	7.5
pH (Fox)	----	0.1	pH Unit	3.1	4.8	5.4	5.6	5.7
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-6 6	H-TP10N-6 7	H-TP10N-6 8	H-TP10N-6 9	H-TP10N-6 10
			Sampling date / time	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-006	EP2306752-007	EP2306752-008	EP2306752-009	EP2306752-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.6	7.6	7.6	7.6	7.1
pH (Fox)	----	0.1	pH Unit	5.4	5.9	5.7	5.6	5.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-6 11	H-TP10N-6 12	H-TP10N-6 13	H-TP10N-7 1	H-TP10N-7 2
			Sampling date / time	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-011	EP2306752-012	EP2306752-013	EP2306752-014	EP2306752-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.0	7.1	7.2	6.2	6.6
pH (Fox)	----	0.1	pH Unit	5.3	5.3	5.1	3.4	3.7
Reaction Rate	----	1	Reaction Unit	1	1	1	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-7 3	H-TP10N-7 4	H-TP10N-7 5	H-TP10N-7 6	H-TP10N-7 7
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-016	EP2306752-017	EP2306752-018	EP2306752-019	EP2306752-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.7	6.4	6.3	6.9	6.7
pH (Fox)	----	0.1	pH Unit	4.6	4.4	4.6	5.2	4.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-7 8	H-TP10N-7 9	H-TP10N-7 10	H-TP10N-7 11	H-TP10N-8 1
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-021	EP2306752-022	EP2306752-023	EP2306752-024	EP2306752-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.1	6.8	7.6	6.9	6.7
pH (Fox)	----	0.1	pH Unit	5.3	5.1	5.5	4.9	4.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-8 2	H-TP10N-8 3	H-TP10N-8 4	H-TP10N-8 5	H-TP10N-8 6
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-026	EP2306752-027	EP2306752-028	EP2306752-029	EP2306752-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.3	7.7	7.4	7.4	7.4
pH (Fox)	----	0.1	pH Unit	4.7	5.6	5.2	5.5	5.5
Reaction Rate	----	1	Reaction Unit	2	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-8 7	H-TP10N-8 8	H-TP10N-8 9	H-TP10N-8 10	H-TP10N-8 11
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-031	EP2306752-032	EP2306752-033	EP2306752-034	EP2306752-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.0	7.0	7.3	6.9	6.8
pH (Fox)	----	0.1	pH Unit	5.5	5.3	5.6	5.6	5.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-8 12	H-TP10N-8 6_Duplicate	H-TP10N-9 1	H-TP10N-9 2	H-TP10N-9 3
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-036	EP2306752-037	EP2306752-038	EP2306752-039	EP2306752-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.7	7.4	6.7	7.3	6.2
pH (Fox)	----	0.1	pH Unit	5.6	5.5	3.8	4.5	4.6
Reaction Rate	----	1	Reaction Unit	1	1	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-9 4	H-TP10N-9 5	H-TP10N-9 6	H-TP10N-9 7	H-TP10N-9 8
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-041	EP2306752-042	EP2306752-043	EP2306752-044	EP2306752-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	6.2	6.0	5.8	5.9
pH (Fox)	----	0.1	pH Unit	4.6	4.7	4.4	4.5	4.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-9 9	H-TP10N-9 10	H-TP10N-9 11	H-TP10N-9 12	H-TP10N-10 1
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-046	EP2306752-047	EP2306752-048	EP2306752-049	EP2306752-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.3	6.4	6.4	6.0
pH (Fox)	----	0.1	pH Unit	5.1	4.9	4.9	5.1	2.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-10 2	H-TP10N-10 3	H-TP10N-10 4	H-TP10N-10 5	H-TP10N-10 6
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306752-051	EP2306752-052	EP2306752-053	EP2306752-054	EP2306752-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.7	5.0	4.9	5.0	4.8
pH (Fox)	----	0.1	pH Unit	3.1	3.2	3.1	3.4	3.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-10 5_Duplicated	----	----	----	----
			Sampling date / time	18-May-2023 00:00	---	---	---	---
Compound	CAS Number	LOR	Unit	EP2306752-056	--------	--------	--------	--------
				Result	---	---	---	---
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.9	---	---	---	---
pH (Fox)	----	0.1	pH Unit	3.3	---	---	---	---
Reaction Rate	----	1	Reaction Unit	1	---	---	---	---

CERTIFICATE OF ANALYSIS

Work Order	: **EP2306754**	Page	: 1 of 15
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	22-May-2023 15:56
Order number	: 368360-1	Date Analysis Commenced	: 30-May-2023
C-O-C number	: ----	Issue Date	: 31-May-2023 17:57
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 63		
No. of samples analysed	63		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-11 1	H-TP10N-11 2	H-TP10N-11 3	H-TP10N-11 4	H-TP10N-11 5
			Sampling date / time	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-001	EP2306754-002	EP2306754-003	EP2306754-004	EP2306754-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	7.2	6.9	7.2	6.9
pH (Fox)	----	0.1	pH Unit	2.7	4.8	4.7	5.1	5.0
Reaction Rate	----	1	Reaction Unit	2	2	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-11 6	H-TP10N-11 7	H-TP10N-11 8	H-TP10N-11 9	H-TP10N-11 10
			Sampling date / time	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00	15-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-006	EP2306754-007	EP2306754-008	EP2306754-009	EP2306754-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.0	7.0	7.2	7.0	6.9
pH (Fox)	----	0.1	pH Unit	5.1	5.2	5.2	5.1	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-11 11	H-TP10N-11 12	H-TP10N-12 1	H-TP10N-12 2	H-TP10N-12 3
			Sampling date / time	15-May-2023 00:00	15-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-011	EP2306754-012	EP2306754-013	EP2306754-014	EP2306754-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.9	7.3	5.9	7.5	8.0
pH (Fox)	----	0.1	pH Unit	4.8	4.8	2.9	5.1	5.4
Reaction Rate	----	1	Reaction Unit	1	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-12 4	H-TP10N-12 5	H-TP10N-12 6	H-TP10N-12 7	H-TP10N-12 8
			Sampling date / time	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-016	EP2306754-017	EP2306754-018	EP2306754-019	EP2306754-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.1	7.2	7.3	7.0	6.9
pH (Fox)	----	0.1	pH Unit	5.6	5.2	5.3	5.3	7.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-12 9	H-TP10N-12 10	H-TP10N-12 11	H-TP10N-12 12	H-TP10N-12 7_Duplicate
			Sampling date / time	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-021	EP2306754-022	EP2306754-023	EP2306754-024	EP2306754-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	6.8	6.8	6.6	6.7
pH (Fox)	----	0.1	pH Unit	6.2	5.6	7.6	7.8	5.4
Reaction Rate	----	1	Reaction Unit	3	2	3	3	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-13 1	H-TP10N-13 2	H-TP10N-13 3	H-TP10N-13 4	H-TP10N-13 5
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-026	EP2306754-027	EP2306754-028	EP2306754-029	EP2306754-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	6.8	7.5	7.6	7.4
pH (Fox)	----	0.1	pH Unit	3.8	4.4	5.2	5.4	5.4
Reaction Rate	----	1	Reaction Unit	2	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-13 6	H-TP10N-13 7	H-TP10N-13 8	H-TP10N-13 9	H-TP10N-13 10
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-031	EP2306754-032	EP2306754-033	EP2306754-034	EP2306754-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	6.9	7.0	6.9	6.8
pH (Fox)	----	0.1	pH Unit	5.4	5.2	5.4	5.2	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-13 11	H-TP10N-13 12	H-TP10N-13 5_Duplicate	H-TP10N-14 1	H-TP10N-14 2
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-036	EP2306754-037	EP2306754-038	EP2306754-039	EP2306754-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.6	6.4	7.3	7.4	5.5
pH (Fox)	----	0.1	pH Unit	5.2	4.9	5.4	4.7	2.7
Reaction Rate	----	1	Reaction Unit	1	1	1	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-14 3	H-TP10N-14 4	H-TP10N-14 5	H-TP10N-14 6	H-TP10N-14 7
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-041	EP2306754-042	EP2306754-043	EP2306754-044	EP2306754-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.3	5.2	5.6	4.8	4.7
pH (Fox)	----	0.1	pH Unit	2.8	2.6	3.4	3.1	3.2
Reaction Rate	----	1	Reaction Unit	2	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-14 8	H-TP10N-14 9	H-TP10N-14 10	H-TP10N-14 11	H-TP10N-14 12
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	19-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-046	EP2306754-047	EP2306754-048	EP2306754-049	EP2306754-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.9	4.6	4.7	4.7	4.5
pH (Fox)	----	0.1	pH Unit	3.4	3.3	3.2	3.3	3.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-15 1	H-TP10N-15 2	H-TP10N-15 3	H-TP10N-15 4	H-TP10N-15 5
			Sampling date / time	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-051	EP2306754-052	EP2306754-053	EP2306754-054	EP2306754-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**5.1**	**4.9**	**5.0**	**4.9**	**5.0**
pH (Fox)	----	0.1	pH Unit	**2.8**	**3.5**	**3.4**	**3.5**	**3.4**
Reaction Rate	----	1	Reaction Unit	**2**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-15 6	H-TP10N-15 7	H-TP10N-15 8	H-TP10N-15 9	H-TP10N-15 10
			Sampling date / time	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306754-056	EP2306754-057	EP2306754-058	EP2306754-059	EP2306754-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.4	5.0	5.2	4.8	4.6
pH (Fox)	----	0.1	pH Unit	3.5	3.0	3.3	3.3	3.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-15 11	H-TP10N-15 12	H-TP10N-15 3_Duplicate	----	----
			Sampling date / time	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2306754-061	EP2306754-062	EP2306754-063	--------	--------
				Result	Result	Result	----	----
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.8	4.7	4.8	----	----
pH (Fox)	----	0.1	pH Unit	3.5	3.4	3.1	----	----
Reaction Rate	----	1	Reaction Unit	1	1	1	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EP2306761**	Page	: 1 of 15
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	22-May-2023 15:56
Order number	: 368360-1	Date Analysis Commenced	: 01-Jun-2023
C-O-C number	: ----	Issue Date	: 06-Jun-2023 11:59
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 64		
No. of samples analysed	64		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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:

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- Analytical Results

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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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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

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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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-16 1	H-TP10N-16 2	H-TP10N-16 3	H-TP10N-16 4	H-TP10N-16 5
			Sampling date / time	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-001	EP2306761-002	EP2306761-003	EP2306761-004	EP2306761-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.9	7.2	7.3	7.3	7.1
pH (Fox)	----	0.1	pH Unit	5.3	5.1	5.4	5.3	5.2
Reaction Rate	----	1	Reaction Unit	2	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-16 6	H-TP10N-16 7	H-TP10N-16 8	H-TP10N-16 9	H-TP10N-16 10
			Sampling date / time	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-006	EP2306761-007	EP2306761-008	EP2306761-009	EP2306761-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.3	6.8	6.5	7.8	6.7
pH (Fox)	----	0.1	pH Unit	5.2	5.3	5.0	5.8	5.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-16 11	H-TP10N-16 12	H-TP10N-16 13	H-TP10N-17 1	H-TP10N-17 2
			Sampling date / time	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-011	EP2306761-012	EP2306761-013	EP2306761-014	EP2306761-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.5	6.7	6.8	6.3	6.6
pH (Fox)	----	0.1	pH Unit	5.0	5.1	4.8	3.0	3.4
Reaction Rate	----	1	Reaction Unit	1	1	1	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-17 3	H-TP10N-17 4	H-TP10N-17 5	H-TP10N-17 6	H-TP10N-17 7
			Sampling date / time	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-016	EP2306761-017	EP2306761-018	EP2306761-019	EP2306761-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.9	7.6	7.1	7.1	7.0
pH (Fox)	----	0.1	pH Unit	4.8	5.3	5.4	5.5	7.8
Reaction Rate	----	1	Reaction Unit	2	1	1	1	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-17 8	H-TP10N-17 9	H-TP10N-17 10	H-TP10N-17 11	H-TP10N-17 12
			Sampling date / time	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-021	EP2306761-022	EP2306761-023	EP2306761-024	EP2306761-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	7.0	6.9	7.1	6.8
pH (Fox)	----	0.1	pH Unit	5.2	7.8	7.9	5.9	7.8
Reaction Rate	----	1	Reaction Unit	1	3	3	1	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-18 1	H-TP10N-18 2	H-TP10N-18 3	H-TP10N-18 4	H-TP10N-18 5
			Sampling date / time	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-026	EP2306761-027	EP2306761-028	EP2306761-029	EP2306761-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.8	6.9	6.3	6.1	6.7
pH (Fox)	----	0.1	pH Unit	3.2	3.6	4.7	4.5	5.0
Reaction Rate	----	1	Reaction Unit	1	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-18 6	H-TP10N-18 7	H-TP10N-18 8	H-TP10N-18 9	H-TP10N-18 10
			Sampling date / time	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-031	EP2306761-032	EP2306761-033	EP2306761-034	EP2306761-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	6.6	6.7	6.7	6.7
pH (Fox)	----	0.1	pH Unit	5.1	5.0	5.2	7.6	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	3	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-18 11	H-TP10N-18 12	H-TP10N-19 1	H-TP10N-19 2	H-TP10N-19 3
			Sampling date / time	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-036	EP2306761-037	EP2306761-038	EP2306761-039	EP2306761-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	6.7	7.5	8.1	8.3
pH (Fox)	----	0.1	pH Unit	5.1	7.3	5.3	6.0	5.7
Reaction Rate	----	1	Reaction Unit	1	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-19 4	H-TP10N-19 5	H-TP10N-19 6	H-TP10N-19 7	H-TP10N-19 8
			Sampling date / time	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-041	EP2306761-042	EP2306761-043	EP2306761-044	EP2306761-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.2	7.8	8.1	7.0	7.0
pH (Fox)	----	0.1	pH Unit	5.5	6.5	5.5	7.3	5.5
Reaction Rate	----	1	Reaction Unit	1	1	1	3	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-19 9	H-TP10N-19 10	H-TP10N-19 11	H-TP10N-19 12	H-TP10N-19 13
			Sampling date / time	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]	[17-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-046	EP2306761-047	EP2306761-048	EP2306761-049	EP2306761-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.8	8.0	8.4	8.1	8.2
pH (Fox)	----	0.1	pH Unit	6.4	6.8	7.4	6.3	6.9
Reaction Rate	----	1	Reaction Unit	3	3	3	3	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-20 1	H-TP10N-20 2	H-TP10N-20 3	H-TP10N-20 4	H-TP10N-20 5
			Sampling date / time	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-051	EP2306761-052	EP2306761-053	EP2306761-054	EP2306761-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	6.0	5.8	5.5	5.6
pH (Fox)	----	0.1	pH Unit	2.7	3.2	3.7	3.9	4.4
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-20 6	H-TP10N-20 7	H-TP10N-20 8	H-TP10N-20 9	H-TP10N-20 10
			Sampling date / time	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]
Compound	CAS Number	LOR	Unit	EP2306761-056	EP2306761-057	EP2306761-058	EP2306761-059	EP2306761-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.6	5.5	5.8	5.9	5.8
pH (Fox)	----	0.1	pH Unit	4.2	4.1	4.4	4.6	4.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-20 11	H-TP10N-20 12	H-TP10N-20 11_Duplicate	H-TP10N-20 12_Duplicate	----
			Sampling date / time	[16-May-2023]	[16-May-2023]	[16-May-2023]	[16-May-2023]	----
Compound	CAS Number	LOR	Unit	EP2306761-061	EP2306761-062	EP2306761-063	EP2306761-064	--------
				Result	Result	Result	Result	----
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	6.0	5.8	6.4	----
pH (Fox)	----	0.1	pH Unit	4.6	4.9	4.7	5.1	----
Reaction Rate	----	1	Reaction Unit	1	1	1	1	----

CERTIFICATE OF ANALYSIS

Work Order	: **EP2306773**	Page	: 1 of 13
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	22-May-2023 15:56
Order number	: 368360-1	Date Analysis Commenced	: 06-Jun-2023
C-O-C number	: ----	Issue Date	: 09-Jun-2023 14:17
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 55		
No. of samples analysed	55		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-21 1	H-TP10N-21 2	H-TP10N-21 3	H-TP10N-21 4	H-TP10N-21 5
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-001	EP2306773-002	EP2306773-003	EP2306773-004	EP2306773-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.0	6.1	6.5	6.6	6.5
pH (Fox)	----	0.1	pH Unit	2.5	3.3	3.8	4.5	4.8
Reaction Rate	----	1	Reaction Unit	2	2	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-21 6	H-TP10N-21 7	H-TP10N-21 8	H-TP10N-21 9	H-TP10N-21 10
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-006	EP2306773-007	EP2306773-008	EP2306773-009	EP2306773-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.5	6.5	6.6	6.5	6.4
pH (Fox)	----	0.1	pH Unit	4.6	4.6	4.8	4.9	4.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-21 11	H-TP10N-21 12	H-TP10N-21 11_Duplicate	H-TP10N-22 1	H-TP10N-22 2
			Sampling date / time	17-May-2023 00:00	17-May-2023 00:00	17-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-011	EP2306773-012	EP2306773-013	EP2306773-014	EP2306773-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	6.4	6.4	6.2	5.9
pH (Fox)	----	0.1	pH Unit	4.5	4.6	4.6	2.4	3.1
Reaction Rate	----	1	Reaction Unit	1	1	1	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-22 3	H-TP10N-22 4	H-TP10N-22 5	H-TP10N-22 6	H-TP10N-22 7
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-016	EP2306773-017	EP2306773-018	EP2306773-019	EP2306773-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.6	5.5	5.0	5.0	5.0
pH (Fox)	----	0.1	pH Unit	3.3	3.3	3.2	3.6	3.5
Reaction Rate	----	1	Reaction Unit	2	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-22 8	H-TP10N-22 9	H-TP10N-22 10	H-TP10N-22 9_Duplicate	H-TP10N-23 1
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	19-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-021	EP2306773-022	EP2306773-023	EP2306773-024	EP2306773-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.8	5.2	5.6	5.2	5.3
pH (Fox)	----	0.1	pH Unit	3.0	3.5	4.1	3.8	3.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-23 2	H-TP10N-23 3	H-TP10N-23 4	H-TP10N-23 5	H-TP10N-23 6
			Sampling date / time	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-026	EP2306773-027	EP2306773-028	EP2306773-029	EP2306773-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.3	5.0	5.0	4.9	4.9
pH (Fox)	----	0.1	pH Unit	3.4	3.2	3.4	3.3	3.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-23 4_Duplicate	H-TP10N-24 1	H-TP10N-24 2	H-TP10N-24 3	H-TP10N-24 4
			Sampling date / time	19-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-031	EP2306773-032	EP2306773-033	EP2306773-034	EP2306773-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.0	6.4	7.3	7.0	7.1
pH (Fox)	----	0.1	pH Unit	3.3	3.5	4.8	4.9	3.9
Reaction Rate	----	1	Reaction Unit	1	2	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-24 5	H-TP10N-24 6	H-TP10N-24 7	H-TP10N-24 8	H-TP10N-24 9
			Sampling date / time	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-036	EP2306773-037	EP2306773-038	EP2306773-039	EP2306773-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	7.1	7.3	6.5	7.0
pH (Fox)	----	0.1	pH Unit	5.1	5.2	5.4	6.8	4.0
Reaction Rate	----	1	Reaction Unit	1	1	1	3	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-24 10	H-TP10N-24 11	H-TP10N-24 12	H-TP10N-25 1	H-TP10N-25 2
			Sampling date / time	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-041	EP2306773-042	EP2306773-043	EP2306773-044	EP2306773-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.6	6.6	6.5	5.8	5.8
pH (Fox)	----	0.1	pH Unit	5.5	4.8	5.4	3.3	2.7
Reaction Rate	----	1	Reaction Unit	2	1	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-25 3	H-TP10N-25 4	H-TP10N-25 5	H-TP10N-25 6	H-TP10N-25 7
			Sampling date / time	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-046	EP2306773-047	EP2306773-048	EP2306773-049	EP2306773-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.5	6.0	6.0	6.2	6.2
pH (Fox)	----	0.1	pH Unit	4.2	4.4	4.7	4.8	4.8
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-25 8	H-TP10N-25 9	H-TP10N-25 10	H-TP10N-25 11	H-TP10N-25 12
			Sampling date / time	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306773-051	EP2306773-052	EP2306773-053	EP2306773-054	EP2306773-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.5	6.3	6.3	6.4	6.4
pH (Fox)	----	0.1	pH Unit	5.0	4.9	4.7	4.9	4.8
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

CERTIFICATE OF ANALYSIS

Work Order	: **EP2306774**	Page	: 1 of 14
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	22-May-2023 15:56
Order number	: 368360-1	Date Analysis Commenced	: 08-Jun-2023
C-O-C number	: ----	Issue Date	: 12-Jun-2023 11:31
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 57		
No. of samples analysed	57		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- Analytical Results

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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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

General Comments

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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 Contract for details.

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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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-26 1	H-TP10N-26 2	H-TP10N-26 3	H-TP10N-26 4	H-TP10N-26 5
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-001	EP2306774-002	EP2306774-003	EP2306774-004	EP2306774-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.6	5.8	5.6	5.6	4.9
pH (Fox)	----	0.1	pH Unit	2.8	2.9	3.8	3.6	3.6
Reaction Rate	----	1	Reaction Unit	2	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-26 6	H-TP10N-26 7	H-TP10N-26 8	H-TP10N-26 9	H-TP10N-26 10
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-006	EP2306774-007	EP2306774-008	EP2306774-009	EP2306774-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.9	5.0	4.9	5.0	4.9
pH (Fox)	----	0.1	pH Unit	3.6	3.6	3.6	3.7	3.9
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-26 11	H-TP10N-26 12	H-TP10N-27 1	H-TP10N-27 2	H-TP10N-27 3
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-011	EP2306774-012	EP2306774-013	EP2306774-014	EP2306774-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.8	5.0	5.8	7.2	7.3
pH (Fox)	----	0.1	pH Unit	3.7	3.8	2.8	5.4	5.3
Reaction Rate	----	1	Reaction Unit	1	1	2	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-27 4	H-TP10N-27 5	H-TP10N-27 6	H-TP10N-27 7	H-TP10N-27 8
			Sampling date / time	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-016	EP2306774-017	EP2306774-018	EP2306774-019	EP2306774-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**7.4**	**7.3**	**7.1**	**6.9**	**7.0**
pH (Fox)	----	0.1	pH Unit	**5.4**	**5.5**	**5.5**	**5.5**	**5.5**
Reaction Rate	----	1	Reaction Unit	**1**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-27 9	H-TP10N-27 10	H-TP10N-27 11	H-TP10N-27 12	H-TP10N-28 1
			Sampling date / time	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	16-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-021	EP2306774-022	EP2306774-023	EP2306774-024	EP2306774-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.9	6.9	7.5	6.9	6.2
pH (Fox)	----	0.1	pH Unit	5.5	5.0	7.0	5.3	3.8
Reaction Rate	----	1	Reaction Unit	1	1	3	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-28 2	H-TP10N-28 3	H-TP10N-28 4	H-TP10N-28 5	H-TP10N-28 6
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-026	EP2306774-027	EP2306774-028	EP2306774-029	EP2306774-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.0	6.2	6.0	6.4	6.2
pH (Fox)	----	0.1	pH Unit	3.9	4.7	4.6	4.9	5.0
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-28 7	H-TP10N-28 8	H-TP10N-28 9	H-TP10N-28 10	H-TP10N-28 11
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-031	EP2306774-032	EP2306774-033	EP2306774-034	EP2306774-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.6	6.6	6.4	6.6	6.3
pH (Fox)	----	0.1	pH Unit	5.3	5.2	4.9	5.1	5.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-28 12	H-TP10N-28 4_Duplicate	H-TP10N-29 1	H-TP10N-29 2	H-TP10N-29 3
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-036	EP2306774-037	EP2306774-038	EP2306774-039	EP2306774-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.1	6.3	5.9	6.0	6.0
pH (Fox)	----	0.1	pH Unit	4.8	4.9	2.6	3.5	3.6
Reaction Rate	----	1	Reaction Unit	1	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-29 4	H-TP10N-29 5	H-TP10N-29 6	H-TP10N-29 7	H-TP10N-29 8
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-041	EP2306774-042	EP2306774-043	EP2306774-044	EP2306774-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.7	5.4	5.1	5.2	5.6
pH (Fox)	----	0.1	pH Unit	3.8	4.0	3.7	3.8	4.5
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-29 9	H-TP10N-29 10	H-TP10N-29 11	H-TP10N-29 12	H-TP10N-30 1
			Sampling date / time	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	18-May-2023 00:00	19-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-046	EP2306774-047	EP2306774-048	EP2306774-049	EP2306774-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.3	6.0	6.5	6.6	6.5
pH (Fox)	----	0.1	pH Unit	4.2	4.7	4.7	4.8	2.8
Reaction Rate	----	1	Reaction Unit	1	1	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-30 2	H-TP10N-30 3	H-TP10N-30 4	H-TP10N-30 5	H-TP10N-30 6
			Sampling date / time	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00	19-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2306774-051	EP2306774-052	EP2306774-053	EP2306774-054	EP2306774-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.7	5.7	5.6	5.0	4.5
pH (Fox)	----	0.1	pH Unit	3.2	3.8	3.8	3.4	3.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-30 7	H-TP10N-30 8	----	----	----
			Sampling date / time	19-May-2023 00:00	19-May-2023 00:00	---	---	---
Compound	CAS Number	LOR	Unit	EP2306774-056	EP2306774-057	--------	--------	--------
				Result	Result	---	---	---
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**4.6**	**4.7**	**----**	**----**	**----**
pH (Fox)	----	0.1	pH Unit	**3.2**	**3.5**	**----**	**----**	**----**
Reaction Rate	----	1	Reaction Unit	**1**	**1**	**----**	**----**	**----**

CERTIFICATE OF ANALYSIS

Work Order	: **EP2307162**	Page	: 1 of 15
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	29-May-2023 10:45
Order number	: 368360-1	Date Analysis Commenced	: 13-Jun-2023
C-O-C number	: ----	Issue Date	: 14-Jun-2023 16:50
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 63		
No. of samples analysed	63		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-01 1	H-TP10B-01 2	H-TP10B-01 3	H-TP10B-01 4	H-TP10B-01 5
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-001	EP2307162-002	EP2307162-003	EP2307162-004	EP2307162-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.2	5.8	5.8	5.9	6.3
pH (Fox)	----	0.1	pH Unit	2.2	3.8	4.1	4.3	4.3
Reaction Rate	----	1	Reaction Unit	2	2	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-01 6	H-TP10B-01 7	H-TP10B-01 8	H-TP10B-01 9	H-TP10B-01 10
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-006	EP2307162-007	EP2307162-008	EP2307162-009	EP2307162-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	6.3	6.0	6.1	6.2
pH (Fox)	----	0.1	pH Unit	4.5	4.5	4.4	4.6	4.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-01 11	H-TP10B-01 12	H-TP10B-01 Duplicated	H-TP10B-02 1	H-TP10B-02 2
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-011	EP2307162-012	EP2307162-013	EP2307162-014	EP2307162-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.6	6.5	6.4	5.4	5.5
pH (Fox)	----	0.1	pH Unit	4.6	4.7	4.5	2.4	3.7
Reaction Rate	----	1	Reaction Unit	1	1	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-02 3	H-TP10B-02 4	H-TP10B-02 5	H-TP10B-02 6	H-TP10B-02 7
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-016	EP2307162-017	EP2307162-018	EP2307162-019	EP2307162-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	6.0	5.7	6.1	6.2
pH (Fox)	----	0.1	pH Unit	4.1	4.3	4.3	4.4	4.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-02 8	H-TP10B-02 9	H-TP10B-02 10	H-TP10B-02 11	H-TP10B-02 12
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-021	EP2307162-022	EP2307162-023	EP2307162-024	EP2307162-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.2	6.2	6.0	6.1	6.2
pH (Fox)	----	0.1	pH Unit	4.4	4.3	4.3	4.2	4.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-03 1	H-TP10B-03 2	H-TP10B-03 3	H-TP10B-03 4	H-TP10B-03 5
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-026	EP2307162-027	EP2307162-028	EP2307162-029	EP2307162-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.8	5.9	5.8	5.9	6.2
pH (Fox)	----	0.1	pH Unit	2.4	3.8	4.0	4.0	4.3
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-03 6	H-TP10B-03 7	H-TP10B-03 8	H-TP10B-03 9	H-TP10B-03 10
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-031	EP2307162-032	EP2307162-033	EP2307162-034	EP2307162-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.0	6.1	6.2	6.3	6.1
pH (Fox)	----	0.1	pH Unit	4.4	4.4	4.2	4.3	4.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-03 11	H-TP10B-03 12	H-TP10B-03 Duplicated	H-TP10B-04 1	H-TP10B-04 2
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-036	EP2307162-037	EP2307162-038	EP2307162-039	EP2307162-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	5.9	6.3	5.9	6.1
pH (Fox)	----	0.1	pH Unit	4.3	4.2	4.4	2.4	3.6
Reaction Rate	----	1	Reaction Unit	1	1	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-04 3	H-TP10B-04 4	H-TP10B-04 5	H-TP10B-04 6	H-TP10B-04 7
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-041	EP2307162-042	EP2307162-043	EP2307162-044	EP2307162-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.2	6.2	6.3	6.3	6.2
pH (Fox)	----	0.1	pH Unit	4.4	4.4	4.4	4.4	4.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-04 8	H-TP10B-04 9	H-TP10B-04 10	H-TP10B-04 11	H-TP10B-04 12
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-046	EP2307162-047	EP2307162-048	EP2307162-049	EP2307162-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	6.4	6.3	6.5	6.4
pH (Fox)	----	0.1	pH Unit	4.4	6.6	5.4	4.6	5.1
Reaction Rate	----	1	Reaction Unit	1	3	3	1	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-04 Duplicated	H-TP10B-05 1	H-TP10B-05 2	H-TP10B-05 3	H-TP10B-05 4
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-051	EP2307162-052	EP2307162-053	EP2307162-054	EP2307162-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.2	6.0	5.9	6.0	5.9
pH (Fox)	----	0.1	pH Unit	4.5	2.5	4.0	4.3	3.8
Reaction Rate	----	1	Reaction Unit	1	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-05 5	H-TP10B-05 6	H-TP10B-05 7	H-TP10B-05 8	H-TP10B-05 9
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307162-056	EP2307162-057	EP2307162-058	EP2307162-059	EP2307162-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.2	6.3	6.3	6.2	6.3
pH (Fox)	----	0.1	pH Unit	4.4	4.3	4.4	4.5	4.9
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-05 10	H-TP10B-05 11	H-TP10B-05 12	----	----
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2307162-061	EP2307162-062	EP2307162-063	--------	--------
				Result	Result	Result	----	----
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**7.0**	**7.1**	**7.1**	**----**	**----**
pH (Fox)	----	0.1	pH Unit	**5.0**	**5.0**	**5.1**	----	----
Reaction Rate	----	1	Reaction Unit	**1**	**1**	**1**	**----**	**----**

CERTIFICATE OF ANALYSIS

Work Order	: **EP2307165**	Page	: 1 of 15
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	29-May-2023 10:45
Order number	: 368360-1	Date Analysis Commenced	: 15-Jun-2023
C-O-C number	: ----	Issue Date	: 16-Jun-2023 11:38
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 63		
No. of samples analysed	63		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-06 1	H-TP10B-06 2	H-TP10B-06 3	H-TP10B-06 4	H-TP10B-06 5
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-001	EP2307165-002	EP2307165-003	EP2307165-004	EP2307165-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.5	6.2	6.3	6.2	6.5
pH (Fox)	----	0.1	pH Unit	2.6	3.5	4.0	3.9	4.6
Reaction Rate	----	1	Reaction Unit	2	2	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-06 6	H-TP10B-06 7	H-TP10B-06 8	H-TP10B-06 9	H-TP10B-06 10
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-006	EP2307165-007	EP2307165-008	EP2307165-009	EP2307165-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.6	6.6	6.6	6.4	6.4
pH (Fox)	----	0.1	pH Unit	4.5	4.5	4.5	4.5	4.4
Reaction Rate	----	1	Reaction Unit	1	2	2	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-06 11	H-TP10B-06 12	H-TP10B-06 Duplicated	H-TP10B-07 1	H-TP10B-07 2
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-011	EP2307165-012	EP2307165-013	EP2307165-014	EP2307165-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.1	6.4	5.9	5.3
pH (Fox)	----	0.1	pH Unit	4.3	4.2	4.5	2.7	3.5
Reaction Rate	----	1	Reaction Unit	2	1	1	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-07 3	H-TP10B-07 4	H-TP10B-07 5	H-TP10B-07 6	H-TP10B-07 7
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-016	EP2307165-017	EP2307165-018	EP2307165-019	EP2307165-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	5.7	6.0	5.5	6.1
pH (Fox)	----	0.1	pH Unit	3.9	4.0	4.3	4.3	4.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-07 8	H-TP10B-07 9	H-TP10B-07 10	H-TP10B-07 11	H-TP10B-07 12
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-021	EP2307165-022	EP2307165-023	EP2307165-024	EP2307165-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.1	5.9	5.5	5.4	6.4
pH (Fox)	----	0.1	pH Unit	4.3	4.4	4.4	4.3	4.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-08 1	H-TP10B-08 2	H-TP10B-08 3	H-TP10B-08 4	H-TP10B-08 5
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-026	EP2307165-027	EP2307165-028	EP2307165-029	EP2307165-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.9	4.8	5.6	6.3	6.4
pH (Fox)	----	0.1	pH Unit	3.3	3.4	4.2	4.2	4.4
Reaction Rate	----	1	Reaction Unit	2	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-08 6	H-TP10B-08 7	H-TP10B-08 8	H-TP10B-08 9	H-TP10B-08 10
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-031	EP2307165-032	EP2307165-033	EP2307165-034	EP2307165-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.8	6.5	6.4	6.4	6.4
pH (Fox)	----	0.1	pH Unit	4.2	4.4	4.4	4.4	4.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-08 11	H-TP10B-08 12	H-TP10B-08 Duplicated	H-TP10B-09 1	H-TP10B-09 2
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-036	EP2307165-037	EP2307165-038	EP2307165-039	EP2307165-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.7	6.5	5.1	5.7
pH (Fox)	----	0.1	pH Unit	4.2	4.8	4.4	2.3	3.4
Reaction Rate	----	1	Reaction Unit	1	2	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-09 3	H-TP10B-09 4	H-TP10B-09 5	H-TP10B-09 6	H-TP10B-09 7
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-041	EP2307165-042	EP2307165-043	EP2307165-044	EP2307165-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.1	6.3	6.6	7.0	6.4
pH (Fox)	----	0.1	pH Unit	4.3	4.4	4.7	4.9	4.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-09 8	H-TP10B-09 9	H-TP10B-09 10	H-TP10B-09 11	H-TP10B-09 12
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-046	EP2307165-047	EP2307165-048	EP2307165-049	EP2307165-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	7.6	8.0	7.8	7.9
pH (Fox)	----	0.1	pH Unit	4.7	5.2	5.4	5.4	5.5
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-09 Duplicated	H-TP10B-10 1	H-TP10B-10 2	H-TP10B-10 3	H-TP10B-10 4
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-051	EP2307165-052	EP2307165-053	EP2307165-054	EP2307165-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	6.3	4.7	5.3	6.0
pH (Fox)	----	0.1	pH Unit	5.1	3.2	3.1	3.8	4.0
Reaction Rate	----	1	Reaction Unit	1	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-10 5	H-TP10B-10 6	H-TP10B-10 7	H-TP10B-10 8	H-TP10B-10 9
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307165-056	EP2307165-057	EP2307165-058	EP2307165-059	EP2307165-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.2	6.1	6.0	5.8	5.9
pH (Fox)	----	0.1	pH Unit	4.0	4.0	3.9	3.9	4.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-10 10	H-TP10B-10 11	H-TP10B-10 12	----	----
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2307165-061	EP2307165-062	EP2307165-063	--------	--------
				Result	Result	Result	----	----
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	6.0	6.0	----	----
pH (Fox)	----	0.1	pH Unit	4.2	4.2	4.4	----	----
Reaction Rate	----	1	Reaction Unit	1	1	1	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EP2307170**	Page	: 1 of 15
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	29-May-2023 10:45
Order number	: 368360-1	Date Analysis Commenced	: 20-Jun-2023
C-O-C number	: ----	Issue Date	: 21-Jun-2023 11:35
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 63		
No. of samples analysed	63		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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Signatories	*Position*	*Accreditation Category*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-11 1	H-TP10B-11 2	H-TP10B-11 3	H-TP10B-11 4	H-TP10B-11 5
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-001	EP2307170-002	EP2307170-003	EP2307170-004	EP2307170-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.2	5.3	5.6	6.0	6.1
pH (Fox)	----	0.1	pH Unit	2.7	3.3	3.6	4.0	4.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-11 6	H-TP10B-11 7	H-TP10B-11 8	H-TP10B-11 9	H-TP10B-11 10
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-006	EP2307170-007	EP2307170-008	EP2307170-009	EP2307170-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.0	6.1	5.6	5.7	5.8
pH (Fox)	----	0.1	pH Unit	4.2	4.0	3.8	3.9	3.9
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-11 11	H-TP10B-11 12	H-TP10B-11 Duplicated	H-TP10B-12 1	H-TP10B-12 2
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-011	EP2307170-012	EP2307170-013	EP2307170-014	EP2307170-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.4	5.4	6.1	7.0	7.2
pH (Fox)	----	0.1	pH Unit	3.8	3.8	4.2	4.9	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-12 3	H-TP10B-12 4	H-TP10B-12 5	H-TP10B-12 6	H-TP10B-12 7
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-016	EP2307170-017	EP2307170-018	EP2307170-019	EP2307170-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.2	7.2	7.2	7.1	8.0
pH (Fox)	----	0.1	pH Unit	5.3	5.3	5.1	5.2	5.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-12 8	H-TP10B-12 9	H-TP10B-12 10	H-TP10B-12 11	H-TP10B-12 12
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-021	EP2307170-022	EP2307170-023	EP2307170-024	EP2307170-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.5	7.2	7.0	7.8	7.4
pH (Fox)	----	0.1	pH Unit	5.2	5.3	5.2	5.4	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-12 Duplicated	H-TP10B-13 1	H-TP10B-13 2	H-TP10B-13 3	H-TP10B-13 4
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-026	EP2307170-027	EP2307170-028	EP2307170-029	EP2307170-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.3	6.8	6.8	6.8	7.1
pH (Fox)	----	0.1	pH Unit	5.3	4.9	5.0	4.9	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-13 5	H-TP10B-13 6	H-TP10B-13 7	H-TP10B-13 8	H-TP10B-13 9
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-031	EP2307170-032	EP2307170-033	EP2307170-034	EP2307170-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.1	7.2	7.2	7.2	7.4
pH (Fox)	----	0.1	pH Unit	5.0	5.2	5.4	5.2	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-13 10	H-TP10B-13 11	H-TP10B-13 12	H-TP10B-13 Duplicated	H-TP10B-14 1
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-036	EP2307170-037	EP2307170-038	EP2307170-039	EP2307170-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	7.2	7.1	7.1	5.5
pH (Fox)	----	0.1	pH Unit	5.3	4.9	5.0	5.1	3.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-14 2	H-TP10B-14 3	H-TP10B-14 4	H-TP10B-14 5	H-TP10B-14 6
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-041	EP2307170-042	EP2307170-043	EP2307170-044	EP2307170-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.9	5.6	5.7	5.9	6.1
pH (Fox)	----	0.1	pH Unit	3.1	4.1	3.6	4.0	4.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-14 7	H-TP10B-14 8	H-TP10B-14 9	H-TP10B-14 10	H-TP10B-14 11
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-046	EP2307170-047	EP2307170-048	EP2307170-049	EP2307170-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.1	6.2	6.5	6.4	6.3
pH (Fox)	----	0.1	pH Unit	4.4	4.2	4.4	4.5	4.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-14 12	H-TP10B-15 1	H-TP10B-15 2	H-TP10B-15 3	H-TP10B-15 4
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-051	EP2307170-052	EP2307170-053	EP2307170-054	EP2307170-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	6.6	6.7	6.7	6.9
pH (Fox)	----	0.1	pH Unit	4.1	4.8	4.6	4.8	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-15 5	H-TP10B-15 6	H-TP10B-15 7	H-TP10B-15 8	H-TP10B-15 9
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307170-056	EP2307170-057	EP2307170-058	EP2307170-059	EP2307170-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.0	7.0	7.6	6.9	7.4
pH (Fox)	----	0.1	pH Unit	5.0	5.3	5.6	5.2	5.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-15 10	H-TP10B-15 11	H-TP10B-15 12	----	----
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2307170-061	EP2307170-062	EP2307170-063	--------	--------
				Result	Result	Result	----	----
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.8	7.6	7.4	----	----
pH (Fox)	----	0.1	pH Unit	5.3	5.3	5.0	----	----
Reaction Rate	----	1	Reaction Unit	1	1	1	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EP2307178**	Page	: 1 of 15
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	29-May-2023 10:45
Order number	: 368360-1	Date Analysis Commenced	: 22-Jun-2023
C-O-C number	: ----	Issue Date	: 23-Jun-2023 12:11
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 62		
No. of samples analysed	62		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-16 1	H-TP10B-16 2	H-TP10B-16 3	H-TP10B-16 4	H-TP10B-16 5
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-001	EP2307178-002	EP2307178-003	EP2307178-004	EP2307178-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.3	7.5	7.4	7.4	7.6
pH (Fox)	----	0.1	pH Unit	5.0	5.1	4.9	5.1	5.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-16 6	H-TP10B-16 7	H-TP10B-16 8	H-TP10B-16 9	H-TP10B-16 10
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-006	EP2307178-007	EP2307178-008	EP2307178-009	EP2307178-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**7.4**	**7.6**	**7.7**	**7.6**	**7.6**
pH (Fox)	----	0.1	pH Unit	**5.1**	**5.2**	**5.5**	**5.1**	**5.0**
Reaction Rate	----	1	Reaction Unit	**1**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-16 11	H-TP10B-16 12	H-TP10B-17 1	H-TP10B-17 2	H-TP10B-17 3
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-011	EP2307178-012	EP2307178-013	EP2307178-014	EP2307178-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.7	7.5	7.3	7.1	7.1
pH (Fox)	----	0.1	pH Unit	5.0	4.9	5.0	4.6	4.8
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-17 4	H-TP10B-17 5	H-TP10B-17 6	H-TP10B-17 7	H-TP10B-17 8
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-016	EP2307178-017	EP2307178-018	EP2307178-019	EP2307178-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.3	7.1	7.0	7.1	7.6
pH (Fox)	----	0.1	pH Unit	4.9	5.0	4.7	4.8	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-17 9	H-TP10B-17 10	H-TP10B-17 11	H-TP10B-17 12	H-TP10B-17 Duplicated
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-021	EP2307178-022	EP2307178-023	EP2307178-024	EP2307178-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.7	7.6	7.3	7.2	6.9
pH (Fox)	----	0.1	pH Unit	5.3	5.1	4.7	4.7	4.7
Reaction Rate	----	1	Reaction Unit	1	2	2	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-18 1	H-TP10B-18 2	H-TP10B-18 3	H-TP10B-18 4	H-TP10B-18 5
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-026	EP2307178-027	EP2307178-028	EP2307178-029	EP2307178-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.4	6.7	6.6	7.1
pH (Fox)	----	0.1	pH Unit	4.5	4.4	4.7	4.5	5.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-18 6	H-TP10B-18 7	H-TP10B-18 8	H-TP10B-18 9	H-TP10B-18 10
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-031	EP2307178-032	EP2307178-033	EP2307178-034	EP2307178-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.0	7.0	7.2	7.1	7.3
pH (Fox)	----	0.1	pH Unit	4.8	4.8	2.4	4.9	4.7
Reaction Rate	----	1	Reaction Unit	1	1	3	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-18 11	H-TP10B-18 12	H-TP10B-19 1	H-TP10B-19 2	H-TP10B-19 3
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-036	EP2307178-037	EP2307178-038	EP2307178-039	EP2307178-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.0	7.1	7.5	7.4	7.7
pH (Fox)	----	0.1	pH Unit	4.6	4.8	5.0	4.9	4.8
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-19 4	H-TP10B-19 5	H-TP10B-19 6	H-TP10B-19 7	H-TP10B-19 8
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-041	EP2307178-042	EP2307178-043	EP2307178-044	EP2307178-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.6	7.6	7.7	7.8	7.6
pH (Fox)	----	0.1	pH Unit	5.0	5.3	5.3	5.4	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-19 9	H-TP10B-19 10	H-TP10B-19 11	H-TP10B-19 12	H-TP10B-19 Duplicated
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-046	EP2307178-047	EP2307178-048	EP2307178-049	EP2307178-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	7.3	7.9	7.1	7.4
pH (Fox)	----	0.1	pH Unit	5.3	4.9	5.2	4.7	5.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-20 1	H-TP10B-20 2	H-TP10B-20 3	H-TP10B-20 4	H-TP10B-20 5
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-051	EP2307178-052	EP2307178-053	EP2307178-054	EP2307178-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	7.2	7.3	7.2	8.0
pH (Fox)	----	0.1	pH Unit	5.2	4.8	5.1	4.9	2.9
Reaction Rate	----	1	Reaction Unit	1	1	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-20 6	H-TP10B-20 7	H-TP10B-20 8	H-TP10B-20 9	H-TP10B-20 10
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307178-056	EP2307178-057	EP2307178-058	EP2307178-059	EP2307178-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.1	7.6	7.6	7.4	7.3
pH (Fox)	----	0.1	pH Unit	2.8	4.5	4.6	4.9	4.7
Reaction Rate	----	1	Reaction Unit	3	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-20 11	H-TP10B-20 12	----	----	----
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	---	---	---
Compound	CAS Number	LOR	Unit	EP2307178-061	EP2307178-062	--------	--------	--------
				Result	Result	---	---	---
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**7.5**	**7.1**	**----**	**----**	**----**
pH (Fox)	----	0.1	pH Unit	**4.9**	**4.8**	**----**	**----**	**----**
Reaction Rate	----	1	Reaction Unit	**1**	**1**	**----**	**----**	**----**

CERTIFICATE OF ANALYSIS

Work Order	: **EP2307183**	Page	: 1 of 23
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	29-May-2023 10:45
Order number	: 368360-1	Date Analysis Commenced	: 27-Jun-2023
C-O-C number	: ----	Issue Date	: 30-Jun-2023 17:04
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 101		
No. of samples analysed	101		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

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Signatories	*Position*	*Accreditation Category*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

General Comments

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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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-21 1	H-TP10B-21 2	H-TP10B-21 3	H-TP10B-21 4	H-TP10B-21 5
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-001	EP2307183-002	EP2307183-003	EP2307183-004	EP2307183-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.4	6.7	5.5	5.7	5.9
pH (Fox)	----	0.1	pH Unit	3.1	4.3	3.9	4.1	4.2
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-21 6	H-TP10B-21 7	H-TP10B-21 8	H-TP10B-21 9	H-TP10B-21 10
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-006	EP2307183-007	EP2307183-008	EP2307183-009	EP2307183-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	5.9	5.8	5.6	5.6
pH (Fox)	----	0.1	pH Unit	4.3	4.3	4.3	4.4	4.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-21 11	H-TP10B-21 12	H-TP10B-21 Duplicated	H-TP10B-22 1	H-TP10B-22 2
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-011	EP2307183-012	EP2307183-013	EP2307183-014	EP2307183-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.2	5.9	6.9	7.2	7.4
pH (Fox)	----	0.1	pH Unit	4.3	4.3	4.4	5.1	5.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-22 3	H-TP10B-22 4	H-TP10B-22 5	H-TP10B-22 6	H-TP10B-22 7
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-016	EP2307183-017	EP2307183-018	EP2307183-019	EP2307183-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.3	7.1	7.4	7.0	7.3
pH (Fox)	----	0.1	pH Unit	4.9	5.0	5.1	5.0	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-22 8	H-TP10B-22 9	H-TP10B-22 10	H-TP10B-22 11	H-TP10B-22 12
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-021	EP2307183-022	EP2307183-023	EP2307183-024	EP2307183-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.7	7.0	7.0	6.9	6.9
pH (Fox)	----	0.1	pH Unit	5.4	5.0	5.1	4.7	4.9
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-23 1	H-TP10B-23 2	H-TP10B-23 3	H-TP10B-23 4	H-TP10B-23 5
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-026	EP2307183-027	EP2307183-028	EP2307183-029	EP2307183-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.3	7.2	7.0	7.1	7.4
pH (Fox)	----	0.1	pH Unit	5.0	5.0	4.9	4.9	5.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-23 6	H-TP10B-23 7	H-TP10B-23 8	H-TP10B-23 9	H-TP10B-23 10
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-031	EP2307183-032	EP2307183-033	EP2307183-034	EP2307183-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**7.1**	**7.0**	**7.1**	**7.6**	**7.8**
pH (Fox)	----	0.1	pH Unit	**5.0**	**5.0**	**4.9**	**5.1**	**5.2**
Reaction Rate	----	1	Reaction Unit	**1**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-23 11	H-TP10B-23 12	H-TP10B-23 Duplicated	H-TP10B-24 1	H-TP10B-24 2
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-036	EP2307183-037	EP2307183-038	EP2307183-039	EP2307183-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.7	7.4	7.0	6.7	7.3
pH (Fox)	----	0.1	pH Unit	5.5	5.5	4.9	4.9	5.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-24 3	H-TP10B-24 4	H-TP10B-24 5	H-TP10B-24 6	H-TP10B-24 7
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-041	EP2307183-042	EP2307183-043	EP2307183-044	EP2307183-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.3	7.4	7.5	7.9	7.4
pH (Fox)	----	0.1	pH Unit	4.9	5.1	5.2	5.4	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-24 8	H-TP10B-24 9	H-TP10B-24 10	H-TP10B-24 11	H-TP10B-24 12
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-046	EP2307183-047	EP2307183-048	EP2307183-049	EP2307183-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.5	7.6	7.2	7.5	7.5
pH (Fox)	----	0.1	pH Unit	5.4	5.3	5.2	5.0	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-25 1	H-TP10B-25 2	H-TP10B-25 3	H-TP10B-25 4	H-TP10B-25 5
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-051	EP2307183-052	EP2307183-053	EP2307183-054	EP2307183-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.7	6.9	6.9	6.9	6.8
pH (Fox)	----	0.1	pH Unit	4.8	5.1	5.2	5.2	5.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-25 6	H-TP10B-25 7	H-TP10B-25 8	H-TP10B-25 9	H-TP10B-25 10
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-056	EP2307183-057	EP2307183-058	EP2307183-059	EP2307183-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.2	7.5	7.2	7.0	7.1
pH (Fox)	----	0.1	pH Unit	5.1	5.4	5.1	5.1	5.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-25 11	H-TP10B-25 12	H-TP10B-25 Duplicated	H-TP10B-26 1	H-TP10B-26 2
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-061	EP2307183-062	EP2307183-063	EP2307183-064	EP2307183-065
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.2	7.2	7.2	6.2	5.4
pH (Fox)	----	0.1	pH Unit	5.0	5.0	5.2	2.9	3.6
Reaction Rate	----	1	Reaction Unit	1	1	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-26 3	H-TP10B-26 4	H-TP10B-26 5	H-TP10B-26 6	H-TP10B-26 7
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-066	EP2307183-067	EP2307183-068	EP2307183-069	EP2307183-070
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	5.8	6.0	6.0	6.4
pH (Fox)	----	0.1	pH Unit	4.0	3.9	4.3	4.4	4.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-26 8	H-TP10B-26 9	H-TP10B-26 10	H-TP10B-26 11	H-TP10B-26 12
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-071	EP2307183-072	EP2307183-073	EP2307183-074	EP2307183-075
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.5	7.1	5.4	7.4
pH (Fox)	----	0.1	pH Unit	4.4	4.7	5.2	4.7	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-26 Duplicated	H-TP10B-27 1	H-TP10B-27 2	H-TP10B-27 3	H-TP10B-27 4
			Sampling date / time	24-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-076	EP2307183-077	EP2307183-078	EP2307183-079	EP2307183-080
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.1	6.3	6.2	6.5	6.5
pH (Fox)	----	0.1	pH Unit	4.5	4.6	4.8	4.8	4.8
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-27 5	H-TP10B-27 6	H-TP10B-27 7	H-TP10B-27 8	H-TP10B-27 9
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-081	EP2307183-082	EP2307183-083	EP2307183-084	EP2307183-085
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.7	6.5	6.9	6.9	8.2
pH (Fox)	----	0.1	pH Unit	4.7	4.9	4.3	5.4	6.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-27 10	H-TP10B-27 11	H-TP10B-27 12	H-TP10B-27 Duplicated	H-TP10B-28 1
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-086	EP2307183-087	EP2307183-088	EP2307183-089	EP2307183-090
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.8	7.2	7.1	6.6	6.4
pH (Fox)	----	0.1	pH Unit	5.4	5.1	4.9	4.6	2.5
Reaction Rate	----	1	Reaction Unit	2	1	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-28 2	H-TP10B-28 3	H-TP10B-28 4	H-TP10B-28 5	H-TP10B-28 6
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-091	EP2307183-092	EP2307183-093	EP2307183-094	EP2307183-095
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.6	6.3	6.3	6.5	6.7
pH (Fox)	----	0.1	pH Unit	3.0	4.3	4.2	4.3	4.4
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-28 7	H-TP10B-28 8	H-TP10B-28 9	H-TP10B-28 10	H-TP10B-28 11
			Sampling date / time	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2307183-096	EP2307183-097	EP2307183-098	EP2307183-099	EP2307183-100
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	6.9	6.7	6.9	7.0
pH (Fox)	----	0.1	pH Unit	4.6	5.0	4.9	5.1	4.8
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-28 12	----	----	----	----
			Sampling date / time	24-May-2023 00:00	---	---	---	---
Compound	CAS Number	LOR	Unit	EP2307183-101	--------	--------	--------	--------
				Result	---	---	---	---
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.2	----	----	----	----
pH (Fox)	----	0.1	pH Unit	5.0	----	----	----	----
Reaction Rate	----	1	Reaction Unit	1	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EP2308132**	Page	: 1 of 13
Amendment	: **1**		
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	22-May-2023 15:56
Order number	: 368360-1	Date Analysis Commenced	: 20-Jun-2023
C-O-C number	: ----	Issue Date	: 25-Jul-2023 12:46
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 53		
No. of samples analysed	53		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA033 (CRS Suite): Retained Acidity not required for particular samples because pH KCl greater than or equal to 4.5
- Amendment (25/07/2023): This report has been amended as a result of changes to the contacts for the distribution of the report. All analysis results are as per the previous report.
- ASS: EA033 (CRS Suite): ANC not required because pH KCl less than 6.5
- This workorder is a rebatch of EP2306747, EP2306752, EP2306754, EP2306761, EP2306773 and EP2306774.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-3 6	H-TP10N-4 3	H-TP10N-4 5	H-TP10N-4 7	H-TP10N-4 9
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-001	EP2308132-002	EP2308132-003	EP2308132-004	EP2308132-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.2	5.6	5.4	5.1	5.2
Titratable Actual Acidity (23F)	----	2	mole H+ / t	41	36	39	50	36
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.07	0.06	0.06	0.08	0.06
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.07	0.06	0.06	0.08	0.06
Net Acidity (acidity units)	----	10	mole H+ / t	42	36	40	51	37
Liming Rate	----	1	kg CaCO3/t	3	3	3	4	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.07	0.06	0.06	0.08	0.06
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	42	36	40	51	37
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	3	3	4	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-4 11	H-TP10N-5 3	H-TP10N-5 5	H-TP10N-5 7	H-TP10N-5 9
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-006	EP2308132-007	EP2308132-008	EP2308132-009	EP2308132-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.4	5.1	4.5	4.6	4.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	34	16	21	28	24
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	0.03	0.03	0.04	0.04
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-D: Retained Acidity								
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	<0.02
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	<10
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	<0.02
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	0.05
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	0.05
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.06	0.03	0.03	0.04	0.04
Net Acidity (acidity units)	----	10	mole H+ / t	34	17	22	28	27
Liming Rate	----	1	kg CaCO3/t	3	1	2	2	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.06	0.03	0.03	0.04	0.04
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	34	17	22	28	27
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	1	2	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-10 3	H-TP10N-10 5	H-TP10N-10 5_Duplicated	H-TP10N-12 1	H-TP10N-12 8
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-011	EP2308132-012	EP2308132-013	EP2308132-014	EP2308132-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.6	4.9	5.0	4.7	5.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	16	22	22	20	21
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.04	0.04	0.03	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.03	0.04	0.04	0.04	0.04
Net Acidity (acidity units)	----	10	mole H+ / t	16	23	24	22	22
Liming Rate	----	1	kg CaCO3/t	1	2	2	2	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	0.04	0.04	0.04	0.04
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	16	23	24	22	22
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	2	2	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-12 11	H-TP10N-14 3	H-TP10N-14 5	H-TP10N-14 7	H-TP10N-14 9
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-016	EP2308132-017	EP2308132-018	EP2308132-019	EP2308132-020
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.3	4.6	4.9	4.5	4.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	5	18	16	30	31
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.03	0.03	0.05	0.05
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-D: Retained Acidity								
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	<0.02	<0.02
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	<10	<10
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	<0.02	<0.02
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	0.05	0.06
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	0.05	0.06
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.03	0.03	0.04	0.06
Net Acidity (acidity units)	----	10	mole H+ / t	<10	19	18	28	35
Liming Rate	----	1	kg CaCO3/t	1	1	1	2	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.03	0.03	0.04	0.06
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	19	18	28	35
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	1	2	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-14 11	H-TP10N-15 3	H-TP10N-15 5	H-TP10N-15 7	H-TP10N-15 9
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-021	EP2308132-022	EP2308132-023	EP2308132-024	EP2308132-025
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.3	4.8	4.7	4.7	4.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	34	21	14	18	20
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	0.03	0.02	0.03	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-D: Retained Acidity								
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	<0.02
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	<10
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	<0.02
KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.06	----	----	----	0.04
HCl Extractable Sulfur (20Be)	----	0.02	% S	0.06	----	----	----	0.04
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.05	0.03	0.03	0.03	0.04
Net Acidity (acidity units)	----	10	mole H+ / t	34	22	16	19	22
Liming Rate	----	1	kg CaCO3/t	3	2	1	1	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.05	0.03	0.03	0.03	0.04
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	34	22	16	19	22
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	2	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-15 11	H-TP10N-17 2	H-TP10N-17 9	H-TP10N-18 2	H-TP10N-18 9
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-026	EP2308132-027	EP2308132-028	EP2308132-029	EP2308132-030
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**4.7**	**4.7**	**5.7**	**5.0**	**5.5**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**20**	**12**	**5**	**12**	**5**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.03**	**0.02**	0.02	**0.02**	0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	**0.03**	**0.02**	<0.02	**0.02**	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	**20**	**13**	<10	**13**	<10
Liming Rate	----	1	kg CaCO3/t	**2**	**1**	<1	**1**	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.03**	**0.02**	<0.02	**0.02**	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**20**	**13**	<10	**13**	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	**2**	**1**	<1	**1**	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-19 3	H-TP10N-19 6	H-TP10N-19 13	H-TP10N-20 2	H-TP10N-21 2
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-031	EP2308132-032	EP2308132-033	EP2308132-034	EP2308132-035
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.9	6.1	5.7	4.5	4.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	2	2	2	29	20
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.02	0.02	0.05	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-D: Retained Acidity								
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	<0.02	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	<10	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	<0.02	----
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	<0.02	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	<0.02	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	0.05	0.03
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	32	20
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	2	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	0.05	0.03
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	<10	32	20
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	<1	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-22 4	H-TP10N-22 6	H-TP10N-22 8	H-TP10N-23 4	H-TP10N-23 6
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-036	EP2308132-037	EP2308132-038	EP2308132-039	EP2308132-040
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.6	4.4	4.6	4.4	4.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	24	28	26	16	21
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.04	0.04	0.04	0.03	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-D: Retained Acidity								
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	<0.02	----	<0.02	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	<10	----	<10	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	<0.02	----	<0.02	----
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	0.04	----	0.04	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	0.05	----	0.05	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.04	0.05	0.04	0.04	0.03
Net Acidity (acidity units)	----	10	mole H+ / t	25	30	27	24	22
Liming Rate	----	1	kg CaCO3/t	2	2	2	2	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.05	0.04	0.04	0.03
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	25	30	27	24	22
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	2	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-24 4	H-TP10N-24 9	H-TP10N-25 2	H-TP10N-27 2	H-TP10N-27 4
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-041	EP2308132-042	EP2308132-043	EP2308132-044	EP2308132-045
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**4.9**	**4.9**	**4.6**	**5.8**	**6.0**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**14**	**11**	**25**	2	2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.02**	**0.02**	**0.04**	0.02	0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	**0.02**	**0.02**	**0.04**	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	**14**	**11**	**26**	<10	<10
Liming Rate	----	1	kg CaCO3/t	**1**	**1**	**2**	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.02**	**0.02**	**0.04**	<0.02	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**14**	**11**	**26**	<10	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	**1**	**1**	**2**	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-27 7	H-TP10N-27 9	H-TP10N-28 3	H-TP10N-28 5	H-TP10N-28 7
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	EP2308132-046	EP2308132-047	EP2308132-048	EP2308132-049	EP2308132-050
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.3	5.3	5.0	5.4	5.2
Titratable Actual Acidity (23F)	----	2	mole H+ / t	8	8	10	6	8
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.02	0.02	0.02	0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	10	<10	<10
Liming Rate	----	1	kg CaCO3/t	1	1	1	<1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	0.02	<0.02	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	10	<10	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	1	<1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10N-28 11	H-TP10N-29 3	H-TP10N-29 8	----	----
			Sampling date / time	17-Jun-2023 00:00	17-Jun-2023 00:00	17-Jun-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2308132-051	EP2308132-052	EP2308132-053	--------	--------
				Result	Result	Result	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.2	4.7	4.9	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	9	26	16	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.04	0.03	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.04	0.03	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	26	17	----	----
Liming Rate	----	1	kg CaCO3/t	1	2	1	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.04	0.03	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	26	17	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	2	1	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EP2310022**	Page	: 1 of 13
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	29-May-2023 10:45
Order number	: 368360-1	Date Analysis Commenced	: 27-Jul-2023
C-O-C number	: ----	Issue Date	: 04-Aug-2023 12:44
Sampler	: ----		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 53		
No. of samples analysed	53		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA033 (CRS Suite): Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA033 (CRS Suite): ANC not required because pH KCl less than 6.5
- This workorder is a rebatch of EP2307162, EP2307165, EP2307170, EP2307178 & EP2307183
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-01 1	H-TP10B-01 2	H-TP10B-01 11	H-TP10B-03 8	H-TP10B-04 2
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	24-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-001	EP2310022-002	EP2310022-003	EP2310022-004	EP2310022-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.8	5.3	5.6	6.0	5.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	6	24	14	10	10
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.04	0.02	0.02	0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.04	0.02	0.02	0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	24	15	11	11
Liming Rate	----	1	kg CaCO3/t	1	2	1	1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.04	0.02	0.02	0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	24	15	11	11
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-04 9	H-TP10B-04 12	H-TP10B-05 6	H-TP10B-06 1	H-TP10B-06 8
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-006	EP2310022-007	EP2310022-008	EP2310022-009	EP2310022-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.5**	**5.6**	**5.6**	**5.9**	**5.6**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**14**	**9**	**15**	**4**	**14**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.02**	0.02	**0.02**	0.02	**0.02**
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	**0.03**	<0.02	**0.03**	<0.02	**0.02**
Net Acidity (acidity units)	----	10	mole H+ / t	**16**	<10	**17**	<10	**15**
Liming Rate	----	1	kg CaCO3/t	**1**	**1**	**1**	<1	**1**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.03**	<0.02	**0.03**	<0.02	**0.02**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**16**	<10	**17**	<10	**15**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**1**	**1**	**1**	<1	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-06 11	H-TP10B-08 1	H-TP10B-08 2	H-TP10B-08 12	H-TP10B-09 5
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-011	EP2310022-012	EP2310022-013	EP2310022-014	EP2310022-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.7**	**6.0**	**6.0**	**5.6**	**5.6**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**11**	2	2	**14**	**12**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.02**	0.02	0.02	**0.02**	**0.02**
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	**0.02**	<0.02	<0.02	**0.02**	**0.02**
Net Acidity (acidity units)	----	10	mole H+ / t	**12**	<10	<10	**14**	**14**
Liming Rate	----	1	kg CaCO3/t	**1**	<1	<1	**1**	**1**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.02**	<0.02	<0.02	**0.02**	**0.02**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**12**	<10	<10	**14**	**14**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**1**	<1	<1	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-09 10	H-TP10B-09 Duplicated	H-TP10B-10 7	H-TP10B-11 1	H-TP10B-11 5
			Sampling date / time	25-May-2023 00:00	25-May-2023 00:00	25-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-016	EP2310022-017	EP2310022-018	EP2310022-019	EP2310022-020
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.2	5.8	5.8	5.8	5.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	4	6	10	4	10
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.02	<0.02	0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.02	<0.02	0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	11	<10	12
Liming Rate	----	1	kg CaCO3/t	<1	1	1	<1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	0.02	<0.02	0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	11	<10	12
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	1	1	<1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-12 5	H-TP10B-12 11	H-TP10B-13 5	H-TP10B-14 2	H-TP10B-14 9
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-021	EP2310022-022	EP2310022-023	EP2310022-024	EP2310022-025
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.6	5.7	5.3	5.2	5.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	15	5	11	26	18
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.02	0.02	0.04	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.03	<0.02	0.02	0.04	0.03
Net Acidity (acidity units)	----	10	mole H+ / t	17	<10	13	28	21
Liming Rate	----	1	kg CaCO3/t	1	1	1	2	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	<0.02	0.02	0.04	0.03
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	17	<10	13	28	21
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	1	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-15 2	H-TP10B-15 10	H-TP10B-16 5	H-TP10B-17 4	H-TP10B-17 10
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	22-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-026	EP2310022-027	EP2310022-028	EP2310022-029	EP2310022-030
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.3	5.8	5.6	5.4	5.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	22	7	14	17	15
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.04	0.02	0.02	0.03	0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.04	<0.02	0.03	0.03	0.03
Net Acidity (acidity units)	----	10	mole H+ / t	24	<10	16	17	17
Liming Rate	----	1	kg CaCO3/t	2	1	1	1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	<0.02	0.03	0.03	0.03
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	24	<10	16	17	17
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-18 3	H-TP10B-18 8	H-TP10B-18 12	H-TP10B-19 2	H-TP10B-19 11
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-031	EP2310022-032	EP2310022-033	EP2310022-034	EP2310022-035
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.5**	**5.5**	**6.0**	**5.6**	**5.7**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**15**	10	**5**	**11**	**7**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.02**	**0.02**	0.02	**0.02**	0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	**0.039**	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	**24**	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	**0.03**	**0.06**	<0.02	**0.02**	**0.02**
Net Acidity (acidity units)	----	10	mole H+ / t	**16**	**34**	<10	**12**	**10**
Liming Rate	----	1	kg CaCO3/t	**1**	**3**	**1**	**1**	**1**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.03**	**0.06**	<0.02	**0.02**	**0.02**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**16**	**34**	<10	**12**	**10**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**1**	**3**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-19 Duplicated	H-TP10B-20 5	H-TP10B-20 6	H-TP10B-20 11	H-TP10B-21 2
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-036	EP2310022-037	EP2310022-038	EP2310022-039	EP2310022-040
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.8	5.4	5.5	5.8	6.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	12	16	5	6	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.03	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.033	0.029	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	20	18	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.02	0.06	0.04	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	12	37	23	<10	<10
Liming Rate	----	1	kg CaCO3/t	1	3	2	1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	0.06	0.04	<0.02	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	12	37	23	<10	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	3	2	1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-21 Duplicated	H-TP10B-22 2	H-TP10B-23 1	H-TP10B-23 9	H-TP10B-23 Duplicated
			Sampling date / time	23-May-2023 00:00	22-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-041	EP2310022-042	EP2310022-043	EP2310022-044	EP2310022-045
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.1	5.4	5.4	5.7	5.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	21	10	15	18
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	0.03	0.02	0.02	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.03	0.02	0.03	0.03
Net Acidity (acidity units)	----	10	mole H+ / t	<10	21	10	16	19
Liming Rate	----	1	kg CaCO3/t	<1	2	1	1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.03	0.02	0.03	0.03
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	21	10	16	19
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-24 4	H-TP10B-25 6	H-TP10B-25 11	H-TP10B-26 12	H-TP10B-27 5
			Sampling date / time	23-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	24-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EP2310022-046	EP2310022-047	EP2310022-048	EP2310022-049	EP2310022-050
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.6**	**5.4**	**5.4**	**5.6**	**5.7**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**14**	10	**11**	**14**	**11**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
Net Acidity (acidity units)	----	10	mole H+ / t	**14**	**11**	**12**	**14**	**12**
Liming Rate	----	1	kg CaCO3/t	**1**	**1**	**1**	**1**	**1**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**14**	**11**	**12**	**14**	**12**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**1**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-TP10B-27 9	H-TP10B-28 1	H-TP10B-28 2	----	----
			Sampling date / time	23-May-2023 00:00	24-May-2023 00:00	24-May-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2310022-051	EP2310022-052	EP2310022-053	--------	--------
				Result	Result	Result	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.5**	**5.7**	**5.5**	**----**	**----**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**11**	**6**	**17**	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.02**	0.02	**0.03**	**----**	**----**
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	**----**	**----**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**----**	**----**
Net Acidity (sulfur units)	----	0.02	% S	**0.02**	<0.02	**0.03**	**----**	**----**
Net Acidity (acidity units)	----	10	mole H+ / t	**12**	<10	**19**	----	----
Liming Rate	----	1	kg CaCO3/t	**1**	**1**	**1**	**----**	**----**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.02**	<0.02	**0.03**	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**12**	<10	**19**	**----**	**----**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**1**	**1**	**1**	**----**	**----**

CERTIFICATE OF ANALYSIS

Work Order	: **EP2317249**	Page	: 1 of 13
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	30-Nov-2023 10:00
Order number	: 368360-1	Date Analysis Commenced	: 08-Dec-2023
C-O-C number	: ----	Issue Date	: 14-Dec-2023 15:56
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 51		
No. of samples analysed	51		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-01: 1 250mm	H-MW-01: 2 500mm	H-MW-01: 3 750mm	H-MW-01: 4 1000mm	H-MW-01: 5 1250mm
			Sampling date / time	28-Nov-2023 15:00	28-Nov-2023 15:15	28-Nov-2023 15:15	28-Nov-2023 15:15	28-Nov-2023 15:15
Compound	CAS Number	LOR	Unit	EP2317249-001	EP2317249-002	EP2317249-003	EP2317249-004	EP2317249-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.7	7.8	8.3	8.5	8.6
pH (Fox)	----	0.1	pH Unit	3.6	5.2	5.3	5.4	5.4
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW02: 2 500mm	H-MW02: 3 750mm	H-MW02: 4 1000mm	H-MW02: 5 1250mm	H-MW02: 6 1500mm
			Sampling date / time	29-Nov-2023 15:15	29-Nov-2023 15:15	29-Nov-2023 15:15	29-Nov-2023 15:15	29-Nov-2023 15:15
Compound	CAS Number	LOR	Unit	EP2317249-006	EP2317249-007	EP2317249-008	EP2317249-009	EP2317249-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.2	8.4	8.5	8.0	7.7
pH (Fox)	----	0.1	pH Unit	5.5	5.5	5.3	5.6	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-03: 3 750mm	H-MW-03: 4 1000mm	H-MW-03: 5 1250mm	H-MW-03: 6 1500mm	H-MW-04: 2 500mm
			Sampling date / time	29-Nov-2023 15:35	29-Nov-2023 15:35	29-Nov-2023 15:35	29-Nov-2023 15:35	29-Nov-2023 16:15
Compound	CAS Number	LOR	Unit	EP2317249-011	EP2317249-012	EP2317249-013	EP2317249-014	EP2317249-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.6	5.2	6.6	4.9	7.2
pH (Fox)	----	0.1	pH Unit	2.8	3.9	3.2	2.8	4.7
Reaction Rate	----	1	Reaction Unit	1	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-04: 3 750mm	H-MW-04: 4 1000mm	H-MW-04: 5 1250mm	H-MW-05: 2 500mm	H-MW-05: 3 750mm
			Sampling date / time	29-Nov-2023 16:15	29-Nov-2023 16:15	29-Nov-2023 16:15	29-Nov-2023 14:20	29-Nov-2023 14:20
Compound	CAS Number	LOR	Unit	EP2317249-016	EP2317249-017	EP2317249-018	EP2317249-019	EP2317249-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	7.3	6.0	5.8	5.6
pH (Fox)	----	0.1	pH Unit	4.0	6.0	3.6	2.9	3.5
Reaction Rate	----	1	Reaction Unit	1	1	2	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-05: 4 1000mm	H-MW-05: 5 1250mm	H-MW-06: 2 500mm	H-MW-06: 3 750mm	H-MW-06: 4 1000mm
			Sampling date / time	29-Nov-2023 14:20	29-Nov-2023 14:20	29-Nov-2023 14:00	29-Nov-2023 14:00	29-Nov-2023 14:00
Compound	CAS Number	LOR	Unit	EP2317249-021	EP2317249-022	EP2317249-023	EP2317249-024	EP2317249-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	6.7	5.8	5.5	5.3
pH (Fox)	----	0.1	pH Unit	4.6	5.3	3.4	3.7	4.0
Reaction Rate	----	1	Reaction Unit	1	1	2	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-06: 5 1250mm	H-MW-06: 6 1500mm	H-MW-07: 2 500mm	H-MW-07: 3 750mm	H-MW-07: 4 1000mm
			Sampling date / time	29-Nov-2023 14:00	29-Nov-2023 14:00	29-Nov-2023 12:45	29-Nov-2023 12:45	29-Nov-2023 12:45
Compound	CAS Number	LOR	Unit	EP2317249-026	EP2317249-027	EP2317249-028	EP2317249-029	EP2317249-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.1	5.6	5.5	5.4	5.0
pH (Fox)	----	0.1	pH Unit	4.0	4.4	2.6	3.3	3.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-07: 5 1250mm	H-MW-08: 2 500mm	H-MW-08: 3 750mm	H-MW-08: 4 1000mm	H-MW-08: 5 1250mm
			Sampling date / time	29-Nov-2023 12:45	29-Nov-2023 12:00	29-Nov-2023 12:00	29-Nov-2023 01:00	29-Nov-2023 12:00
Compound	CAS Number	LOR	Unit	EP2317249-031	EP2317249-032	EP2317249-033	EP2317249-034	EP2317249-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.9	6.2	6.8	5.8	5.1
pH (Fox)	----	0.1	pH Unit	3.9	2.4	3.9	3.8	3.5
Reaction Rate	----	1	Reaction Unit	1	3	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-08: 6 1500mm	H-MW-09: 1 250mm	H-MW-09: 2 500mm	H-MW-09: 3 750mm	H-MW-09: 4 1000mm
			Sampling date / time	29-Nov-2023 12:00	28-Nov-2023 13:15	28-Nov-2023 13:15	28-Nov-2023 13:15	28-Nov-2023 13:15
Compound	CAS Number	LOR	Unit	EP2317249-036	EP2317249-037	EP2317249-038	EP2317249-039	EP2317249-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.2	8.0	7.3	6.6	7.9
pH (Fox)	----	0.1	pH Unit	3.8	6.0	5.3	2.7	5.9
Reaction Rate	----	1	Reaction Unit	1	3	3	2	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-09: 5 1250mm	H-MW-10: 3 750mm	H-MW-10: 4 1000mm	H-MW-10: 5 1250mm	H-MW-10: 6 1500mm
			Sampling date / time	28-Nov-2023 13:15	28-Nov-2023 15:45	28-Nov-2023 15:45	28-Nov-2023 15:45	28-Nov-2023 15:45
Compound	CAS Number	LOR	Unit	EP2317249-041	EP2317249-042	EP2317249-043	EP2317249-044	EP2317249-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.2	5.4	5.0	4.8	4.9
pH (Fox)	----	0.1	pH Unit	5.9	3.2	3.7	3.9	4.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-11: 2 500mm	H-MW-11: 3 750mm	H-MW-11: 4 1000mm	H-MW-11: 5 1250mm	H-MW-11: 6 1500mm
			Sampling date / time	28-Nov-2023 15:45	28-Nov-2023 15:45	28-Nov-2023 15:45	28-Nov-2023 15:45	28-Nov-2023 15:45
Compound	CAS Number	LOR	Unit	EP2317249-046	EP2317249-047	EP2317249-048	EP2317249-049	EP2317249-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.6	5.4	5.3	5.5	5.5
pH (Fox)	----	0.1	pH Unit	3.8	3.8	3.8	4.0	4.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-4: 6 1500mm	----	----	----	----
			Sampling date / time	28-Nov-2023 15:45	---	---	---	---
Compound	CAS Number	LOR	Unit	EP2317249-051	--------	--------	--------	--------
				Result	---	---	---	---
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	---	---	---	---
pH (Fox)	----	0.1	pH Unit	4.2	---	---	---	---
Reaction Rate	----	1	Reaction Unit	1	---	---	---	---

CERTIFICATE OF ANALYSIS

Work Order	: **EP2317262**	Page	: 1 of 15
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	30-Nov-2023 10:00
Order number	: 368360-1	Date Analysis Commenced	: 11-Dec-2023
C-O-C number	: ----	Issue Date	: 14-Dec-2023 15:53
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 61		
No. of samples analysed	61		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-12: 2 500mm	H-MW-12: 3 750mm	H-MW-12: 4 1000mm	H-MW-12: 5 1250mm	H-MW-12: 6 1500mm
			Sampling date / time	28-Nov-2023 08:30	28-Nov-2023 08:30	28-Nov-2023 08:30	28-Nov-2023 08:30	28-Nov-2023 08:30
Compound	CAS Number	LOR	Unit	EP2317262-001	EP2317262-002	EP2317262-003	EP2317262-004	EP2317262-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.7	6.0	6.0	6.2	6.3
pH (Fox)	----	0.1	pH Unit	3.6	4.6	4.6	5.0	5.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-13: 4 1000mm	H-MW-13: 5 1250mm	H-MW-13: 6 1500mm	H-MW-14: 2 500mm	H-MW-14: 3 750mm
			Sampling date / time	29-Nov-2023 09:00	29-Nov-2023 09:00	29-Nov-2023 09:00	29-Nov-2023 10:40	29-Nov-2023 10:40
Compound	CAS Number	LOR	Unit	EP2317262-006	EP2317262-007	EP2317262-008	EP2317262-009	EP2317262-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.5	4.9	4.8	5.6	5.4
pH (Fox)	----	0.1	pH Unit	3.2	3.5	3.4	3.4	3.7
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-14: 4 1000mm	H-MW-14: 5 1250mm	H-MW-14: 6 1500mm	H-MW-15: 3 750mm	H-MW-15: 4 1000mm
			Sampling date / time	29-Nov-2023 10:40	29-Nov-2023 10:40	29-Nov-2023 10:40	29-Nov-2023 11:05	29-Nov-2023 11:05
Compound	CAS Number	LOR	Unit	EP2317262-011	EP2317262-012	EP2317262-013	EP2317262-014	EP2317262-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.3	5.3	5.4	6.2	6.2
pH (Fox)	----	0.1	pH Unit	3.5	3.7	4.0	3.1	3.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-15: 5 1250mm	H-MW-15: 6 1500mm	H-MW-16: 2 500mm	H-MW-16: 3 750mm	H-MW-16: 4 1000mm
			Sampling date / time	29-Nov-2023 11:05	29-Nov-2023 11:05	29-Nov-2023 11:30	29-Nov-2023 11:30	29-Nov-2023 11:30
Compound	CAS Number	LOR	Unit	EP2317262-016	EP2317262-017	EP2317262-019	EP2317262-020	EP2317262-021
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.0	5.8	5.7	5.6	5.0
pH (Fox)	----	0.1	pH Unit	4.0	4.3	3.1	3.4	3.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-16: 5 1250mm	H-MW-16: 6 1500mm	H-MW-17: 1 250mm	H-MW-17: 2 500mm	H-MW-17: 3 750mm
			Sampling date / time	29-Nov-2023 11:30	29-Nov-2023 11:30	28-Nov-2023 10:30	28-Nov-2023 10:30	28-Nov-2023 10:30
Compound	CAS Number	LOR	Unit	EP2317262-022	EP2317262-023	EP2317262-028	EP2317262-029	EP2317262-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.0	5.2	6.1	6.9	6.6
pH (Fox)	----	0.1	pH Unit	3.8	4.2	3.0	2.8	3.9
Reaction Rate	----	1	Reaction Unit	1	1	2	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-17: 4 1000mm	H-MW-17: 5 1250mm	H-MW-17: 6 1500mm	H-MW-17: 7 1725mm	H-MW-17: 8 2000mm
			Sampling date / time	28-Nov-2023 10:30	28-Nov-2023 10:30	28-Nov-2023 10:30	28-Nov-2023 10:30	28-Nov-2023 10:30
Compound	CAS Number	LOR	Unit	EP2317262-031	EP2317262-032	EP2317262-033	EP2317262-034	EP2317262-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.0	7.9	7.3	7.4	7.3
pH (Fox)	----	0.1	pH Unit	6.3	5.7	5.4	5.4	5.5
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-17: 9 2250mm	H-MW-17: 10 2500mm	H-MW-18: 1 250mm	H-MW-18: 2 500mm	H-MW-18: 3 750mm
			Sampling date / time	28-Nov-2023 10:30	28-Nov-2023 10:30	28-Nov-2023 14:00	28-Nov-2023 14:00	28-Nov-2023 14:00
Compound	CAS Number	LOR	Unit	EP2317262-036	EP2317262-037	EP2317262-038	EP2317262-039	EP2317262-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.2	6.7	6.9	7.8	8.7
pH (Fox)	----	0.1	pH Unit	5.4	5.4	3.2	5.3	5.6
Reaction Rate	----	1	Reaction Unit	1	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-18: 4 1000mm	H-MW-18: 5 1250mm	H-MW-18: 6 1500mm	H-MW-18: 7 1725mm	H-MW-18: 8 2000mm
			Sampling date / time	28-Nov-2023 14:00	28-Nov-2023 14:00	28-Nov-2023 14:00	28-Nov-2023 14:00	28-Nov-2023 14:00
Compound	CAS Number	LOR	Unit	EP2317262-041	EP2317262-042	EP2317262-043	EP2317262-044	EP2317262-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	8.6	8.4	8.2	7.7	7.2
pH (Fox)	----	0.1	pH Unit	5.5	5.6	5.3	5.5	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-18: 9 2250mm	H-MW-18: 10 2500mm	H-MW-19: 2 500mm	H-MW-19: 3 750mm	H-MW-19: 4 1000mm
			Sampling date / time	28-Nov-2023 14:00	28-Nov-2023 14:00	29-Nov-2023 13:15	29-Nov-2023 13:15	29-Nov-2023 13:15
Compound	CAS Number	LOR	Unit	EP2317262-046	EP2317262-047	EP2317262-048	EP2317262-049	EP2317262-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.1	6.8	6.2	5.8	5.7
pH (Fox)	----	0.1	pH Unit	5.3	4.9	3.7	4.0	4.2
Reaction Rate	----	1	Reaction Unit	1	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-19: 5 1250mm	H-MW-19: 6 1500mm	H-MW-19: 7 1725mm	H-MW-19: 8 2000mm	H-MW-19: 9 2250mm
			Sampling date / time	29-Nov-2023 13:15	29-Nov-2023 13:15	29-Nov-2023 13:15	29-Nov-2023 13:15	29-Nov-2023 13:15
Compound	CAS Number	LOR	Unit	EP2317262-051	EP2317262-052	EP2317262-053	EP2317262-054	EP2317262-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.9	6.0	6.3	6.8	6.8
pH (Fox)	----	0.1	pH Unit	4.3	4.9	4.9	5.3	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-19: 10 2500mm	H-MW-20: 1 250mm	H-MW-20: 2 500mm	H-MW-20: 3 750mm	H-MW-20: 4 1000mm
			Sampling date / time	29-Nov-2023 13:15	29-Nov-2023 09:20	29-Nov-2023 09:20	29-Nov-2023 09:20	29-Nov-2023 09:20
Compound	CAS Number	LOR	Unit	EP2317262-056	EP2317262-057	EP2317262-058	EP2317262-059	EP2317262-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.7	6.3	6.0	5.4	5.2
pH (Fox)	----	0.1	pH Unit	5.4	3.5	3.8	3.6	3.6
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-20: 5 1250mm	H-MW-20: 6 1500mm	H-MW-20: 7 1725mm	H-MW-20: 8 2000mm	H-MW-20: 9 2250mm
			Sampling date / time	29-Nov-2023 09:20	29-Nov-2023 09:20	29-Nov-2023 09:20	29-Nov-2023 09:20	29-Nov-2023 09:20
Compound	CAS Number	LOR	Unit	EP2317262-061	EP2317262-062	EP2317262-063	EP2317262-064	EP2317262-065
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.0	5.1	5.1	5.5	5.8
pH (Fox)	----	0.1	pH Unit	3.6	3.7	3.7	4.3	4.5
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-20: 10 2500mm	----	----	----	----
			Sampling date / time	29-Nov-2023 09:20	---	---	---	---
Compound	CAS Number	LOR	Unit	EP2317262-066	--------	--------	--------	--------
				Result	---	---	---	---
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	**5.9**	---	---	----	----
pH (Fox)	----	0.1	pH Unit	**4.6**	---	---	----	----
Reaction Rate	----	1	Reaction Unit	**1**	---	---	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EP2401600**	Page	: 1 of 8
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	30-Nov-2023 10:00
Order number	: 368360-1	Date Analysis Commenced	: 13-Feb-2024
C-O-C number	: ----	Issue Date	: 21-Feb-2024 17:47
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 30		
No. of samples analysed	30		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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

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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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

General Comments

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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.

- ASS: EA033 (CRS Suite): Analysis is performed as per the Acid Sulfate Soils Laboratory Methods Guidelines (2004) and the updated National Acid Sulfate Soils Guidance: National acid sulfate soils identification and laboratory methods manual, Department of Agriculture and Water Resources, Canberra, ACT (2018)
- ASS: EA033 (CRS Suite): Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA033 (CRS Suite): ANC not required for all samples except #17 because pH KCl less than 6.5
- This workorder is a rebatch of EP2317262 & EP2317249.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-01: 1 250mm	H-MW-01: 3 750mm	H-MW-02: 4 1000mm	H-MW-02: 6 1500mm	H-MW-03: 3 750mm
			Sampling date / time	28-Nov-2023 15:15	28-Nov-2023 15:15	29-Nov-2023 15:15	29-Nov-2023 15:15	29-Nov-2023 15:35
Compound	CAS Number	LOR	Unit	EP2401600-001	EP2401600-002	EP2401600-003	EP2401600-004	EP2401600-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.9	5.9	6.0	5.6	4.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	18	10	9	10	73
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.02	<0.02	0.02	0.12
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.011	0.010	<0.005	0.006	0.009
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.04	0.03	0.02	0.02	0.13
Net Acidity (acidity units)	----	10	mole H+ / t	26	16	11	14	79
Liming Rate	----	1	kg CaCO3/t	2	1	1	1	6
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.03	0.02	0.02	0.13
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	26	16	11	14	79
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	1	1	1	6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-03: 5 1250mm	H-MW-03: 6 1500mm	H-MW-04: 3 750mm	H-MW-04: 6 1500mm	H-MW-05: 2 500mm
			Sampling date / time	29-Nov-2023 15:35	29-Nov-2023 15:35	29-Nov-2023 16:15	29-Nov-2023 16:15	29-Nov-2023 14:20
Compound	CAS Number	LOR	Unit	EP2401600-006	EP2401600-007	EP2401600-008	EP2401600-009	EP2401600-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.4	5.8	5.4	5.5	5.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	17	17	15	25	20
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.03	0.02	0.04	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.012	0.007	0.014	0.008	0.007
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.04	0.03	0.04	0.05	0.04
Net Acidity (acidity units)	----	10	mole H+ / t	25	22	24	30	24
Liming Rate	----	1	kg CaCO3/t	2	2	2	2	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.03	0.04	0.05	0.04
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	25	22	24	30	24
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	2	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-05: 3 750mm	H-MW-06: 3 750mm	H-MW-07: 2 500mm	H-MW-07: 4 1000mm	H-MW-08: 2 500mm
			Sampling date / time	29-Nov-2023 14:20	29-Nov-2023 14:00	29-Nov-2023 12:45	29-Nov-2023 12:45	29-Nov-2023 12:00
Compound	CAS Number	LOR	Unit	EP2401600-011	EP2401600-012	EP2401600-013	EP2401600-014	EP2401600-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.6	5.3	5.4	5.2	5.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	21	30	27	28	25
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.05	0.04	0.05	0.04
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.007	0.009	0.013	0.012	0.011
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.04	0.06	0.06	0.06	0.05
Net Acidity (acidity units)	----	10	mole H+ / t	25	35	35	36	31
Liming Rate	----	1	kg CaCO3/t	2	3	3	3	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.06	0.06	0.06	0.05
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	25	35	35	36	31
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	3	3	3	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-08: 4 1000mm	H-MW-09: 3 750mm	H-MW-10: 4 1000mm	H-MW-13: 4 1000mm	H-MW-14: 4 1000mm
			Sampling date / time	29-Nov-2023 12:00	28-Nov-2023 13:15	28-Nov-2023 15:45	29-Nov-2023 09:00	29-Nov-2023 10:40
Compound	CAS Number	LOR	Unit	EP2401600-016	EP2401600-017	EP2401600-018	EP2401600-019	EP2401600-020
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.0	6.8	5.2	6.2	5.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	33	<2	27	5	30
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	<0.02	0.04	<0.02	0.05
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.016	0.010	0.014	0.007
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	0.36	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	71	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	0.11	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.06	<0.02	0.05	0.02	0.05
Net Acidity (acidity units)	----	10	mole H+ / t	36	<10	34	14	34
Liming Rate	----	1	kg CaCO3/t	3	<1	3	1	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.06	0.02	0.05	0.02	0.05
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	36	10	34	14	34
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	1	3	1	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-15: 4 1000mm	H-MW-15: 6 1250mm	H-MW-16: 2 500mm	H-MW-16: 3 750mm	H-MW-17: 2 500mm
			Sampling date / time	29-Nov-2023 11:05	29-Nov-2023 11:05	29-Nov-2023 11:30	29-Nov-2023 11:30	28-Nov-2023 10:30
Compound	CAS Number	LOR	Unit	EP2401600-021	EP2401600-022	EP2401600-023	EP2401600-024	EP2401600-025
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.6	5.5	5.3	5.3	6.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	18	24	34	33	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.04	0.05	0.05	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.008	0.006	0.009	0.007	0.012
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.04	0.04	0.06	0.06	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	24	27	40	37	<10
Liming Rate	----	1	kg CaCO3/t	2	2	3	3	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.04	0.06	0.06	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	24	27	40	37	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	3	3	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-17: 3 750mm	H-MW-18: 3 750mm	H-MW-18: 4 1000mm	H-MW-19: 2 500mm	H-MW-20: 5 1250mm
			Sampling date / time	28-Nov-2023 10:30	28-Nov-2023 14:00	28-Nov-2023 14:00	29-Nov-2023 13:15	29-Nov-2023 09:20
Compound	CAS Number	LOR	Unit	EP2401600-026	EP2401600-027	EP2401600-028	EP2401600-029	EP2401600-030
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.2	5.7	5.8	5.3	5.2
Titratable Actual Acidity (23F)	----	2	mole H+ / t	33	16	22	31	26
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	0.03	0.04	0.05	0.04
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.012	0.008	0.008	0.010	0.008
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.07	0.03	0.04	0.06	0.05
Net Acidity (acidity units)	----	10	mole H+ / t	41	21	27	37	30
Liming Rate	----	1	kg CaCO3/t	3	2	2	3	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.07	0.03	0.04	0.06	0.05
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	41	21	27	37	30
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	2	2	3	2

CERTIFICATE OF ANALYSIS

Work Order	: **EP2403511**	Page	: 1 of 14
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: Level 7, 10 Telethon Avenue Perth 6000	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	Wagerup RSA10N	Date Samples Received	14-Mar-2024 11:30
Order number	: 368360-1	Date Analysis Commenced	: 22-Mar-2024
C-O-C number	: ----	Issue Date	: 22-Mar-2024 18:39
Sampler	: Monica Niven		
Site	: ----		
Quote number	EP/968/22		
No. of samples received	: 56		
No. of samples analysed	56		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-28-1	MW-28-2	MW-28-3	MW-31-1	MW-31-2
			Sampling date / time	11-Mar-2024 00:00	11-Mar-2024 00:00	11-Mar-2024 00:00	11-Mar-2024 00:00	11-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-001	EP2403511-002	EP2403511-003	EP2403511-004	EP2403511-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	6.0	6.2	5.7	5.9
pH (Fox)	----	0.1	pH Unit	7.6	7.8	4.6	3.5	4.3
Reaction Rate	----	1	Reaction Unit	3	3	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-31-3	MW-25-1	MW-25-2	MW-25-3	MW-24-1
			Sampling date / time	11-Mar-2024 00:00	11-Mar-2024 00:00	11-Mar-2024 00:00	11-Mar-2024 00:00	11-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-006	EP2403511-007	EP2403511-008	EP2403511-009	EP2403511-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.5	6.4	6.7	6.9	6.3
pH (Fox)	----	0.1	pH Unit	4.3	3.3	5.0	5.1	3.2
Reaction Rate	----	1	Reaction Unit	1	2	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-24-2	MW-24-3	MW-23-1	MW-23-2	MW-23-3
			Sampling date / time	11-Mar-2024 00:00	11-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-011	EP2403511-012	EP2403511-013	EP2403511-014	EP2403511-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.4	5.8	6.1	6.1	6.8
pH (Fox)	----	0.1	pH Unit	3.9	4.5	3.6	4.4	5.4
Reaction Rate	----	1	Reaction Unit	1	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-22-1	MW-22-2	MW-22-3	MW-21-1	MW-21-2
			Sampling date / time	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-016	EP2403511-017	EP2403511-018	EP2403511-019	EP2403511-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.3	5.0	5.0	6.7	6.0
pH (Fox)	----	0.1	pH Unit	3.3	3.7	4.0	3.7	7.4
Reaction Rate	----	1	Reaction Unit	1	1	1	2	4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-27-1	MW-27-2	MW-27-3	MW-34-1	MW-34-2
			Sampling date / time	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-022	EP2403511-023	EP2403511-024	EP2403511-025	EP2403511-026
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.9	5.7	5.3	5.8	5.0
pH (Fox)	----	0.1	pH Unit	5.0	4.3	4.4	2.9	3.6
Reaction Rate	----	1	Reaction Unit	2	1	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-34-3	MW-30-2	MW-33-1	MW-33-2	MW-33-3
			Sampling date / time	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-027	EP2403511-028	EP2403511-029	EP2403511-030	EP2403511-031
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	4.6	6.2	5.8	6.7	5.6
pH (Fox)	----	0.1	pH Unit	3.5	2.8	3.0	4.9	4.3
Reaction Rate	----	1	Reaction Unit	1	2	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	DS-1	DS-2	MW-32-1	MW-32-2	MW-32-3
			Sampling date / time	12-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-032	EP2403511-033	EP2403511-034	EP2403511-035	EP2403511-036
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.0	5.5	5.0	5.6	5.8
pH (Fox)	----	0.1	pH Unit	3.9	3.7	3.5	3.9	4.0
Reaction Rate	----	1	Reaction Unit	1	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-35-1	MW-35-2	MW-35-3	MW-37-1	MW-37-2
			Sampling date / time	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-037	EP2403511-038	EP2403511-039	EP2403511-040	EP2403511-041
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.6	5.4	5.2	5.6	5.2
pH (Fox)	----	0.1	pH Unit	3.0	3.5	3.7	3.5	3.5
Reaction Rate	----	1	Reaction Unit	2	1	1	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-37-3	MW-36-1	MW-39-1	MW-39-2	MW-39-3
			Sampling date / time	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-042	EP2403511-043	EP2403511-046	EP2403511-047	EP2403511-048
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.8	5.0	5.1	6.3	5.3
pH (Fox)	----	0.1	pH Unit	4.0	3.7	2.4	4.0	3.4
Reaction Rate	----	1	Reaction Unit	1	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-38-1	MW-38-2	MW-38-3	MW-26-1	MW-26-2
			Sampling date / time	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	11-Mar-2024 00:00	11-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-049	EP2403511-050	EP2403511-051	EP2403511-052	EP2403511-053
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.1	7.1	6.5	4.8	6.6
pH (Fox)	----	0.1	pH Unit	4.0	4.0	4.2	3.5	4.6
Reaction Rate	----	1	Reaction Unit	1	1	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-26-3	MW-30-3	MW-29-3	Unlabelled	MW-36-2-a
			Sampling date / time	11-Mar-2024 00:00	12-Mar-2024 00:00	12-Mar-2024 00:00	[11-Mar-2024]	11-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403511-054	EP2403511-055	EP2403511-056	EP2403511-057	EP2403511-058
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.2	5.3	5.1	6.2	5.4
pH (Fox)	----	0.1	pH Unit	5.6	3.4	3.7	4.6	3.1
Reaction Rate	----	1	Reaction Unit	1	1	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	MW-36-2-b	----	----	----	----
				Sampling date / time	11-Mar-2024 00:00	---	---	---	---
Compound	CAS Number	LOR	Unit		EP2403511-059	--------	--------	--------	--------
					Result	---	---	---	---
EA003 :pH (field/fox)									
pH (F)	----	0.1	pH Unit		5.6	----	----	----	----
pH (Fox)	----	0.1	pH Unit		3.8	----	----	----	----
Reaction Rate	----	1	Reaction Unit		1	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: **EP2403707**	Page	: 1 of 18
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	Wagerup RSA10N	Date Samples Received	15-Mar-2024 16:15
Order number	: 368360-1	Date Analysis Commenced	: 26-Mar-2024
C-O-C number	: ----	Issue Date	: 28-Mar-2024 23:10
Sampler	: Monica Niven		
Site	: ----		
Quote number	EP/968/22		
No. of samples received	: 80		
No. of samples analysed	80		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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^ = 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-04-:1	H-DP10B-04-:2	H-DP10B-04-:3	H-DP10B-04-:4	H-DP10B-04-:5
			Sampling date / time	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-001	EP2403707-002	EP2403707-003	EP2403707-004	EP2403707-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.0	4.7	5.2	6.2	6.8
pH (Fox)	----	0.1	pH Unit	3.3	2.0	2.7	4.4	4.6
Reaction Rate	----	1	Reaction Unit	2	2	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-04-:6	H-DP10B-04-:7	H-DP10B-04-:8	H-DP10B-04-:9	H-DP10B-04-:10
			Sampling date / time	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-006	EP2403707-007	EP2403707-008	EP2403707-009	EP2403707-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.2	7.6	7.7	7.7	7.2
pH (Fox)	----	0.1	pH Unit	4.8	5.2	5.2	5.3	5.0
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-03-:1	H-DP10B-03-:2	H-DP10B-03-:3	H-DP10B-03-:4	H-DP10B-03-:5
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-011	EP2403707-012	EP2403707-013	EP2403707-014	EP2403707-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.6	5.8	7.4	7.4	7.6
pH (Fox)	----	0.1	pH Unit	2.8	3.0	5.2	4.3	4.5
Reaction Rate	----	1	Reaction Unit	3	3	3	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-03-:6	H-DP10B-03-:7	H-DP10B-03-:8	H-DP10B-03-:9	H-DP10B-03-:10
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-016	EP2403707-017	EP2403707-018	EP2403707-019	EP2403707-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.7	7.7	7.6	7.6	7.4
pH (Fox)	----	0.1	pH Unit	5.3	5.4	5.3	5.3	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-01-:1	H-DP10B-01-:2	H-DP10B-01-:3	H-DP10B-01-:4	H-DP10B-01-:5
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-021	EP2403707-022	EP2403707-023	EP2403707-024	EP2403707-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.2	6.4	6.2	6.2	6.2
pH (Fox)	----	0.1	pH Unit	3.1	3.5	4.2	4.4	4.4
Reaction Rate	----	1	Reaction Unit	2	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-01-:6	H-DP10B-01-:7	H-DP10B-01-:8	H-DP10B-01-:9	H-DP10B-01-:10
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-026	EP2403707-027	EP2403707-028	EP2403707-029	EP2403707-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.4	6.6	6.6	6.6
pH (Fox)	----	0.1	pH Unit	4.4	4.5	4.6	4.4	4.5
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-02-:1	H-DP10B-02-:2	H-DP10B-02-:3	H-DP10B-02-:4	H-DP10B-02-:5
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-031	EP2403707-032	EP2403707-033	EP2403707-034	EP2403707-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.6	6.8	6.4	6.5	6.4
pH (Fox)	----	0.1	pH Unit	3.2	4.0	3.8	3.9	3.9
Reaction Rate	----	1	Reaction Unit	2	2	2	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-02-:6	H-DP10B-02-:7	H-DP10B-02-:8	H-DP10B-02-:9	H-DP10B-02-:10
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-036	EP2403707-037	EP2403707-038	EP2403707-039	EP2403707-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.5	6.6	7.4	7.6
pH (Fox)	----	0.1	pH Unit	4.2	4.1	4.5	5.4	5.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-05-:1	H-DP10B-05-:2	H-DP10B-05-:3	H-DP10B-05-:4	H-DP10B-05-:5
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-041	EP2403707-042	EP2403707-043	EP2403707-044	EP2403707-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.7	5.9	5.3	5.3	5.5
pH (Fox)	----	0.1	pH Unit	2.2	2.6	2.3	3.1	3.6
Reaction Rate	----	1	Reaction Unit	2	2	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-05-:6	H-DP10B-05-:7	H-DP10B-05-:8	H-DP10B-05-:9	H-DP10B-05-:10
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-046	EP2403707-047	EP2403707-048	EP2403707-049	EP2403707-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.7	6.3	6.7	7.2	7.4
pH (Fox)	----	0.1	pH Unit	3.2	4.2	4.4	4.6	4.8
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	DP-03	DP-05	H-DP10B-08-:1	H-DP10B-08-:2	H-DP10B-08-:3
			Sampling date / time	13-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-051	EP2403707-052	EP2403707-053	EP2403707-054	EP2403707-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.6	5.6	6.5	7.2	6.7
pH (Fox)	----	0.1	pH Unit	5.2	3.1	3.0	3.1	4.0
Reaction Rate	----	1	Reaction Unit	1	1	2	2	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-08-:4	H-DP10B-08-:5	H-DP10B-08-:6	H-DP10B-08-:7	H-DP10B-08-:8
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-056	EP2403707-057	EP2403707-058	EP2403707-059	EP2403707-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.1	7.3	6.9	7.3	7.0
pH (Fox)	----	0.1	pH Unit	4.5	4.7	4.0	5.1	4.1
Reaction Rate	----	1	Reaction Unit	1	1	2	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-08-:9	H-DP10B-08-:10	H-DP10B-08-:11	H-DP10B-08-:12	H-DP10B-08-:13
			Sampling date / time	14-Mar-2024 00:00	13-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-061	EP2403707-062	EP2403707-063	EP2403707-064	EP2403707-065
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.8	6.8	6.7	6.7	6.7
pH (Fox)	----	0.1	pH Unit	3.8	4.7	4.6	4.4	4.8
Reaction Rate	----	1	Reaction Unit	1	1	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-08-:14	H-DP10B-08-:15	H-DP10B-08-:16	H-DP10B-08-:17	H-DP10B-08-:18
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-066	EP2403707-067	EP2403707-068	EP2403707-069	EP2403707-070
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.7	6.8	6.7	6.6	6.7
pH (Fox)	----	0.1	pH Unit	4.7	5.1	5.0	5.0	5.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-08-:19	H-DP10B-08-:20	H-DP10B-08-:21	H-DP10B-08-:22	H-DP10B-08-:23
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-071	EP2403707-072	EP2403707-073	EP2403707-074	EP2403707-075
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.9	7.0	7.3	6.7	6.9
pH (Fox)	----	0.1	pH Unit	4.8	5.1	5.5	5.0	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-08-:24	H-DP10B-08-:25	H-DP10B-08-:26	DP-07	DP-08
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403707-076	EP2403707-077	EP2403707-078	EP2403707-079	EP2403707-080
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.9	6.3	6.4	6.7	6.0
pH (Fox)	----	0.1	pH Unit	5.2	4.3	4.3	4.1	4.2
Reaction Rate	----	1	Reaction Unit	1	1	1	2	1

CERTIFICATE OF ANALYSIS

Work Order	: **EP2403718**	Page	: 1 of 17
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	Wagerup RSA10N	Date Samples Received	15-Mar-2024 16:15
Order number	: 368360-1	Date Analysis Commenced	: 04-Apr-2024
C-O-C number	: ----	Issue Date	: 04-Apr-2024 16:34
Sampler	: Monica Niven		
Site	: ----		
Quote number	EP/968/22		
No. of samples received	: 74		
No. of samples analysed	74		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-07-:1	H-DP10B-07-:2	H-DP10B-07-:3	H-DP10B-07-:4	H-DP10B-07-:5
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-001	EP2403718-002	EP2403718-003	EP2403718-004	EP2403718-005
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	6.3	6.2	6.4	6.3
pH (Fox)	----	0.1	pH Unit	3.1	3.2	3.4	4.1	4.2
Reaction Rate	----	1	Reaction Unit	2	2	2	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-07-:6	H-DP10B-07-:7	H-DP10B-07-:8	H-DP10B-07-:9	H-DP10B-07-:10
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-006	EP2403718-007	EP2403718-008	EP2403718-009	EP2403718-010
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.2	6.2	6.9	7.2	7.3
pH (Fox)	----	0.1	pH Unit	3.9	3.9	4.7	4.6	4.9
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-07-:11	H-DP10B-07-:12	H-DP10B-07-:13	H-DP10B-07-:14	H-DP10B-07-:15
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-011	EP2403718-012	EP2403718-013	EP2403718-014	EP2403718-015
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	7.4	7.5	7.8	7.7
pH (Fox)	----	0.1	pH Unit	5.1	5.1	5.1	5.4	5.4
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-07-:16	H-DP10B-07-:17	H-DP10B-07-:18	H-DP10B-07-:19	H-DP10B-07-:20
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-016	EP2403718-017	EP2403718-018	EP2403718-019	EP2403718-020
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.8	7.6	7.4	7.0	7.6
pH (Fox)	----	0.1	pH Unit	5.3	5.1	5.2	5.1	5.1
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-07-:21	H-DP10B-07-:22	H-DP10B-07-:23	H-DP10B-07-:24	H-DP10B-07-:25
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-021	EP2403718-022	EP2403718-023	EP2403718-024	EP2403718-025
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.7	7.6	7.5	7.7	7.7
pH (Fox)	----	0.1	pH Unit	5.0	5.3	5.2	5.4	5.5
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-07-:26	H-DP10B-07-:27	H-DP10B-07-:28	DP-09	DP-10
			Sampling date / time	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00	14-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-026	EP2403718-027	EP2403718-028	EP2403718-029	EP2403718-030
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	7.4	7.6	7.7	7.7
pH (Fox)	----	0.1	pH Unit	5.1	5.0	5.2	5.3	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-06-:1	H-DP10B-06-:2	H-DP10B-06-:3	H-DP10B-06-:4	H-DP10B-06-:5
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-031	EP2403718-032	EP2403718-033	EP2403718-034	EP2403718-035
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.4	5.4	5.9	6.2	6.3
pH (Fox)	----	0.1	pH Unit	2.5	3.0	3.6	3.9	4.1
Reaction Rate	----	1	Reaction Unit	2	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-06-:6	H-DP10B-06-:7	H-DP10B-06-:8	H-DP10B-06-:9	H-DP10B-06-:10
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-036	EP2403718-037	EP2403718-038	EP2403718-039	EP2403718-040
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.4	6.3	6.3	6.4	6.7
pH (Fox)	----	0.1	pH Unit	4.3	4.2	4.4	4.3	4.9
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-06-:11	H-DP10B-06-:12	H-DP10B-06-:13	H-DP10B-06-:14	H-DP10B-06-:15
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-041	EP2403718-042	EP2403718-043	EP2403718-044	EP2403718-045
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	6.3	7.0	6.9	7.4	7.2
pH (Fox)	----	0.1	pH Unit	4.1	4.7	4.8	5.2	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-06-:16	H-DP10B-06-:17	H-DP10B-06-:18	H-DP10B-06-:19	H-DP10B-06-:20
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-046	EP2403718-047	EP2403718-048	EP2403718-049	EP2403718-050
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	7.4	7.3	7.4	7.3
pH (Fox)	----	0.1	pH Unit	5.2	5.2	5.3	5.3	5.3
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-06-:21	H-DP10B-06-:22	H-DP10B-06-:23	H-DP10B-06-:24	H-DP10B-06-:25
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-051	EP2403718-052	EP2403718-053	EP2403718-054	EP2403718-055
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.4	7.4	7.4	7.3	7.1
pH (Fox)	----	0.1	pH Unit	5.2	5.2	5.3	5.2	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-06-:26	DP-11	DP-12	H-MW-36A-1	H-MW-36A-2
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-056	EP2403718-057	EP2403718-058	EP2403718-059	EP2403718-060
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.1	7.4	7.4	5.1	5.3
pH (Fox)	----	0.1	pH Unit	4.9	5.1	5.3	2.4	3.3
Reaction Rate	----	1	Reaction Unit	1	1	1	2	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-MW-36A-3	DP-13	H-DP10B-04-:11	H-DP10B-04-:12	H-DP10B-04-:13
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-061	EP2403718-062	EP2403718-063	EP2403718-064	EP2403718-065
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	5.2	5.1	7.0	6.9	7.2
pH (Fox)	----	0.1	pH Unit	2.4	2.5	4.9	4.7	5.1
Reaction Rate	----	1	Reaction Unit	2	2	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-04-:14	H-DP10B-04-:15	H-DP10B-04-:16	H-DP10B-04-:17	H-DP10B-04-:18
			Sampling date / time	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00	13-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	EP2403718-066	EP2403718-067	EP2403718-068	EP2403718-069	EP2403718-070
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.7	7.7	7.7	7.8	7.7
pH (Fox)	----	0.1	pH Unit	5.2	5.2	5.3	5.3	5.2
Reaction Rate	----	1	Reaction Unit	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-04-:19	H-DP10B-04-:20	DP-04	MW-29-2	----
			Sampling date / time	13-Mar-2024 00:00	13-Mar-2024 00:00	14-Mar-2024 00:00	12-Mar-2024 00:00	----
Compound	CAS Number	LOR	Unit	EP2403718-071	EP2403718-072	EP2403718-073	EP2403718-074	--------
				Result	Result	Result	Result	----
EA003 :pH (field/fox)								
pH (F)	----	0.1	pH Unit	7.7	7.6	6.7	5.3	----
pH (Fox)	----	0.1	pH Unit	5.1	5.4	3.6	3.1	----
Reaction Rate	----	1	Reaction Unit	1	1	2	1	----

CERTIFICATE OF ANALYSIS

Work Order	: **EP2404889**	Page	: 1 of 14
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	Wagerup RSA10N	Date Samples Received	15-Mar-2024 16:15
Order number	: 368360-1	Date Analysis Commenced	: 16-Apr-2024
C-O-C number	: ----	Issue Date	: 26-Apr-2024 17:33
Sampler	: ----		
Site	: ----		
Quote number	EP/968/22		
No. of samples received	: 60		
No. of samples analysed	60		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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 Contract 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.

- ASS: EA033 (CRS Suite): Analysis is performed as per the Acid Sulfate Soils Laboratory Methods Guidelines (2004) and the updated National Acid Sulfate Soils Guidance: National acid sulfate soils identification and laboratory methods manual, Department of Agriculture and Water Resources, Canberra, ACT (2018)
- ASS: EA033 (CRS Suite): Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA033 (CRS Suite): ANC not required for all samples except sample #10 because pH KCl less than 6.5
- This workorder is a rebatch of EP2403511, EP2403707, EP2403718.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-21-1	MW-22-1	MW-23-1	MW-24-1	MW-24-2
			Sampling date / time	12-Mar-2024 12:00	12-Mar-2024 12:00	12-Mar-2024 12:00	11-Mar-2024 12:00	11-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-001	EP2404889-002	EP2404889-003	EP2404889-004	EP2404889-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.7	5.6	5.7	5.4	5.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	32	62	29	53	54
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	0.10	0.05	0.08	0.09
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.005	0.007	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.06	0.11	0.05	0.09	0.09
Net Acidity (acidity units)	----	10	mole H+ / t	34	66	31	55	55
Liming Rate	----	1	kg CaCO3/t	3	5	2	4	4
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.06	0.11	0.05	0.09	0.09
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	34	66	31	55	55
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	5	2	4	4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-25-1	MW-26-2	MW-28-2	MW-29-3	MW-30-2
			Sampling date / time	11-Mar-2024 12:00	11-Mar-2024 12:00	11-Mar-2024 12:00	12-Mar-2024 12:00	12-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-006	EP2404889-007	EP2404889-008	EP2404889-009	EP2404889-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.9	5.6	5.4	5.7	6.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	28	20	35	39	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.04	0.03	0.06	0.06	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.006	0.006	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	0.81
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	163
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	0.26
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.05	0.04	0.06	0.07	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	30	22	39	43	<10
Liming Rate	----	1	kg CaCO3/t	2	2	3	3	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.05	0.04	0.06	0.07	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	30	22	39	43	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	3	3	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-31-1	DS-2	MW-33-1	MW-34-2	MW-35-1
			Sampling date / time	12-Mar-2024 12:00	13-Mar-2024 12:00	12-Mar-2024 12:00	12-Mar-2024 12:00	13-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-011	EP2404889-012	EP2404889-013	EP2404889-014	EP2404889-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.8	5.6	5.9	5.7	5.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	35	19	11	37	47
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.06	0.03	0.02	0.06	0.07
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.06	0.03	0.02	0.06	0.08
Net Acidity (acidity units)	----	10	mole H+ / t	38	20	11	39	50
Liming Rate	----	1	kg CaCO3/t	3	1	1	3	4
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.06	0.03	0.02	0.06	0.08
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	38	20	11	39	50
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	1	1	3	4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	DP-13	H-MW-36A-3	MW-37-2	MW-38-2	MW-38-3
			Sampling date / time	15-Mar-2024 12:00	15-Mar-2024 12:00	13-Mar-2024 12:00	13-Mar-2024 12:00	13-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-016	EP2404889-017	EP2404889-018	EP2404889-019	EP2404889-020
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.6	5.4	5.5	5.9	5.0
Titratable Actual Acidity (23F)	----	2	mole H+ / t	32	46	39	21	39
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	0.07	0.06	0.03	0.06
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.05	0.07	0.07	0.04	0.07
Net Acidity (acidity units)	----	10	mole H+ / t	33	47	42	23	41
Liming Rate	----	1	kg CaCO3/t	2	3	3	2	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.05	0.07	0.07	0.04	0.07
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	33	47	42	23	41
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	3	3	2	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	MW-39-1	MW-39-2	H-DP10B-01-:1	H-DP10B-01-:3	H-DP10B-01-:7
			Sampling date / time	13-Mar-2024 12:00	13-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	13-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-021	EP2404889-022	EP2404889-023	EP2404889-024	EP2404889-025
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.8	5.2	6.3	5.6	5.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	21	34	<2	15	15
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.05	<0.02	0.02	0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.03	0.05	<0.02	0.02	0.02
Net Acidity (acidity units)	----	10	mole H+ / t	21	34	<10	15	15
Liming Rate	----	1	kg CaCO3/t	2	3	<1	1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	0.05	<0.02	0.02	0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	21	34	<10	15	15
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	3	<1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-01-:9	H-DP10B-02-:1	H-DP10B-02-:5	H-DP10B-03-:2	H-DP10B-03-:3
			Sampling date / time	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-026	EP2404889-027	EP2404889-028	EP2404889-029	EP2404889-030
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.8	6.4	6.1	6.0	6.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	15	<2	10	7	9
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	<0.02	0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.02	<0.02	0.02	0.02	0.02
Net Acidity (acidity units)	----	10	mole H+ / t	15	<10	11	<10	10
Liming Rate	----	1	kg CaCO3/t	1	<1	1	1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	<0.02	0.02	0.02	0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	15	<10	11	<10	10
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	<1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-03-:4	H-DP10B-04-:2	H-DP10B-04-:3	H-DP10B-04-:19	H-DP10B-05-:1
			Sampling date / time	14-Mar-2024 12:00	13-Mar-2024 12:00	13-Mar-2024 12:00	13-Mar-2024 12:00	14-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-031	EP2404889-032	EP2404889-033	EP2404889-034	EP2404889-035
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.0	5.7	5.8	5.9	5.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	12	7	<2	12	5
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	<0.02	<0.02	0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.02	<0.02	<0.02	0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	13	<10	<10	13	<10
Liming Rate	----	1	kg CaCO3/t	1	1	<1	1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	<0.02	<0.02	0.02	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	13	<10	<10	13	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	<1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-05-:2	H-DP10B-05-:3	H-DP10B-05-:4	H-DP10B-05-:7	H-DP10B-06-:1
			Sampling date / time	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	15-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-036	EP2404889-037	EP2404889-038	EP2404889-039	EP2404889-040
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.6	5.6	6.1	5.8	6.2
Titratable Actual Acidity (23F)	----	2	mole H+ / t	8	14	11	14	5
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	0.02	0.02	0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.02	0.02	0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	14	11	14	<10
Liming Rate	----	1	kg CaCO3/t	1	1	1	1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.02	0.02	0.02	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	14	11	14	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-06-:2	H-DP10B-06-:4	H-DP10B-06-:11	H-DP10B-06-:18	DP-11
			Sampling date / time	15-Mar-2024 12:00	15-Mar-2024 12:00	15-Mar-2024 12:00	15-Mar-2024 12:00	14-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-041	EP2404889-042	EP2404889-043	EP2404889-044	EP2404889-045
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.4	6.1	5.9	5.8	5.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	11	11	19	20
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	0.02	0.02	0.03	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.02	0.02	0.03	0.04
Net Acidity (acidity units)	----	10	mole H+ / t	<10	12	13	19	22
Liming Rate	----	1	kg CaCO3/t	<1	1	1	1	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.02	0.02	0.03	0.04
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	12	13	19	22
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	1	1	1	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-06-:24	H-DP10B-07-:1	H-DP10B-07-:2	H-DP10B-07-:6	H-DP10B-07-:12
			Sampling date / time	13-Mar-2024 12:00	13-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-046	EP2404889-047	EP2404889-048	EP2404889-049	EP2404889-050
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.0	6.4	6.0	6.0	6.0
Titratable Actual Acidity (23F)	----	2	mole H+ / t	14	<2	9	10	9
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	<0.02	<0.02	0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.005	0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.02	<0.02	0.02	0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	14	<10	12	12	<10
Liming Rate	----	1	kg CaCO3/t	1	<1	1	1	1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	<0.02	0.02	0.02	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	14	<10	12	12	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	<1	1	1	1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-07-:21	H-DP10B-07-:27	H-DP10B-08-:1	H-DP10B-08-:2	H-DP10B-08-:9
			Sampling date / time	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-051	EP2404889-052	EP2404889-053	EP2404889-054	EP2404889-055
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.9**	**6.1**	**5.8**	**5.8**	**5.9**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**12**	**9**	**4**	**5**	**16**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.02**	<0.02	<0.02	<0.02	**0.03**
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	**0.005**	<0.005	<0.005	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	**0.02**	**0.02**	<0.02	<0.02	**0.03**
Net Acidity (acidity units)	----	10	mole H+ / t	**14**	**12**	<10	<10	**17**
Liming Rate	----	1	kg CaCO3/t	1	**1**	<1	<1	**1**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.02**	**0.02**	<0.02	<0.02	**0.03**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**14**	**12**	<10	<10	**17**
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	**1**	<1	<1	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	H-DP10B-08-:13	H-DP10B-08-:17	H-DP10B-08-:22	H-DP10B-08-:25	DP-08
			Sampling date / time	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00	14-Mar-2024 12:00
Compound	CAS Number	LOR	Unit	EP2404889-056	EP2404889-057	EP2404889-058	EP2404889-059	EP2404889-060
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.2	5.9	5.8	5.9	5.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t	10	10	19	13	16
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.02	0.03	0.02	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.008	<0.005	0.009	0.008
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.02	0.02	0.03	0.03	0.03
Net Acidity (acidity units)	----	10	mole H+ / t	12	15	21	18	21
Liming Rate	----	1	kg CaCO3/t	1	1	2	1	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	0.02	0.03	0.03	0.03
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	12	15	21	18	21
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	2	1	2

QUALITY CONTROL REPORT

Work Order	: **EP2307162**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 13-Jun-2023
C-O-C number	: ----	Issue Date	: 14-Jun-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 63		
No. of samples analysed	: 63		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5105608)									
EP2307162 001	H TP10B 01 1	EA003: pH (F)		0 1	pH Unit	5 2	5 2	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.2	2.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2307162-010	H-TP10B-01 10	EA003: pH (F)	----	0.1	pH Unit	6.2	6.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.6	4.6	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0 0	No Limit
EA003 :pH (field/fox) (QC Lot: 5105609)									
EP2307162-021	H-TP10B-02 8	EA003: pH (F)	----	0.1	pH Unit	6.2	6.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.4	4.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307162-030	H-TP10B-03 5	EA003: pH (F)	----	0.1	pH Unit	6.2	6.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.3	4.3	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5105610)									
EP2307162-041	H-TP10B-04 3	EA003: pH (F)	----	0.1	pH Unit	6.2	6.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.4	4.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307162 050	H TP10B 04 12	EA003: pH (F)		0 1	pH Unit	6 4	6 4	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.1	5.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	3	3	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5105611)									
EP2307162-061	H-TP10B-05 10	EA003: pH (F)	----	0.1	pH Unit	7.0	7.0	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5105611) - continued									
EP2307162-061	H-TP10B-05 10	EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2307165**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 15-Jun-2023
C-O-C number	: ----	Issue Date	: 16-Jun-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 63		
No. of samples analysed	: 63		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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Signatories	*Position*	*Accreditation Category*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

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Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5116306)									
EP2307165 001	H TP10B 06 1	EA003: pH (F)		0 1	pH Unit	6 5	6 5	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.6	2.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2307165-010	H-TP10B-06 10	EA003: pH (F)	----	0.1	pH Unit	6.4	6.4	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.4	4.4	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0 0	No Limit
EA003 :pH (field/fox) (QC Lot: 5116307)									
EP2307165-021	H-TP10B-07 8	EA003: pH (F)	----	0.1	pH Unit	6.1	6.0	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.3	4.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307165-030	H-TP10B-08 5	EA003: pH (F)	----	0.1	pH Unit	6.4	6.4	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.4	4.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5116308)									
EP2307165-041	H-TP10B-09 3	EA003: pH (F)	----	0.1	pH Unit	6.1	6.1	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.3	4.3	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307165 050	H TP10B 09 12	EA003: pH (F)		0 1	pH Unit	7 9	7 9	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.5	5.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5116309)									
EP2307165-061	H-TP10B-10 10	EA003: pH (F)	----	0.1	pH Unit	5.9	6.0	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.2	4.2	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5116309) - continued									
EP2307165-061	H-TP10B-10 10	EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

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- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

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- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2307170**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 20-Jun-2023
C-O-C number	: ----	Issue Date	: 21-Jun-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 63		
No. of samples analysed	: 63		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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Signatories	*Position*	*Accreditation Category*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5116375)									
EP2307170-001	H-TP10B-11-1	EA003: pH (F)		0.1	pH Unit	5.2	5.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.7	2.7	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307170-010	H-TP10B-11-10	EA003: pH (F)	----	0.1	pH Unit	5.8	5.8	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.9	3.9	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5116376)									
EP2307170-021	H-TP10B-12-8	EA003: pH (F)	----	0.1	pH Unit	7.5	7.5	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.2	5.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307170-030	H-TP10B-13-4	EA003: pH (F)	----	0.1	pH Unit	7.1	7.1	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.2	5.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5116377)									
EP2307170-041	H-TP10B-14-2	EA003: pH (F)	----	0.1	pH Unit	4.9	4.8	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.1	3.1	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307170-050	H-TP10B-14-11	EA003: pH (F)		0.1	pH Unit	6.3	6.3	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.3	4.3	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5116378)									
EP2307170-061	H-TP10B-15-10	EA003: pH (F)	----	0.1	pH Unit	7.8	7.8	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.3	5.4	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5116378) - continued									
EP2307170-061	H-TP10B-15 10	EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2307178**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 22-Jun-2023
C-O-C number	: ----	Issue Date	: 23-Jun-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 62		
No. of samples analysed	: 62		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5130509)									
EP2307178 001	H TP10B 16 1	EA003: pH (F)		0 1	pH Unit	7 3	7 3	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307178-010	H-TP10B-16 10	EA003: pH (F)	----	0.1	pH Unit	7.6	7.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0 0	No Limit
EA003 :pH (field/fox) (QC Lot: 5130510)									
EP2307178-021	H-TP10B-17 9	EA003: pH (F)	----	0.1	pH Unit	7.7	7.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.3	5.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307178-030	H-TP10B-18 5	EA003: pH (F)	----	0.1	pH Unit	7.1	7.1	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5130511)									
EP2307178-041	H-TP10B-19 4	EA003: pH (F)	----	0.1	pH Unit	7.6	7.6	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307178 050	H TP10B 19 Duplicated	EA003: pH (F)		0 1	pH Unit	7 4	7 5	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5130512)									
EP2307178-061	H-TP10B-20 11	EA003: pH (F)	----	0.1	pH Unit	7.5	7.4	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.9	4.8	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5130512) - continued									
EP2307178-061	H-TP10B-20 11	EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2307183**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 27-Jun-2023
C-O-C number	: ----	Issue Date	: 30-Jun-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 101		
No. of samples analysed	: 101		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5139519)									
EP2307183 001	H TP10B 21 1	EA003: pH (F)		0 1	pH Unit	5 4	5 5	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.1	3.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2307183-010	H-TP10B-21 10	EA003: pH (F)	----	0.1	pH Unit	5.6	5.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.4	4.3	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0 0	No Limit
EA003 :pH (field/fox) (QC Lot: 5139520)									
EP2307183-021	H-TP10B-22 8	EA003: pH (F)	----	0.1	pH Unit	7.7	7.6	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.4	5.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307183-030	H-TP10B-23 5	EA003: pH (F)	----	0.1	pH Unit	7.4	7.4	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.1	5.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5139521)									
EP2307183-041	H-TP10B-24 3	EA003: pH (F)	----	0.1	pH Unit	7.3	7.3	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.9	4.9	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307183 050	H TP10B 24 12	EA003: pH (F)		0 1	pH Unit	7 5	7 4	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.2	5.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5139522)									
EP2307183-061	H-TP10B-25 11	EA003: pH (F)	----	0.1	pH Unit	7.2	7.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5139522) - continued									
EP2307183-061	H-TP10B-25 11	EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307183-070	H-TP10B-26 7	EA003: pH (F)	----	0.1	pH Unit	6.4	6.3	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.4	4.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5139523)									
EP2307183-081	H-TP10B-27 5	EA003: pH (F)	----	0.1	pH Unit	6.7	6.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.7	4.8	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2307183-090	H-TP10B-28 1	EA003: pH (F)	----	0.1	pH Unit	6.4	6.4	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.5	2.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5139524)									
EP2307183-101	H-TP10B-28 12	EA003: pH (F)	----	0.1	pH Unit	7.2	7.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

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- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2308132**	Page	: 1 of 6
Amendment	: **1**		
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 20-Jun-2023
C-O-C number	: ----	Issue Date	: 25-Jul-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 53		
No. of samples analysed	: 53		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

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Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-A: Actual Acidity (QC Lot: 5130545)									
EP2308132 001	H TP10N 3 6	EA033: sulfidic - Titratable Actual Acidity (s-23F)		0 02	% pyrite S	0 07	0 07	0 0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	41	41	0.0	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.2	5.1	0.0	0% - 20%
EP2308132-011	H-TP10N-10 3	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.03	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	16	16	0.0	No Limit
		EA033: pH KCl (23A)		0 1	pH Unit	4 6	4 7	0 0	0% 20%
EA033-A: Actual Acidity (QC Lot: 5130546)									
EP2308132-021	H-TP10N-14 11	EA033 sulfidic Titratable Actual Acidity (s 23F)	----	0.02	% pyrite S	0.05	0.05	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	34	34	0.0	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.3	4.4	0.0	0% - 20%
EP2308132-031	H-TP10N-19 3	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033 pH KCl (23A)	----	0.1	pH Unit	5.9	5.9	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 5130547)									
EP2308132-041	H-TP10N-24 4	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	14	14	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.9	4.9	0.0	0% - 20%
EP2308132 051	H TP10N 28 11	EA033: sulfidic - Titratable Actual Acidity (s-23F)		0 02	% pyrite S	0 02	0 02	0 0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	9	8	15.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.2	5.2	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 5130545)									
EP2308132-001	H-TP10N-3 6	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-B: Potential Acidity (QC Lot: 5130545) - continued									
EP2308132-001	H-TP10N-3 6	EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2308132-011	H-TP10N-10 3	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-B: Potential Acidity (QC Lot: 5130546)									
EP2308132-021	H-TP10N-14 11	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2308132-031	H-TP10N-19 3	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-B: Potential Acidity (QC Lot: 5130547)									
EP2308132-041	H-TP10N-24 4	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033 acidity Chromium Reducible Sulfur (a 22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2308132-051	H-TP10N-28 11	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-D: Retained Acidity (QC Lot: 5130546)									
EP2308132-021	H-TP10N-14 11	EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	0.02	0.0	No Limit
		EA033: Net Acid Soluble Sulfur (20Je)		0 02	% S	0 02	0 02	0 0	No Limit
		EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.06	0.04	40.0	No Limit
		EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	0.06	0.05	18.2	No Limit
		EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	10	0.0	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5130545)									
EP2308132-001	H-TP10N-3 6	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.07	0.07	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.07	0.07	0.0	No Limit
		EA033 Liming Rate	----	1	kg CaCO3/t	3	3	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	3	3	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	42	42	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	42	42	0.0	No Limit
EP2308132-011	H-TP10N-10 3	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.03	0.03	0.0	No Limit
		EA033 Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	0.03	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	16	16	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	16	16	0.0	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5130546)									
EP2308132-021	H-TP10N-14 11	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.05	0.07	33.3	No Limit

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-E: Acid Base Accounting (QC Lot: 5130546) - continued									
EP2308132-021	H-TP10N-14 11	EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.05	0.07	33.3	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	3	3	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	3	3	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	34	45	27.8	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	34	45	27.8	No Limit
EP2308132-031	H-TP10N-19 3	EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5130547)									
EP2308132-041	H-TP10N-24 4	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.02	0.02	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	0.02	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	14	14	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	14	14	0.0	No Limit
EP2308132-051	H-TP10N-28 11	EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 5130545)								
EA033: pH KCl (23A)	---	0.1	pH Unit	<0.1	---	---	---	---
EA033: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	22.26 mole H+ / t	95.9	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
EA033-A: Actual Acidity (QCLot: 5130546)								
EA033: pH KCl (23A)	---	0.1	pH Unit	<0.1	---	---	---	---
EA033: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	22.26 mole H+ / t	95.5	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
EA033-A: Actual Acidity (QCLot: 5130547)								
EA033: pH KCl (23A)	---	0.1	pH Unit	<0.1	---	---	---	---
EA033: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	22.26 mole H+ / t	95.7	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
EA033-B: Potential Acidity (QCLot: 5130545)								
EA033: Chromium Reducible Sulfur (22B)	---	0.005	% S	<0.005	0.202 % S	91.1	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	---	10	mole H+ / t	<10	---	---	---	---
EA033-B: Potential Acidity (QCLot: 5130546)								
EA033: Chromium Reducible Sulfur (22B)	---	0.005	% S	<0.005	0.202 % S	94.0	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	---	10	mole H+ / t	<10	---	---	---	---
EA033-B: Potential Acidity (QCLot: 5130547)								
EA033: Chromium Reducible Sulfur (22B)	---	0.005	% S	<0.005	0.202 % S	97.0	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	---	10	mole H+ / t	<10	---	---	---	---
EA033-E: Acid Base Accounting (QCLot: 5130545)								
EA033: Net Acidity (sulfur units)	---	0.02	% S	<0.02	---	---	---	---
EA033: Net Acidity (acidity units)	---	10	mole H+ / t	<10	---	---	---	---
EA033: Liming Rate	---	1	kg CaCO3/t	<1	---	---	---	---
EA033-E: Acid Base Accounting (QCLot: 5130546)								
EA033: Net Acidity (sulfur units)	---	0.02	% S	<0.02	---	---	---	---
EA033: Net Acidity (acidity units)	---	10	mole H+ / t	<10	---	---	---	---
EA033: Liming Rate	---	1	kg CaCO3/t	<1	---	---	---	---
EA033-E: Acid Base Accounting (QCLot: 5130547)								
EA033: Net Acidity (sulfur units)	---	0.02	% S	<0.02	---	---	---	---

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EA033-E: Acid Base Accounting (QCLot: 5130547) - continued								
EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA033: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2310022**	Page	: 1 of 6
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 27-Jul-2023
C-O-C number	: ----	Issue Date	: 04-Aug-2023
Sampler	: ----		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 53		
No. of samples analysed	: 53		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-A: Actual Acidity (QC Lot: 5212388)									
EP2310022 001	H TP10B 01 1	EA033: sulfidic - Titratable Actual Acidity (s-23F)		0 02	% pyrite S	0 02	0 02	0 0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	6	6	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.8	5.8	0.0	0% - 20%
EP2310022-011	H-TP10B-06 11	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	11	11	0.0	No Limit
		EA033: pH KCl (23A)		0 1	pH Unit	5 7	5 6	0 0	0% 20%
EA033-A: Actual Acidity (QC Lot: 5212389)									
EP2310022-021	H-TP10B-12 5	EA033 sulfidic Titratable Actual Acidity (s 23F)	----	0.02	% pyrite S	0.02	0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	15	15	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.6	5.5	2.3	0% - 20%
EP2310022-031	H-TP10B-18 3	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	15	15	0.0	No Limit
		EA033 pH KCl (23A)	----	0.1	pH Unit	5.5	5.5	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 5212390)									
EP2310022-041	H-TP10B-21 Duplicated	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.1	6.1	0.0	0% - 20%
EP2310022 051	H TP10B 27 9	EA033: sulfidic - Titratable Actual Acidity (s-23F)		0 02	% pyrite S	0 02	0 02	0 0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	11	11	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.5	5.5	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 5212388)									
EP2310022-001	H-TP10B-01 1	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-B: Potential Acidity (QC Lot: 5212388) - continued									
EP2310022-001	H-TP10B-01 1	EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2310022-011	H-TP10B-06 11	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-B: Potential Acidity (QC Lot: 5212389)									
EP2310022-021	H-TP10B-12 5	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2310022-031	H-TP10B-18 3	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-B: Potential Acidity (QC Lot: 5212390)									
EP2310022-041	H-TP10B-21 Duplicated	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033 acidity Chromium Reducible Sulfur (a 22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2310022-051	H-TP10B-27 9	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5212388)									
EP2310022-001	H-TP10B-01 1	EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)		0 02	% S	0 02	0 02	0 0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2310022 011	H TP10B 06 11	EA033: Net Acidity (sulfur units)		0 02	% S	0 02	0 02	0 0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	0.02	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	12	13	8.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)		10	mole H+ / t	12	13	8 0	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5212389)									
EP2310022-021	H-TP10B-12 5	EA033 Net Acidity (sulfur units)	----	0.02	% S	0.03	0.03	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	0.03	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	17	16	6.1	No Limit
		EA033 Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	17	16	6.1	No Limit
EP2310022-031	H-TP10B-18 3	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.03	0.03	0.0	No Limit

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-E: Acid Base Accounting (QC Lot: 5212389) - continued									
EP2310022-031	H-TP10B-18 3	EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	0.03	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	16	17	6.1	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	16	17	6.1	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5212390)									
EP2310022-041	H-TP10B-21 Duplicated	EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2310022-051	H-TP10B-27 9	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.02	0.02	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	0.02	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	12	13	8.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	12	13	8.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 5212388)								
EA033: pH KCl (23A)	---	0.1	pH Unit	<0.1	---	---	---	---
EA033: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	22.26 mole H+ / t	95.0	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
EA033-A: Actual Acidity (QCLot: 5212389)								
EA033: pH KCl (23A)	---	0.1	pH Unit	<0.1	---	---	---	---
EA033: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	22.26 mole H+ / t	95.0	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
EA033-A: Actual Acidity (QCLot: 5212390)								
EA033: pH KCl (23A)	---	0.1	pH Unit	<0.1	---	---	---	---
EA033: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	22.26 mole H+ / t	94.9	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
EA033-B: Potential Acidity (QCLot: 5212388)								
EA033: Chromium Reducible Sulfur (22B)	---	0.005	% S	<0.005	0.202 % S	95.5	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	---	10	mole H+ / t	<10	---	---	---	---
EA033-B: Potential Acidity (QCLot: 5212389)								
EA033: Chromium Reducible Sulfur (22B)	---	0.005	% S	<0.005	0.202 % S	89.1	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	---	10	mole H+ / t	<10	---	---	---	---
EA033-B: Potential Acidity (QCLot: 5212390)								
EA033: Chromium Reducible Sulfur (22B)	---	0.005	% S	<0.005	0.202 % S	95.5	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	---	10	mole H+ / t	<10	---	---	---	---
EA033-E: Acid Base Accounting (QCLot: 5212388)								
EA033: Net Acidity (sulfur units)	---	0.02	% S	<0.02	---	---	---	---
EA033: Net Acidity (acidity units)	---	10	mole H+ / t	<10	---	---	---	---
EA033: Liming Rate	---	1	kg CaCO3/t	<1	---	---	---	---
EA033-E: Acid Base Accounting (QCLot: 5212389)								
EA033: Net Acidity (sulfur units)	---	0.02	% S	<0.02	---	---	---	---
EA033: Net Acidity (acidity units)	---	10	mole H+ / t	<10	---	---	---	---
EA033: Liming Rate	---	1	kg CaCO3/t	<1	---	---	---	---
EA033-E: Acid Base Accounting (QCLot: 5212390)								
EA033: Net Acidity (sulfur units)	---	0.02	% S	<0.02	---	---	---	---

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EA033-E: Acid Base Accounting (QCLot: 5212390) - continued								
EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA033: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2306747**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 24-May-2023
C-O-C number	: ----	Issue Date	: 26-May-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 61		
No. of samples analysed	: 61		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5074971)									
EP2306747-001	H-TP10N-1-250mm	EA003: pH (F)		0.1	pH Unit	6.3	6.3	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.8	3.8	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2306747-010	H-TP10N-1-2500mm	EA003: pH (F)	----	0.1	pH Unit	6.9	6.9	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.1	5.1	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5074972)									
EP2306747-021	H-TP10N-2-9	EA003: pH (F)	----	0.1	pH Unit	6.7	6.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.1	5.1	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2306747-030	H-TP10N-3-5	EA003: pH (F)	----	0.1	pH Unit	5.3	5.3	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.9	3.9	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5074973)									
EP2306747-041	H-TP10N-4-3	EA003: pH (F)	----	0.1	pH Unit	4.9	4.9	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.1	3.1	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2306747-050	H-TP10N-4-12	EA003: pH (F)		0.1	pH Unit	4.5	4.6	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.4	3.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5074974)									
EP2306747-061	H-TP10N-5-5_Duplicated	EA003: pH (F)	----	0.1	pH Unit	5.1	5.1	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.3	3.3	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5074974) - continued									
EP2306747-061	H-TP10N-5 5_Duplicated	EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2306752**	Page	: 1 of 3
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 25-May-2023
C-O-C number	: ----	Issue Date	: 26-May-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 56		
No. of samples analysed	: 56		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5074991)									
EP2306752 001	H TP10N 6 1	EA003: pH (F)		0 1	pH Unit	6 4	6 4	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.1	3.1	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2306752-010	H-TP10N-6 10	EA003: pH (F)	----	0.1	pH Unit	7.1	7.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.4	5.4	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0 0	No Limit
EA003 :pH (field/fox) (QC Lot: 5074992)									
EP2306752-021	H-TP10N-7 8	EA003: pH (F)	----	0.1	pH Unit	7.1	7.1	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.3	5.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2306752-030	H-TP10N-8 6	EA003: pH (F)	----	0.1	pH Unit	7.4	7.5	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.5	5.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5074993)									
EP2306752-041	H-TP10N-9 4	EA003: pH (F)	----	0.1	pH Unit	6.3	6.3	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.6	4.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2306752 050	H TP10N 10 1	EA003: pH (F)		0 1	pH Unit	6 0	6 1	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.6	2.7	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2306754**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 30-May-2023
C-O-C number	: ----	Issue Date	: 31-May-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 63		
No. of samples analysed	: 63		

Accreditation No. 825
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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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5083877)									
EP2306754 001	H TP10N 11 1	EA003: pH (F)		0 1	pH Unit	5 9	5 9	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.7	2.7	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2306754-010	H-TP10N-11 10	EA003: pH (F)	----	0.1	pH Unit	6.9	6.9	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.2	5.2	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0 0	No Limit
EA003 :pH (field/fox) (QC Lot: 5083878)									
EP2306754-021	H-TP10N-12 9	EA003: pH (F)	----	0.1	pH Unit	6.8	6.8	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	6.2	6.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	3	3	0.0	No Limit
EP2306754-030	H-TP10N-13 5	EA003: pH (F)	----	0.1	pH Unit	7.4	7.4	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.4	5.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5083879)									
EP2306754-041	H-TP10N-14 3	EA003: pH (F)	----	0.1	pH Unit	5.3	5.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.8	2.8	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2306754 050	H TP10N 14 12	EA003: pH (F)		0 1	pH Unit	4 5	4 5	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.3	3.3	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5083880)									
EP2306754-061	H-TP10N-15 11	EA003: pH (F)	----	0.1	pH Unit	4.8	4.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.5	3.4	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5083880) - continued									
EP2306754-061	H-TP10N-15 11	EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2306761**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 01-Jun-2023
C-O-C number	: ----	Issue Date	: 06-Jun-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 64		
No. of samples analysed	: 64		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5094592)									
EP2306761 001	H TP10N 16 1	EA003: pH (F)		0 1	pH Unit	6 9	6 9	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.3	5.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2306761-010	H-TP10N-16 10	EA003: pH (F)	----	0.1	pH Unit	6.7	6.8	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.1	5.2	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0 0	No Limit
EA003 :pH (field/fox) (QC Lot: 5094593)									
EP2306761-021	H-TP10N-17 8	EA003: pH (F)	----	0.1	pH Unit	6.8	6.8	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.2	5.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2306761-030	H-TP10N-18 5	EA003: pH (F)	----	0.1	pH Unit	6.7	6.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.1	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5094594)									
EP2306761-041	H-TP10N-19 4	EA003: pH (F)	----	0.1	pH Unit	8.2	8.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.5	5.5	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2306761 050	H TP10N 19 13	EA003: pH (F)		0 1	pH Unit	8 2	8 2	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	6.9	6.9	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	3	3	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5094595)									
EP2306761-061	H-TP10N-20 11	EA003: pH (F)	----	0.1	pH Unit	5.9	5.8	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.6	4.7	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5094595) - continued									
EP2306761-061	H-TP10N-20 11	EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2306773**	Page	: 1 of 3
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 06-Jun-2023
C-O-C number	: ----	Issue Date	: 09-Jun-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 55		
No. of samples analysed	: 55		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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Signatories	*Position*	*Accreditation Category*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

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Laboratory Duplicate (DUP) Report

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA003 :pH (field/fox) (QC Lot: 5103622)									
EP2306773 001	H TP10N 21 1	EA003: pH (F)		0 1	pH Unit	6 0	6 0	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.5	2.5	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2306773-010	H-TP10N-21 10	EA003: pH (F)	----	0.1	pH Unit	6.4	6.4	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.6	4.4	3.1	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0 0	No Limit
EA003 :pH (field/fox) (QC Lot: 5103623)									
EP2306773-021	H-TP10N-22 8	EA003: pH (F)	----	0.1	pH Unit	5.8	5.8	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.0	3.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2306773-030	H-TP10N-23 6	EA003: pH (F)	----	0.1	pH Unit	4.9	4.9	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.4	3.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5103624)									
EP2306773-041	H-TP10N-24 10	EA003: pH (F)	----	0.1	pH Unit	7.6	7.6	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.5	5.4	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2306773 050	H TP10N 25 7	EA003: pH (F)		0 1	pH Unit	6 2	6 2	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.8	4.8	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2306774**	Page	: 1 of 3
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 08-Jun-2023
C-O-C number	: ----	Issue Date	: 12-Jun-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 57		
No. of samples analysed	: 57		

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- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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Signatories	*Position*	*Accreditation Category*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

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# = Indicates failed QC

Laboratory Duplicate (DUP) Report

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA003 :pH (field/fox) (QC Lot: 5105711)									
EP2306774 001	H TP10N 26 1	EA003: pH (F)		0 1	pH Unit	5 6	5 6	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.8	2.8	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2306774-010	H-TP10N-26 10	EA003: pH (F)	----	0.1	pH Unit	4.9	5.0	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.9	3.8	0.0	0% - 20%
		EA003: Reaction Rate		1	Reaction Unit	1	1	0 0	No Limit
EA003 :pH (field/fox) (QC Lot: 5105712)									
EP2306774-021	H-TP10N-27 9	EA003: pH (F)	----	0.1	pH Unit	6.9	6.9	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.5	5.5	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2306774-030	H-TP10N-28 6	EA003: pH (F)	----	0.1	pH Unit	6.2	6.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	4.9	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5105713)									
EP2306774-041	H-TP10N-29 4	EA003: pH (F)	----	0.1	pH Unit	5.7	5.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.8	3.8	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2306774 050	H TP10N 30 1	EA003: pH (F)		0 1	pH Unit	6 5	6 5	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	2.8	2.8	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

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- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2317249**	Page	: 1 of 3
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 30-Nov-2023
Order number	: 368360-1	Date Analysis Commenced	: 08-Dec-2023
C-O-C number	: ----	Issue Date	: 14-Dec-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 51		
No. of samples analysed	: 51		

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- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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Signatories	*Position*	*Accreditation Category*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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

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# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting. Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA003 :pH (field/fox) (QC Lot: 5479526)									
EP2317249-001	H-MW-01: 1 250mm	EA003: pH (F)	----	0.1	pH Unit	6.7	6.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.6	3.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2317249 010	H MW02 6 1500mm	EA003: pH (F)		0 1	pH Unit	7 7	7 7	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.3	5.3	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5479527)									
EP2317249-021	H-MW-05: 4 1000mm	EA003 pH (F)	----	0.1	pH Unit	6.3	6.3	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.6	4.7	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2317249-030	H-MW-07: 4 1000mm	EA003: pH (F)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.6	3.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5479528)									
EP2317249-041	H-MW-09: 5 1250mm	EA003: pH (F)	----	0.1	pH Unit	8.2	8.4	1.6	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.9	6.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2317249-050	H-MW-11: 6 1500mm	EA003: pH (F)	----	0.1	pH Unit	5.5	5.5	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.3	4.3	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

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Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2317262**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 30-Nov-2023
Order number	: 368360-1	Date Analysis Commenced	: 11-Dec-2023
C-O-C number	: ----	Issue Date	: 14-Dec-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 61		
No. of samples analysed	: 61		

Accreditation No. 825
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ISO/IEC 17025 - Testing

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- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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Signatories	*Position*	*Accreditation Category*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting. Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5482658)									
EP2317262-001	H-MW-12: 2 500mm	EA003: pH (F)	----	0.1	pH Unit	5.7	5.6	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.6	3.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2317262-010	H-MW-14: 3 750mm	EA003: pH (F)		0.1	pH Unit	5.4	5.5	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.7	3.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5482659)									
EP2317262-030	H-MW-17: 3 750mm	EA003: pH (F)	----	0.1	pH Unit	6.6	6.7	1.8	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.9	3.9	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2317262-041	H-MW-18: 4 1000mm	EA003: pH (F)	----	0.1	pH Unit	8.6	8.6	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.5	5.5	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5482660)									
EP2317262-051	H-MW-19: 5 1250mm	EA003: pH (F)	----	0.1	pH Unit	5.9	5.8	0.0	0% - 20%
		EA003: pH (Fox)		0.1	pH Unit	4.3	4.4	2.3	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2317262-060	H-MW-20: 4 1000mm	EA003: pH (F)	----	0.1	pH Unit	5.2	5.1	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.6	3.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5482661)									
EP2317262-066	H-MW-20: 10 2500mm	EA003: pH (F)	----	0.1	pH Unit	5.9	5.9	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5482661) - continued									
EP2317262-066	H-MW-20: 10 2500mm	EA003: pH (Fox)	----	0.1	pH Unit	4.6	4.6	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2401600**	Page	: 1 of 4
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 30-Nov-2023
Order number	: 368360-1	Date Analysis Commenced	: 13-Feb-2024
C-O-C number	: ----	Issue Date	: 21-Feb-2024
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 30		
No. of samples analysed	: 30		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting. Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA033-A: Actual Acidity (QC Lot: 5598521)									
EP2401600-001	H-MW-01: 1 250mm	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.03	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	18	18	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.9	5.9	0.0	0% - 20%
EP2401600-011	H-MW-05: 3 750mm	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.03	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	21	21	0.0	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.6	5.6	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 5598522)									
EP2401600-021	H-MW-15: 4 1000mm	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.03	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	18	18	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.6	5.6	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 5598521)									
EP2401600-001	H-MW-01: 1 250mm	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.011	0.010	9.5	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2401600-011	H-MW-05: 3 750mm	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.007	0.009	25.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-B: Potential Acidity (QC Lot: 5598522)									
EP2401600-021	H-MW-15: 4 1000mm	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.008	0.009	11.8	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5598521)									

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-E: Acid Base Accounting (QC Lot: 5598521) - continued									
EP2401600-001	H-MW-01: 1 250mm	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.04	0.04	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.04	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	2	2	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	26	25	3.9	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	26	25	3.9	No Limit
EP2401600-011	H-MW-05: 3 750mm	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.04	0.04	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.04	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	2	2	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	25	27	7.7	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	25	27	7.7	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5598522)									
EP2401600-021	H-MW-15: 4 1000mm	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.04	0.04	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.04	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	2	2	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	24	24	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	24	24	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

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Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 5598521)								
EA033: pH KCl (23A)	----	0.1	pH Unit	<0.1	----	----	----	----
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	18 mole H+ / t	89.3	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-A: Actual Acidity (QCLot: 5598522)								
EA033: pH KCl (23A)	----	0.1	pH Unit	<0.1	----	----	----	----
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	18 mole H+ / t	89.4	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 5598521)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.202 % S	93.1	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-B: Potential Acidity (QCLot: 5598522)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.202 % S	99.0	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-E: Acid Base Accounting (QCLot: 5598521)								
EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA033: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA033-E: Acid Base Accounting (QCLot: 5598522)								
EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA033: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2403511**	Page	: 1 of 3
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: Level 7, 10 Telethon Avenue Perth 6000	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: Wagerup RSA10N	Date Samples Received	: 14-Mar-2024
Order number	: 368360-1	Date Analysis Commenced	: 22-Mar-2024
C-O-C number	: ----	Issue Date	: 22-Mar-2024
Sampler	: Monica Niven		
Site	: ----		
Quote number	: EP/968/22		
No. of samples received	: 56		
No. of samples analysed	: 56		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting. Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA003 :pH (field/fox) (QC Lot: 5682363)									
EP2403511-001	MW-28-1	EA003: pH (F)	----	0.1	pH Unit	7.4	7.6	2.4	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	7.6	7.7	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	3	3	0.0	No Limit
EP2403511-010	MW-24-1	EA003: pH (F)		0.1	pH Unit	6.3	6.3	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.2	3.1	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5682364)									
EP2403511-022	MW-27-1	EA003: pH (F)	----	0.1	pH Unit	6.9	6.8	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2403511-031	MW-33-3	EA003: pH (F)	----	0.1	pH Unit	5.6	5.6	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.3	4.3	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5682365)									
EP2403511-042	MW-37-3	EA003: pH (F)	----	0.1	pH Unit	5.8	5.0	14.8	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.0	3.7	9.1	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2403511-053	MW-26-2	EA003: pH (F)	----	0.1	pH Unit	6.6	6.9	4.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.6	5.2	13.2	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

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- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2403707**	Page	: 1 of 4
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: Wagerup RSA10N	Date Samples Received	: 15-Mar-2024
Order number	: 368360-1	Date Analysis Commenced	: 26-Mar-2024
C-O-C number	: ----	Issue Date	: 28-Mar-2024
Sampler	: Monica Niven		
Site	: ----		
Quote number	: EP/968/22		
No. of samples received	: 80		
No. of samples analysed	: 80		

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Accredited for compliance with
ISO/IEC 17025 - Testing

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- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting. Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5695278)									
EP2403707-001	H-DP10B-04-:1	EA003: pH (F)	----	0.1	pH Unit	6.0	6.1	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.3	3.3	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2403707 010	H DP10B 04 10	EA003: pH (F)		0 1	pH Unit	7 2	7 2	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5695279)									
EP2403707-021	H-DP10B-01-:1	EA003 pH (F)	----	0.1	pH Unit	6.2	6.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.1	3.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2403707-030	H-DP10B-01-:10	EA003: pH (F)	----	0.1	pH Unit	6.6	6.6	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.5	4.5	0.0	0% - 20%
		EA003 Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5695280)									
EP2403707-041	H-DP10B-05-:1	EA003: pH (F)	----	0.1	pH Unit	5.7	5.8	0.0	0% - 20%
		EA003: pH (Fox)		0 1	pH Unit	2 2	2 5	14 5	0% 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2403707-050	H-DP10B-05-:10	EA003: pH (F)	----	0.1	pH Unit	7.4	7.3	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.8	4.8	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5695281)									
EP2403707-061	H-DP10B-08-:9	EA003: pH (F)	----	0.1	pH Unit	6.8	6.9	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5695281) - continued									
EP2403707-061	H-DP10B-08-.9	EA003: pH (Fox)	----	0.1	pH Unit	3.8	3.9	2.6	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2403707-070	H-DP10B-08-.18	EA003: pH (F)	----	0.1	pH Unit	6.7	6.8	1.5	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.1	5.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2403718**	Page	: 1 of 4
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: Wagerup RSA10N	Date Samples Received	: 15-Mar-2024
Order number	: 368360-1	Date Analysis Commenced	: 04-Apr-2024
C-O-C number	: ----	Issue Date	: 04-Apr-2024
Sampler	: Monica Niven		
Site	: ----		
Quote number	: EP/968/22		
No. of samples received	: 74		
No. of samples analysed	: 74		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting. Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5704991)									
EP2403718-001	H-DP10B-07-:1	EA003: pH (F)	----	0.1	pH Unit	6.3	6.2	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	3.1	3.0	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2403718 010	H DP10B 07 10	EA003: pH (F)		0 1	pH Unit	7 3	7 3	0 0	0% 20%
		EA003: pH (Fox)	----	0.1	pH Unit	4.9	4.9	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5704992)									
EP2403718-021	H-DP10B-07-:21	EA003 pH (F)	----	0.1	pH Unit	7.7	7.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.0	5.1	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2403718-030	DP-10	EA003: pH (F)	----	0.1	pH Unit	7.7	7.7	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.3	5.3	0.0	0% - 20%
		EA003 Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5704993)									
EP2403718-041	H-DP10B-06-:11	EA003: pH (F)	----	0.1	pH Unit	6.3	6.9	9.4	0% - 20%
		EA003: pH (Fox)		0 1	pH Unit	4 1	4 6	11 1	0% 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EP2403718-050	H-DP10B-06-:20	EA003: pH (F)	----	0.1	pH Unit	7.3	7.4	1.4	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.3	5.1	3.3	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit
EA003 :pH (field/fox) (QC Lot: 5704994)									
EP2403718-061	H-MW-36A-3	EA003: pH (F)	----	0.1	pH Unit	5.2	5.1	0.0	0% - 20%

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA003 :pH (field/fox) (QC Lot: 5704994) - continued									
EP2403718-061	H-MW-36A-3	EA003: pH (Fox)	----	0.1	pH Unit	2.4	2.5	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	2	2	0.0	No Limit
EP2403718-070	H-DP10B-04-18	EA003: pH (F)	----	0.1	pH Unit	7.7	7.6	0.0	0% - 20%
		EA003: pH (Fox)	----	0.1	pH Unit	5.2	5.2	0.0	0% - 20%
		EA003: Reaction Rate	----	1	Reaction Unit	1	1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

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- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QUALITY CONTROL REPORT

Work Order	: **EP2404889**	Page	: 1 of 6
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: Wagerup RSA10N	Date Samples Received	: 15-Mar-2024
Order number	: 368360-1	Date Analysis Commenced	: 16-Apr-2024
C-O-C number	: ----	Issue Date	: 26-Apr-2024
Sampler	: ----		
Site	: ----		
Quote number	: EP/968/22		
No. of samples received	: 60		
No. of samples analysed	: 60		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

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- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Daniel Fisher	Inorganics Analyst	Perth ASS, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting. Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-A: Actual Acidity (QC Lot: 5731036)									
EP2404889-001	MW-21-1	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	0.05	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	32	32	0.0	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.7	5.6	1.8	0% - 20%
EP2404889 011	MW 31 1	EA033: sulfidic - Titratable Actual Acidity (s-23F)		0 02	% pyrite S	0 06	0 06	0 0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	35	35	0.0	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.8	5.8	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 5731037)									
EP2404889-021	MW-39-1	EA033 sulfidic Titratable Actual Acidity (s 23F)	----	0.02	% pyrite S	0.03	0.03	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	21	21	0.0	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.8	5.8	0.0	0% - 20%
EP2404889-031	H-DP10B-03-:4	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	12	12	0.0	No Limit
		EA033 pH KCl (23A)	----	0.1	pH Unit	6.0	5.9	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 5731038)									
EP2404889-041	H-DP10B-06-:2	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)		2	mole H+ / t	2	2	0 0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.4	6.4	0.0	0% - 20%
EP2404889-051	H-DP10B-07-:21	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	12	13	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.9	5.9	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 5731036)									
EP2404889-001	MW-21-1	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.005	0.005	0.0	No Limit

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-B: Potential Acidity (QC Lot: 5731036) - continued									
EP2404889-001	MW-21-1	EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2404889-011	MW-31-1	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-B: Potential Acidity (QC Lot: 5731037)									
EP2404889-021	MW-39-1	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2404889-031	H-DP10B-03-:4	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-B: Potential Acidity (QC Lot: 5731038)									
EP2404889-041	H-DP10B-06-:2	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2404889-051	H-DP10B-07-:21	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5731036)									
EP2404889-001	MW-21-1	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.06	0.06	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.06	0.06	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	3	3	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	3	3	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	34	35	2.9	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	34	35	2.9	No Limit
EP2404889-011	MW-31-1	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.06	0.06	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.06	0.06	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	3	3	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	3	3	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	38	37	2.7	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	38	37	2.7	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5731037)									
EP2404889-021	MW-39-1	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.03	0.03	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	0.03	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	2	2	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	21	21	0.0	No Limit

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA033-E: Acid Base Accounting (QC Lot: 5731037) - continued									
EP2404889-021	MW-39-1	EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	21	21	0.0	No Limit
EP2404889-031	H-DP10B-03-:4	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.02	0.02	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	0.02	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	13	13	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	13	13	0.0	No Limit
EA033-E: Acid Base Accounting (QC Lot: 5731038)									
EP2404889-041	H-DP10B-06-:2	EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EP2404889-051	H-DP10B-07-:21	EA033: Net Acidity (sulfur units)	----	0.02	% S	0.02	0.02	0.0	No Limit
		EA033: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.02	0.02	0.0	No Limit
		EA033: Liming Rate	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Liming Rate excluding ANC	----	1	kg CaCO3/t	1	1	0.0	No Limit
		EA033: Net Acidity (acidity units)	----	10	mole H+ / t	14	13	7.4	No Limit
		EA033: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	14	13	7.4	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 5731036)								
EA033: pH KCl (23A)	---	0.1	pH Unit	<0.1	---	---	---	---
EA033: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	18 mole H+ / t	105	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
EA033-A: Actual Acidity (QCLot: 5731037)								
EA033: pH KCl (23A)	---	0.1	pH Unit	<0.1	---	---	---	---
EA033: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	18 mole H+ / t	97.4	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
EA033-A: Actual Acidity (QCLot: 5731038)								
EA033: pH KCl (23A)	---	0.1	pH Unit	<0.1	---	---	---	---
EA033: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	18 mole H+ / t	98.2	83.3	112
EA033: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
EA033-B: Potential Acidity (QCLot: 5731036)								
EA033: Chromium Reducible Sulfur (22B)	---	0.005	% S	<0.005	0.202 % S	94.6	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	---	10	mole H+ / t	<10	---	---	---	---
EA033-B: Potential Acidity (QCLot: 5731037)								
EA033: Chromium Reducible Sulfur (22B)	---	0.005	% S	<0.005	0.202 % S	101	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	---	10	mole H+ / t	<10	---	---	---	---
EA033-B: Potential Acidity (QCLot: 5731038)								
EA033: Chromium Reducible Sulfur (22B)	---	0.005	% S	<0.005	0.202 % S	86.6	79.0	109
EA033: acidity - Chromium Reducible Sulfur (a-22B)	---	10	mole H+ / t	<10	---	---	---	---
EA033-C: Acid Neutralising Capacity (QCLot: 5731036)								
EA033: Acid Neutralising Capacity (19A2)	---	---	% CaCO3	---	4.9 % CaCO3	102	98.7	105
EA033-E: Acid Base Accounting (QCLot: 5731036)								
EA033: Net Acidity (sulfur units)	---	0.02	% S	<0.02	---	---	---	---
EA033: Net Acidity (acidity units)	---	10	mole H+ / t	<10	---	---	---	---
EA033: Liming Rate	---	1	kg CaCO3/t	<1	---	---	---	---
EA033-E: Acid Base Accounting (QCLot: 5731037)								
EA033: Net Acidity (sulfur units)	---	0.02	% S	<0.02	---	---	---	---
EA033: Net Acidity (acidity units)	---	10	mole H+ / t	<10	---	---	---	---
EA033: Liming Rate	---	1	kg CaCO3/t	<1	---	---	---	---

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EA033-E: Acid Base Accounting (QCLot: 5731038)								
EA033: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA033: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA033: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2306747**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22 May 2023
Site	: Wagerup	Issue Date	: 26-May-2023
Sampler	: Jerry Zhang	No. of samples received	: 61
Order number	: 368360-1	No. of samples analysed	: 61

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Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10N-1 250mm,	H-TP10N-1 500mm,	**15-May-2023**	**24-May-2023**	07-Feb-2026	✓	**24-May-2023**	22-Aug-2023	✓
H-TP10N-1 750mm,	H-TP10N-1 1000mm,							
H-TP10N-1 1250mm,	H-TP10N-1 1500mm,							
H-TP10N-1 1750mm,	H-TP10N-1 2000mm,							
H-TP10N-1 2250mm,	H-TP10N-1 2500mm,							
H-TP10N-1 2750mm,	H-TP10N-1 3000mm							
Snap Lock Bag - frozen (EA003)								
H-TP10N-2 1,	H-TP10N-2 2,	**17-May-2023**	**24-May-2023**	09-Feb-2026	✓	**24-May-2023**	22-Aug-2023	✓
H-TP10N-2 3,	H-TP10N-2 4,							
H-TP10N-2 5,	H-TP10N-2 6,							
H-TP10N-2 7,	H-TP10N-2 8,							
H-TP10N-2 9,	H-TP10N-2 10,							
H-TP10N-2 11,	H-TP10N-2 12,							
H-TP10N-2 7_Duplicated,	H-TP10N-3 1,							
H-TP10N-3 2,	H-TP10N-3 3,							
H-TP10N-3 4,	H-TP10N-3 5,							
H-TP10N-3 6,	H-TP10N-3 7,							
H-TP10N-3 8,	H-TP10N-3 9,							
H-TP10N-3 10,	H-TP10N-3 11,							
H-TP10N-3 12,	H-TP10N-3 8_Duplicated,							
H-TP10N-4 1,	H-TP10N-4 2,							
H-TP10N-4 3,	H-TP10N-4 4,							
H-TP10N-4 5,	H-TP10N-4 6,							
H-TP10N-4 7,	H-TP10N-4 8,							
H-TP10N-4 9,	H-TP10N-4 10,							
H-TP10N-4 11,	H-TP10N-4 12							
Snap Lock Bag - frozen (EA003)								

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-TP10N-5 1,	H-TP10N-5 2,	18-May-2023	24-May-2023	10-Feb-2026	✓	24-May-2023	22-Aug-2023	✓
H-TP10N-5 3,	H-TP10N-5 4,							
H-TP10N-5 5,	H-TP10N-5 6,							
H-TP10N-5 7,	H-TP10N-5 8,							
H-TP10N-5 9,	H-TP10N-5 10,							
H-TP10N-5 5_Duplicated								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	7	61	**11.48**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2306752**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22 May 2023
Site	: Wagerup	Issue Date	: 26-May-2023
Sampler	: Jerry Zhang	No. of samples received	: 56
Order number	: 368360-1	No. of samples analysed	: 56

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Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)							
Snap Lock Bag - frozen (EA003)							
H-TP10N-6 13	**15-May-2023**	**25-May-2023**	07-Feb-2026	✓	**25-May-2023**	23-Aug-2023	✓
Snap Lock Bag - frozen (EA003)							
H-TP10N-10 1	**18-May-2023**	**25-May-2023**	10-Feb-2026	✓	**25-May-2023**	23-Aug-2023	✓
Snap Lock Bag - frozen (EA003)							
H-TP10N-6 1, H-TP10N-6 2, H-TP10N-6 3, H-TP10N-6 4, H-TP10N-6 5, H-TP10N-6 6, H-TP10N-6 7, H-TP10N-6 8, H-TP10N-6 9, H-TP10N-6 10, H-TP10N-6 11, H-TP10N-6 12, H-TP10N-7 1, H-TP10N-7 2, H-TP10N-7 3, H-TP10N-7 4, H-TP10N-7 5, H-TP10N-7 6, H-TP10N-7 7, H-TP10N-7 8, H-TP10N-7 9, H-TP10N-7 10, H-TP10N-7 11, H-TP10N-8 1, H-TP10N-8 2, H-TP10N-8 3, H-TP10N-8 4, H-TP10N-8 5, H-TP10N-8 6, H-TP10N-8 7, H-TP10N-8 8, H-TP10N-8 9, H-TP10N-8 10, H-TP10N-8 11, H-TP10N-8 12, H-TP10N-8 6_Duplicate, H-TP10N-9 1, H-TP10N-9 2, H-TP10N-9 3, H-TP10N-9 4, H-TP10N-9 5, H-TP10N-9 6, H-TP10N-9 7, H-TP10N-9 8, H-TP10N-9 9, H-TP10N-9 10, H-TP10N-9 11, H-TP10N-9 12, H-TP10N-10 2, H-TP10N-10 3, H-TP10N-10 4, H-TP10N-10 5, H-TP10N-10 6, H-TP10N-10 5_Duplicated	**22-May-2023**	**25-May-2023**	14-Feb-2026	✓	**25-May-2023**	23-Aug-2023	✓

Quality Control Parameter Frequency Compliance

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Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	6	56	**10.71**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2306754**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22 May 2023
Site	: Wagerup	Issue Date	: 31-May-2023
Sampler	: Jerry Zhang	No. of samples received	: 63
Order number	: 368360-1	No. of samples analysed	: 63

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Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10N-12 1,	H-TP10N-12 2,	**16-May-2023**	**30-May-2023**	08-Feb-2026	✓	**30-May-2023**	28-Aug-2023	✓
H-TP10N-12 3,	H-TP10N-12 4,							
H-TP10N-12 5,	H-TP10N-12 6,							
H-TP10N-12 7,	H-TP10N-12 8,							
H-TP10N-12 9,	H-TP10N-12 10,							
H-TP10N-12 11,	H-TP10N-12 12,							
H-TP10N-12 7_Duplicate								
Snap Lock Bag - frozen (EA003)								
H-TP10N-14 1,	H-TP10N-14 2,	**18-May-2023**	**30-May-2023**	10-Feb-2026	✓	**30-May-2023**	28-Aug-2023	✓
H-TP10N-14 3,	H-TP10N-14 4,							
H-TP10N-14 5,	H-TP10N-14 6,							
H-TP10N-14 7,	H-TP10N-14 8,							
H-TP10N-14 9,	H-TP10N-14 10,							
H-TP10N-14 11								
Snap Lock Bag - frozen (EA003)								
H-TP10N-14 12,	H-TP10N-15 1,	**19-May-2023**	**30-May-2023**	11-Feb-2026	✓	**30-May-2023**	28-Aug-2023	✓
H-TP10N-15 2,	H-TP10N-15 3,							
H-TP10N-15 4,	H-TP10N-15 5,							
H-TP10N-15 6,	H-TP10N-15 7,							
H-TP10N-15 8,	H-TP10N-15 9,							
H-TP10N-15 10,	H-TP10N-15 11,							
H-TP10N-15 12,	H-TP10N-15 3_Duplicate							
Snap Lock Bag - frozen (EA003)								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-TP10N-11 1,	H-TP10N-11 2,	22-May-2023	30-May-2023	14-Feb-2026	✓	30-May-2023	28-Aug-2023	✓
H-TP10N-11 3,	H-TP10N-11 4,							
H-TP10N-11 5,	H-TP10N-11 6,							
H-TP10N-11 7,	H-TP10N-11 8,							
H-TP10N-11 9,	H-TP10N-11 10,							
H-TP10N-11 11,	H-TP10N-11 12,							
H-TP10N-13 1,	H-TP10N-13 2,							
H-TP10N-13 3,	H-TP10N-13 4,							
H-TP10N-13 5,	H-TP10N-13 6,							
H-TP10N-13 7,	H-TP10N-13 8,							
H-TP10N-13 9,	H-TP10N-13 10,							
H-TP10N-13 11,	H-TP10N-13 12,							
H-TP10N-13 5_Duplicate								

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Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	7	63	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2306761**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22 May 2023
Site	: Wagerup	Issue Date	: 06-Jun-2023
Sampler	: Jerry Zhang	No. of samples received	: 64
Order number	: 368360-1	No. of samples analysed	: 64

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Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

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Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10N-16 1,	H-TP10N-16 2,	**16-May-2023**	**01-Jun-2023**	08-Feb-2026	✓	**01-Jun-2023**	30-Aug-2023	✓
H-TP10N-16 3,	H-TP10N-16 4,							
H-TP10N-16 5,	H-TP10N-16 6,							
H-TP10N-16 7,	H-TP10N-16 8,							
H-TP10N-16 9,	H-TP10N-16 10,							
H-TP10N-16 11,	H-TP10N-16 12,							
H-TP10N-16 13,	H-TP10N-17 1,							
H-TP10N-17 2,	H-TP10N-17 3,							
H-TP10N-17 4,	H-TP10N-17 5,							
H-TP10N-17 6,	H-TP10N-17 7,							
H-TP10N-17 8,	H-TP10N-17 9,							
H-TP10N-17 10,	H-TP10N-17 11,							
H-TP10N-17 12,	H-TP10N-20 1,							
H-TP10N-20 2,	H-TP10N-20 3,							
H-TP10N-20 4,	H-TP10N-20 5,							
H-TP10N-20 6,	H-TP10N-20 7,							
H-TP10N-20 8,	H-TP10N-20 9,							
H-TP10N-20 10,	H-TP10N-20 11,							
H-TP10N-20 12,	H-TP10N-20 11_Duplicate,							
H-TP10N-20 12_Duplicate								
Snap Lock Bag - frozen (EA003)								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-TP10N-18 1,	H-TP10N-18 2,	17-May-2023	01-Jun-2023	09-Feb-2026	✓	01-Jun-2023	30-Aug-2023	✓
H-TP10N-18 3,	H-TP10N-18 4,							
H-TP10N-18 5,	H-TP10N-18 6,							
H-TP10N-18 7,	H-TP10N-18 8,							
H-TP10N-18 9,	H-TP10N-18 10,							
H-TP10N-18 11,	H-TP10N-18 12,							
H-TP10N-19 1,	H-TP10N-19 2,							
H-TP10N-19 3,	H-TP10N-19 4,							
H-TP10N-19 5,	H-TP10N-19 6,							
H-TP10N-19 7,	H-TP10N-19 8,							
H-TP10N-19 9,	H-TP10N-19 10,							
H-TP10N-19 11,	H-TP10N-19 12,							
H-TP10N-19 13								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	7	64	**10.94**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2306773**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22 May 2023
Site	: Wagerup	Issue Date	: 09-Jun-2023
Sampler	: Jerry Zhang	No. of samples received	: 55
Order number	: 368360-1	No. of samples analysed	: 55

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10N-24 1,	H-TP10N-24 2,	**16-May-2023**	**06-Jun-2023**	08-Feb-2026	✓	**06-Jun-2023**	04-Sep-2023	✓
H-TP10N-24 3,	H-TP10N-24 4,							
H-TP10N-24 5,	H-TP10N-24 6,							
H-TP10N-24 7,	H-TP10N-24 8,							
H-TP10N-24 9,	H-TP10N-24 10,							
H-TP10N-24 11,	H-TP10N-24 12,							
H-TP10N-25 1,	H-TP10N-25 2,							
H-TP10N-25 3,	H-TP10N-25 4,							
H-TP10N-25 5,	H-TP10N-25 6,							
H-TP10N-25 7								
Snap Lock Bag - frozen (EA003)								
H-TP10N-21 1,	H-TP10N-21 2,	**17-May-2023**	**06-Jun-2023**	09-Feb-2026	✓	**06-Jun-2023**	04-Sep-2023	✓
H-TP10N-21 3,	H-TP10N-21 4,							
H-TP10N-21 5,	H-TP10N-21 6,							
H-TP10N-21 7,	H-TP10N-21 8,							
H-TP10N-21 9,	H-TP10N-21 10,							
H-TP10N-21 11,	H-TP10N-21 12,							
H-TP10N-21 11_Duplicate								
Snap Lock Bag - frozen (EA003)								
H-TP10N-22 1,	H-TP10N-22 2,	**18-May-2023**	**06-Jun-2023**	10-Feb-2026	✓	**06-Jun-2023**	04-Sep-2023	✓
H-TP10N-22 3,	H-TP10N-22 4,							
H-TP10N-22 5,	H-TP10N-22 6,							
H-TP10N-22 7,	H-TP10N-22 8,							
H-TP10N-22 9,	H-TP10N-22 10,							
H-TP10N-22 9_Duplicate								
Snap Lock Bag - frozen (EA003)								
H-TP10N-23 1,	H-TP10N-23 2,	**19-May-2023**	**06-Jun-2023**	11-Feb-2026	✓	**06-Jun-2023**	04-Sep-2023	✓
H-TP10N-23 3,	H-TP10N-23 4,							
H-TP10N-23 5,	H-TP10N-23 6,							
H-TP10N-23 4_Duplicate								
Snap Lock Bag - frozen (EA003)								

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-TP10N-25 8, H-TP10N-25 10, H-TP10N-25 12	H-TP10N-25 9, H-TP10N-25 11,	22-May-2023	06-Jun-2023	14-Feb-2026	✓	06-Jun-2023	04-Sep-2023	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/fox	EA003	5	55	**10.91**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2306774**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22 May 2023
Site	: Wagerup	Issue Date	: 12-Jun-2023
Sampler	: Jerry Zhang	No. of samples received	: 57
Order number	: 368360-1	No. of samples analysed	: 57

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10N-26 1,	H-TP10N-26 2,	**18-May-2023**	**08-Jun-2023**	10-Feb-2026	✓	**08-Jun-2023**	06-Sep-2023	✓
H-TP10N-26 3,	H-TP10N-26 4,							
H-TP10N-26 5,	H-TP10N-26 6,							
H-TP10N-26 7,	H-TP10N-26 8,							
H-TP10N-26 9,	H-TP10N-26 10,							
H-TP10N-26 11,	H-TP10N-26 12,							
H-TP10N-28 1,	H-TP10N-28 2,							
H-TP10N-28 3,	H-TP10N-28 4,							
H-TP10N-28 5,	H-TP10N-28 6,							
H-TP10N-28 7,	H-TP10N-28 8,							
H-TP10N-28 9,	H-TP10N-28 10,							
H-TP10N-28 11,	H-TP10N-28 12,							
H-TP10N-28 4_Duplicate,	H-TP10N-29 1,							
H-TP10N-29 2,	H-TP10N-29 3,							
H-TP10N-29 4,	H-TP10N-29 5,							
H-TP10N-29 6,	H-TP10N-29 7,							
H-TP10N-29 8,	H-TP10N-29 9,							
H-TP10N-29 10,	H-TP10N-29 11,							
H-TP10N-29 12								
Snap Lock Bag - frozen (EA003)								
H-TP10N-30 1,	H-TP10N-30 2,	**19-May-2023**	**08-Jun-2023**	11-Feb-2026	✓	**08-Jun-2023**	06-Sep-2023	✓
H-TP10N-30 3,	H-TP10N-30 4,							
H-TP10N-30 5,	H-TP10N-30 6,							
H-TP10N-30 7,	H-TP10N-30 8							
Snap Lock Bag - frozen (EA003)								
H-TP10N-27 1,	H-TP10N-27 2,	**22-May-2023**	**08-Jun-2023**	14-Feb-2026	✓	**08-Jun-2023**	06-Sep-2023	✓
H-TP10N-27 3,	H-TP10N-27 4,							
H-TP10N-27 5,	H-TP10N-27 6,							
H-TP10N-27 7,	H-TP10N-27 8,							
H-TP10N-27 9,	H-TP10N-27 10,							
H-TP10N-27 11,	H-TP10N-27 12							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	6	57	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2307162**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29 May 2023
Site	: Wagerup	Issue Date	: 14-Jun-2023
Sampler	: Jerry Zhang	No. of samples received	: 63
Order number	: 368360-1	No. of samples analysed	: 63

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Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10B-02 1,	H-TP10B-02 2,	**24-May-2023**	**13-Jun-2023**	16-Feb-2026	✓	**14-Jun-2023**	11-Sep-2023	✓
H-TP10B-02 3,	H-TP10B-02 4,							
H-TP10B-02 5,	H-TP10B-02 6,							
H-TP10B-02 7,	H-TP10B-02 8,							
H-TP10B-02 9,	H-TP10B-02 10,							
H-TP10B-02 11,	H-TP10B-02 12,							
H-TP10B-03 1,	H-TP10B-03 2,							
H-TP10B-03 3,	H-TP10B-03 4,							
H-TP10B-03 5,	H-TP10B-03 6,							
H-TP10B-03 7,	H-TP10B-03 8,							
H-TP10B-03 9,	H-TP10B-03 10,							
H-TP10B-03 11,	H-TP10B-03 12,							
H-TP10B-03 Duplicated								
Snap Lock Bag - frozen (EA003)								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-TP10B-01 1,	H-TP10B-01 2,	25-May-2023	13-Jun-2023	17-Feb-2026	✓	14-Jun-2023	11-Sep-2023	✓
H-TP10B-01 3,	H-TP10B-01 4,							
H-TP10B-01 5,	H-TP10B-01 6,							
H-TP10B-01 7,	H-TP10B-01 8,							
H-TP10B-01 9,	H-TP10B-01 10,							
H-TP10B-01 11,	H-TP10B-01 12,							
H-TP10B-01 Duplicated,	H-TP10B-04 1,							
H-TP10B-04 2,	H-TP10B-04 3,							
H-TP10B-04 4,	H-TP10B-04 5,							
H-TP10B-04 6,	H-TP10B-04 7,							
H-TP10B-04 8,	H-TP10B-04 9,							
H-TP10B-04 10,	H-TP10B-04 11,							
H-TP10B-04 12,	H-TP10B-04 Duplicated,							
H-TP10B-05 1,	H-TP10B-05 2,							
H-TP10B-05 3,	H-TP10B-05 4,							
H-TP10B-05 5,	H-TP10B-05 6,							
H-TP10B-05 7,	H-TP10B-05 8,							
H-TP10B-05 9,	H-TP10B-05 10,							
H-TP10B-05 11,	H-TP10B-05 12							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	7	63	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2307165**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29 May 2023
Site	: Wagerup	Issue Date	: 16-Jun-2023
Sampler	: Jerry Zhang	No. of samples received	: 63
Order number	: 368360-1	No. of samples analysed	: 63

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10B-08 1,	H-TP10B-08 2,	**25-May-2023**	**15-Jun-2023**	17-Feb-2026	✓	**15-Jun-2023**	13-Sep-2023	✓
H-TP10B-08 3,	H-TP10B-08 4,							
H-TP10B-08 5,	H-TP10B-08 6,							
H-TP10B-08 7,	H-TP10B-08 8,							
H-TP10B-08 9,	H-TP10B-08 10,							
H-TP10B-08 11,	H-TP10B-08 12,							
H-TP10B-08 Duplicated								
Snap Lock Bag - frozen (EA003)								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-TP10B-06 1,	H-TP10B-06 2,	29-May-2023	15-Jun-2023	21-Feb-2026	✓	15-Jun-2023	13-Sep-2023	✓
H-TP10B-06 3,	H-TP10B-06 4,							
H-TP10B-06 5,	H-TP10B-06 6,							
H-TP10B-06 7,	H-TP10B-06 8,							
H-TP10B-06 9,	H-TP10B-06 10,							
H-TP10B-06 11,	H-TP10B-06 12,							
H-TP10B-06 Duplicated,	H-TP10B-07 1,							
H-TP10B-07 2,	H-TP10B-07 3,							
H-TP10B-07 4,	H-TP10B-07 5,							
H-TP10B-07 6,	H-TP10B-07 7,							
H-TP10B-07 8,	H-TP10B-07 9,							
H-TP10B-07 10,	H-TP10B-07 11,							
H-TP10B-07 12,	H-TP10B-09 1,							
H-TP10B-09 2,	H-TP10B-09 3,							
H-TP10B-09 4,	H-TP10B-09 5,							
H-TP10B-09 6,	H-TP10B-09 7,							
H-TP10B-09 8,	H-TP10B-09 9,							
H-TP10B-09 10,	H-TP10B-09 11,							
H-TP10B-09 12,	H-TP10B-09 Duplicated,							
H-TP10B-10 1,	H-TP10B-10 2,							
H-TP10B-10 3,	H-TP10B-10 4,							
H-TP10B-10 5,	H-TP10B-10 6,							
H-TP10B-10 7,	H-TP10B-10 8,							
H-TP10B-10 9,	H-TP10B-10 10,							
H-TP10B-10 11,	H-TP10B-10 12							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	7	63	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2307170**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29 May 2023
Site	: Wagerup	Issue Date	: 21-Jun-2023
Sampler	: Jerry Zhang	No. of samples received	: 63
Order number	: 368360-1	No. of samples analysed	: 63

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10B-12 1,	H-TP10B-12 2,	**22-May-2023**	**20-Jun-2023**	14-Feb-2026	✓	**20-Jun-2023**	18-Sep-2023	✓
H-TP10B-12 3,	H-TP10B-12 4,							
H-TP10B-12 5,	H-TP10B-12 6,							
H-TP10B-12 7,	H-TP10B-12 8,							
H-TP10B-12 9,	H-TP10B-12 10,							
H-TP10B-12 11,	H-TP10B-12 12,							
H-TP10B-12 Duplicated,	H-TP10B-13 1,							
H-TP10B-13 2,	H-TP10B-13 3,							
H-TP10B-13 4,	H-TP10B-13 5,							
H-TP10B-13 6,	H-TP10B-13 7,							
H-TP10B-13 8,	H-TP10B-13 9,							
H-TP10B-13 10,	H-TP10B-13 11,							
H-TP10B-13 12,	H-TP10B-13 Duplicated							
Snap Lock Bag - frozen (EA003)								
H-TP10B-14 1,	H-TP10B-14 2,	**23-May-2023**	**20-Jun-2023**	15-Feb-2026	✓	**20-Jun-2023**	18-Sep-2023	✓
H-TP10B-14 3,	H-TP10B-14 4,							
H-TP10B-14 5,	H-TP10B-14 6,							
H-TP10B-14 7,	H-TP10B-14 8,							
H-TP10B-14 9,	H-TP10B-14 10,							
H-TP10B-14 11,	H-TP10B-14 12,							
H-TP10B-15 1,	H-TP10B-15 2,							
H-TP10B-15 3,	H-TP10B-15 4,							
H-TP10B-15 5,	H-TP10B-15 6,							
H-TP10B-15 7,	H-TP10B-15 8,							
H-TP10B-15 9,	H-TP10B-15 10,							
H-TP10B-15 11,	H-TP10B-15 12							
Snap Lock Bag - frozen (EA003)								

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-TP10B-11 1,	H-TP10B-11 2,	24-May-2023	20-Jun-2023	16-Feb-2026	✓	20-Jun-2023	18-Sep-2023	✓
H-TP10B-11 3,	H-TP10B-11 4,							
H-TP10B-11 5,	H-TP10B-11 6,							
H-TP10B-11 7,	H-TP10B-11 8,							
H-TP10B-11 9,	H-TP10B-11 10,							
H-TP10B-11 11,	H-TP10B-11 12,							
H-TP10B-11 Duplicated								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	7	63	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2307178**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29 May 2023
Site	: Wagerup	Issue Date	: 23-Jun-2023
Sampler	: Jerry Zhang	No. of samples received	: 62
Order number	: 368360-1	No. of samples analysed	: 62

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Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10B-16 1,	H-TP10B-16 2,	**22-May-2023**	**22-Jun-2023**	14-Feb-2026	✓	**22-Jun-2023**	20-Sep-2023	✓
H-TP10B-16 3,	H-TP10B-16 4,							
H-TP10B-16 5,	H-TP10B-16 6,							
H-TP10B-16 7,	H-TP10B-16 8,							
H-TP10B-16 9,	H-TP10B-16 10,							
H-TP10B-16 11,	H-TP10B-16 12,							
H-TP10B-18 1,	H-TP10B-18 2,							
H-TP10B-18 3,	H-TP10B-18 4,							
H-TP10B-18 5,	H-TP10B-18 6,							
H-TP10B-18 7,	H-TP10B-18 8,							
H-TP10B-18 9,	H-TP10B-18 10,							
H-TP10B-18 11,	H-TP10B-18 12,							
H-TP10B-19 1,	H-TP10B-19 2,							
H-TP10B-19 3,	H-TP10B-19 4,							
H-TP10B-19 5,	H-TP10B-19 6,							
H-TP10B-19 7,	H-TP10B-19 8,							
H-TP10B-19 9,	H-TP10B-19 10,							
H-TP10B-19 11,	H-TP10B-19 12,							
H-TP10B-19 Duplicated,	H-TP10B-20 1,							
H-TP10B-20 2,	H-TP10B-20 3,							
H-TP10B-20 4,	H-TP10B-20 5,							
H-TP10B-20 6,	H-TP10B-20 7,							
H-TP10B-20 8,	H-TP10B-20 9,							
H-TP10B-20 10,	H-TP10B-20 11,							
H-TP10B-20 12								
Snap Lock Bag - frozen (EA003)								

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-TP10B-17 1,	H-TP10B-17 2,	23-May-2023	22-Jun-2023	15-Feb-2026	✓	22-Jun-2023	20-Sep-2023	✓
H-TP10B-17 3,	H-TP10B-17 4,							
H-TP10B-17 5,	H-TP10B-17 6,							
H-TP10B-17 7,	H-TP10B-17 8,							
H-TP10B-17 9,	H-TP10B-17 10,							
H-TP10B-17 11,	H-TP10B-17 12,							
H-TP10B-17 Duplicated								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	7	62	**11.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2307183**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29 May 2023
Site	: Wagerup	Issue Date	: 30-Jun-2023
Sampler	: Jerry Zhang	No. of samples received	: 101
Order number	: 368360-1	No. of samples analysed	: 101

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-TP10B-22 1,	H-TP10B-22 2,	**22-May-2023**	**27-Jun-2023**	14-Feb-2026	✓	**28-Jun-2023**	25-Sep-2023	✓
H-TP10B-22 3,	H-TP10B-22 4,							
H-TP10B-22 5,	H-TP10B-22 6,							
H-TP10B-22 7,	H-TP10B-22 8,							
H-TP10B-22 9,	H-TP10B-22 10,							
H-TP10B-22 11,	H-TP10B-22 12,							
H-TP10B-25 1,	H-TP10B-25 2,							
H-TP10B-25 3,	H-TP10B-25 4							
Snap Lock Bag - frozen (EA003)								
H-TP10B-25 5,	H-TP10B-25 6,	**22-May-2023**	**28-Jun-2023**	14-Feb-2026	✓	**29-Jun-2023**	26-Sep-2023	✓
H-TP10B-25 7,	H-TP10B-25 8,							
H-TP10B-25 9,	H-TP10B-25 10,							
H-TP10B-25 11,	H-TP10B-25 12,							
H-TP10B-25 Duplicated								
Snap Lock Bag - frozen (EA003)								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-TP10B-21 1,	H-TP10B-21 2,	23-May-2023	27-Jun-2023	15-Feb-2026	✓	28-Jun-2023	25-Sep-2023	✓
H-TP10B-21 3,	H-TP10B-21 4,							
H-TP10B-21 5,	H-TP10B-21 6,							
H-TP10B-21 7,	H-TP10B-21 8,							
H-TP10B-21 9,	H-TP10B-21 10,							
H-TP10B-21 11,	H-TP10B-21 12,							
H-TP10B-21 Duplicated,	H-TP10B-23 1,							
H-TP10B-23 2,	H-TP10B-23 3,							
H-TP10B-23 4,	H-TP10B-23 5,							
H-TP10B-23 6,	H-TP10B-23 7,							
H-TP10B-23 8,	H-TP10B-23 9,							
H-TP10B-23 10,	H-TP10B-23 11,							
H-TP10B-23 12,	H-TP10B-23 Duplicated,							
H-TP10B-24 1,	H-TP10B-24 2,							
H-TP10B-24 3,	H-TP10B-24 4,							
H-TP10B-24 5,	H-TP10B-24 6,							
H-TP10B-24 7,	H-TP10B-24 8,							
H-TP10B-24 9,	H-TP10B-24 10,							
H-TP10B-24 11,	H-TP10B-24 12							
Snap Lock Bag - frozen (EA003)								
H-TP10B-27 1,	H-TP10B-27 2,	23-May-2023	28-Jun-2023	15-Feb-2026	✓	29-Jun-2023	26-Sep-2023	✓
H-TP10B-27 3,	H-TP10B-27 4,							
H-TP10B-27 5,	H-TP10B-27 6,							
H-TP10B-27 7,	H-TP10B-27 8,							
H-TP10B-27 9,	H-TP10B-27 10,							
H-TP10B-27 11,	H-TP10B-27 12,							
H-TP10B-27 Duplicated								
Snap Lock Bag - frozen (EA003)								
H-TP10B-26 1,	H-TP10B-26 2,	24-May-2023	28-Jun-2023	16-Feb-2026	✓	29-Jun-2023	26-Sep-2023	✓
H-TP10B-26 3,	H-TP10B-26 4,							
H-TP10B-26 5,	H-TP10B-26 6,							
H-TP10B-26 7,	H-TP10B-26 8,							
H-TP10B-26 9,	H-TP10B-26 10,							
H-TP10B-26 11,	H-TP10B-26 12,							
H-TP10B-26 Duplicated,	H-TP10B-28 1,							
H-TP10B-28 2,	H-TP10B-28 3,							
H-TP10B-28 4,	H-TP10B-28 5,							
H-TP10B-28 6,	H-TP10B-28 7,							
H-TP10B-28 8,	H-TP10B-28 9,							
H-TP10B-28 10,	H-TP10B-28 11,							
H-TP10B-28 12								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	11	101	**10.89**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2308132**	Page	: 1 of 8
Amendment	: **1**		
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 22 May 2023
Site	: Wagerup	Issue Date	: 25-Jul-2023
Sampler	: Jerry Zhang	No. of samples received	: 53
Order number	: 368360-1	No. of samples analysed	: 53

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA033-A: Actual Acidity							
Snap Lock Bag - frozen (EA033)							
H-TP10N-3 6, H-TP10N-4 3, H-TP10N-4 5, H-TP10N-4 7, H-TP10N-4 9, H-TP10N-4 11, H-TP10N-5 3, H-TP10N-5 5, H-TP10N-5 7, H-TP10N-5 9, H-TP10N-10 3, H-TP10N-10 5, H-TP10N-10 5_Duplicated, H-TP10N-12 1, H-TP10N-12 8, H-TP10N-12 11, H-TP10N-14 3, H-TP10N-14 5, H-TP10N-14 7, H-TP10N-14 9, H-TP10N-14 11, H-TP10N-15 3, H-TP10N-15 5, H-TP10N-15 7, H-TP10N-15 9, H-TP10N-15 11, H-TP10N-17 2, H-TP10N-17 9, H-TP10N-18 2, H-TP10N-18 9, H-TP10N-19 3, H-TP10N-19 6, H-TP10N-19 13, H-TP10N-20 2, H-TP10N-21 2, H-TP10N-22 4, H-TP10N-22 6, H-TP10N-22 8, H-TP10N-23 4, H-TP10N-23 6, H-TP10N-24 4, H-TP10N-24 9, H-TP10N-25 2, H-TP10N-27 2, H-TP10N-27 4, H-TP10N-27 7, H-TP10N-27 9, H-TP10N-28 3, H-TP10N-28 5, H-TP10N-28 7, H-TP10N-28 11, H-TP10N-29 3, H-TP10N-29 8	17-Jun-2023	20-Jun-2023	16-Jun-2024	✓	23-Jun-2023	18-Sep-2023	✓

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-B: Potential Acidity								
Snap Lock Bag - frozen (EA033)								
H-TP10N-3 6,	H-TP10N-4 3,	17-Jun-2023	20-Jun-2023	16-Jun-2024	✓	23-Jun-2023	18-Sep-2023	✓
H-TP10N-4 5,	H-TP10N-4 7,							
H-TP10N-4 9,	H-TP10N-4 11,							
H-TP10N-5 3,	H-TP10N-5 5,							
H-TP10N-5 7,	H-TP10N-5 9,							
H-TP10N-10 3,	H-TP10N-10 5,							
H-TP10N-10 5_Duplicated,	H-TP10N-12 1,							
H-TP10N-12 8,	H-TP10N-12 11,							
H-TP10N-14 3,	H-TP10N-14 5,							
H-TP10N-14 7,	H-TP10N-14 9,							
H-TP10N-14 11,	H-TP10N-15 3,							
H-TP10N-15 5,	H-TP10N-15 7,							
H-TP10N-15 9,	H-TP10N-15 11,							
H-TP10N-17 2,	H-TP10N-17 9,							
H-TP10N-18 2,	H-TP10N-18 9,							
H-TP10N-19 3,	H-TP10N-19 6,							
H-TP10N-19 13,	H-TP10N-20 2,							
H-TP10N-21 2,	H-TP10N-22 4,							
H-TP10N-22 6,	H-TP10N-22 8,							
H-TP10N-23 4,	H-TP10N-23 6,							
H-TP10N-24 4,	H-TP10N-24 9,							
H-TP10N-25 2,	H-TP10N-27 2,							
H-TP10N-27 4,	H-TP10N-27 7,							
H-TP10N-27 9,	H-TP10N-28 3,							
H-TP10N-28 5,	H-TP10N-28 7,							
H-TP10N-28 11,	H-TP10N-29 3,							
H-TP10N-29 8								

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen (EA033)								
H-TP10N-3 6,	H-TP10N-4 3,	17-Jun-2023	20-Jun-2023	16-Jun-2024	✓	23-Jun-2023	18-Sep-2023	✓
H-TP10N-4 5,	H-TP10N-4 7,							
H-TP10N-4 9,	H-TP10N-4 11,							
H-TP10N-5 3,	H-TP10N-5 5,							
H-TP10N-5 7,	H-TP10N-5 9,							
H-TP10N-10 3,	H-TP10N-10 5,							
H-TP10N-10 5_Duplicated,	H-TP10N-12 1,							
H-TP10N-12 8,	H-TP10N-12 11,							
H-TP10N-14 3,	H-TP10N-14 5,							
H-TP10N-14 7,	H-TP10N-14 9,							
H-TP10N-14 11,	H-TP10N-15 3,							
H-TP10N-15 5,	H-TP10N-15 7,							
H-TP10N-15 9,	H-TP10N-15 11,							
H-TP10N-17 2,	H-TP10N-17 9,							
H-TP10N-18 2,	H-TP10N-18 9,							
H-TP10N-19 3,	H-TP10N-19 6,							
H-TP10N-19 13,	H-TP10N-20 2,							
H-TP10N-21 2,	H-TP10N-22 4,							
H-TP10N-22 6,	H-TP10N-22 8,							
H-TP10N-23 4,	H-TP10N-23 6,							
H-TP10N-24 4,	H-TP10N-24 9,							
H-TP10N-25 2,	H-TP10N-27 2,							
H-TP10N-27 4,	H-TP10N-27 7,							
H-TP10N-27 9,	H-TP10N-28 3,							
H-TP10N-28 5,	H-TP10N-28 7,							
H-TP10N-28 11,	H-TP10N-29 3,							
H-TP10N-29 8								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity								
Snap Lock Bag - frozen (EA033)								
H-TP10N-3 6,	H-TP10N-4 3,	17-Jun-2023	20-Jun-2023	16-Jun-2024	✓	23-Jun-2023	18-Sep-2023	✓
H-TP10N-4 5,	H-TP10N-4 7,							
H-TP10N-4 9,	H-TP10N-4 11,							
H-TP10N-5 3,	H-TP10N-5 5,							
H-TP10N-5 7,	H-TP10N-5 9,							
H-TP10N-10 3,	H-TP10N-10 5,							
H-TP10N-10 5_Duplicated,	H-TP10N-12 1,							
H-TP10N-12 8,	H-TP10N-12 11,							
H-TP10N-14 3,	H-TP10N-14 5,							
H-TP10N-14 7,	H-TP10N-14 9,							
H-TP10N-14 11,	H-TP10N-15 3,							
H-TP10N-15 5,	H-TP10N-15 7,							
H-TP10N-15 9,	H-TP10N-15 11,							
H-TP10N-17 2,	H-TP10N-17 9,							
H-TP10N-18 2,	H-TP10N-18 9,							
H-TP10N-19 3,	H-TP10N-19 6,							
H-TP10N-19 13,	H-TP10N-20 2,							
H-TP10N-21 2,	H-TP10N-22 4,							
H-TP10N-22 6,	H-TP10N-22 8,							
H-TP10N-23 4,	H-TP10N-23 6,							
H-TP10N-24 4,	H-TP10N-24 9,							
H-TP10N-25 2,	H-TP10N-27 2,							
H-TP10N-27 4,	H-TP10N-27 7,							
H-TP10N-27 9,	H-TP10N-28 3,							
H-TP10N-28 5,	H-TP10N-28 7,							
H-TP10N-28 11,	H-TP10N-29 3,							
H-TP10N-29 8								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting								
Snap Lock Bag - frozen (EA033)								
H-TP10N-3 6,	H-TP10N-4 3,	17-Jun-2023	20-Jun-2023	16-Jun-2024	✓	23-Jun-2023	18-Sep-2023	✓
H-TP10N-4 5,	H-TP10N-4 7,							
H-TP10N-4 9,	H-TP10N-4 11,							
H-TP10N-5 3,	H-TP10N-5 5,							
H-TP10N-5 7,	H-TP10N-5 9,							
H-TP10N-10 3,	H-TP10N-10 5,							
H-TP10N-10 5_Duplicated,	H-TP10N-12 1,							
H-TP10N-12 8,	H-TP10N-12 11,							
H-TP10N-14 3,	H-TP10N-14 5,							
H-TP10N-14 7,	H-TP10N-14 9,							
H-TP10N-14 11,	H-TP10N-15 3,							
H-TP10N-15 5,	H-TP10N-15 7,							
H-TP10N-15 9,	H-TP10N-15 11,							
H-TP10N-17 2,	H-TP10N-17 9,							
H-TP10N-18 2,	H-TP10N-18 9,							
H-TP10N-19 3,	H-TP10N-19 6,							
H-TP10N-19 13,	H-TP10N-20 2,							
H-TP10N-21 2,	H-TP10N-22 4,							
H-TP10N-22 6,	H-TP10N-22 8,							
H-TP10N-23 4,	H-TP10N-23 6,							
H-TP10N-24 4,	H-TP10N-24 9,							
H-TP10N-25 2,	H-TP10N-27 2,							
H-TP10N-27 4,	H-TP10N-27 7,							
H-TP10N-27 9,	H-TP10N-28 3,							
H-TP10N-28 5,	H-TP10N-28 7,							
H-TP10N-28 11,	H-TP10N-29 3,							
H-TP10N-29 8								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	6	53	**11.32**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	3	53	**5.66**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	3	53	**5.66**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2310022**	Page	: 1 of 8
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 29 May 2023
Site	: Wagerup	Issue Date	: 04-Aug-2023
Sampler	: ----	No. of samples received	: 53
Order number	: 368360-1	No. of samples analysed	: 53

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA033-A: Actual Acidity								
Snap Lock Bag - frozen (EA033)								
H-TP10B-12 5,	H-TP10B-12 11,	**22-May-2023**	**27-Jul-2023**	21-May-2024	✓	**03-Aug-2023**	25-Oct-2023	✓
H-TP10B-16 5,	H-TP10B-18 3,							
H-TP10B-18 8,	H-TP10B-18 12,							
H-TP10B-19 2,	H-TP10B-19 11,							
H-TP10B-19 Duplicated,	H-TP10B-20 5,							
H-TP10B-20 6,	H-TP10B-20 11,							
H-TP10B-22 2,	H-TP10B-25 6,							
H-TP10B-25 11								
Snap Lock Bag - frozen (EA033)								
H-TP10B-13 5,	H-TP10B-14 2,	**23-May-2023**	**27-Jul-2023**	22-May-2024	✓	**03-Aug-2023**	25-Oct-2023	✓
H-TP10B-14 9,	H-TP10B-15 2,							
H-TP10B-15 10,	H-TP10B-17 4,							
H-TP10B-17 10,	H-TP10B-21 2,							
H-TP10B-21 Duplicated,	H-TP10B-23 1,							
H-TP10B-23 9,	H-TP10B-23 Duplicated,							
H-TP10B-24 4,	H-TP10B-27 5,							
H-TP10B-27 9								
Snap Lock Bag - frozen (EA033)								
H-TP10B-03 8,	H-TP10B-11 1,	**24-May-2023**	**27-Jul-2023**	23-May-2024	✓	**03-Aug-2023**	25-Oct-2023	✓
H-TP10B-11 5,	H-TP10B-26 12,							
H-TP10B-28 1,	H-TP10B-28 2							
Snap Lock Bag - frozen (EA033)								
H-TP10B-01 1,	H-TP10B-01 2,	**25-May-2023**	**27-Jul-2023**	24-May-2024	✓	**03-Aug-2023**	25-Oct-2023	✓
H-TP10B-01 11,	H-TP10B-04 2,							
H-TP10B-04 9,	H-TP10B-04 12,							
H-TP10B-05 6,	H-TP10B-06 1,							
H-TP10B-06 8,	H-TP10B-06 11,							
H-TP10B-08 1,	H-TP10B-08 2,							
H-TP10B-08 12,	H-TP10B-09 5,							
H-TP10B-09 10,	H-TP10B-09 Duplicated,							
H-TP10B-10 7								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-B: Potential Acidity							
Snap Lock Bag - frozen (EA033)							
H-TP10B-12 5, H-TP10B-12 11, H-TP10B-16 5, H-TP10B-18 3, H-TP10B-18 8, H-TP10B-18 12, H-TP10B-19 2, H-TP10B-19 11, H-TP10B-19 Duplicated, H-TP10B-20 5, H-TP10B-20 6, H-TP10B-20 11, H-TP10B-22 2, H-TP10B-25 6, H-TP10B-25 11	22-May-2023	27-Jul-2023	21-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-13 5, H-TP10B-14 2, H-TP10B-14 9, H-TP10B-15 2, H-TP10B-15 10, H-TP10B-17 4, H-TP10B-17 10, H-TP10B-21 2, H-TP10B-21 Duplicated, H-TP10B-23 1, H-TP10B-23 9, H-TP10B-23 Duplicated, H-TP10B-24 4, H-TP10B-27 5, H-TP10B-27 9	23-May-2023	27-Jul-2023	22-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-03 8, H-TP10B-11 1, H-TP10B-11 5, H-TP10B-26 12, H-TP10B-28 1, H-TP10B-28 2	24-May-2023	27-Jul-2023	23-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-01 1, H-TP10B-01 2, H-TP10B-01 11, H-TP10B-04 2, H-TP10B-04 9, H-TP10B-04 12, H-TP10B-05 6, H-TP10B-06 1, H-TP10B-06 8, H-TP10B-06 11, H-TP10B-08 1, H-TP10B-08 2, H-TP10B-08 12, H-TP10B-09 5, H-TP10B-09 10, H-TP10B-09 Duplicated, H-TP10B-10 7	25-May-2023	27-Jul-2023	24-May-2024	✓	03-Aug-2023	25-Oct-2023	✓

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag - frozen (EA033)							
H-TP10B-12 5, H-TP10B-12 11, H-TP10B-16 5, H-TP10B-18 3, H-TP10B-18 8, H-TP10B-18 12, H-TP10B-19 2, H-TP10B-19 11, H-TP10B-19 Duplicated, H-TP10B-20 5, H-TP10B-20 6, H-TP10B-20 11, H-TP10B-22 2, H-TP10B-25 6, H-TP10B-25 11	22-May-2023	27-Jul-2023	21-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-13 5, H-TP10B-14 2, H-TP10B-14 9, H-TP10B-15 2, H-TP10B-15 10, H-TP10B-17 4, H-TP10B-17 10, H-TP10B-21 2, H-TP10B-21 Duplicated, H-TP10B-23 1, H-TP10B-23 9, H-TP10B-23 Duplicated, H-TP10B-24 4, H-TP10B-27 5, H-TP10B-27 9	23-May-2023	27-Jul-2023	22-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-03 8, H-TP10B-11 1, H-TP10B-11 5, H-TP10B-26 12, H-TP10B-28 1, H-TP10B-28 2	24-May-2023	27-Jul-2023	23-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-01 1, H-TP10B-01 2, H-TP10B-01 11, H-TP10B-04 2, H-TP10B-04 9, H-TP10B-04 12, H-TP10B-05 6, H-TP10B-06 1, H-TP10B-06 8, H-TP10B-06 11, H-TP10B-08 1, H-TP10B-08 2, H-TP10B-08 12, H-TP10B-09 5, H-TP10B-09 10, H-TP10B-09 Duplicated, H-TP10B-10 7	25-May-2023	27-Jul-2023	24-May-2024	✓	03-Aug-2023	25-Oct-2023	✓

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity							
Snap Lock Bag - frozen (EA033)							
H-TP10B-12 5, H-TP10B-12 11, H-TP10B-16 5, H-TP10B-18 3, H-TP10B-18 8, H-TP10B-18 12, H-TP10B-19 2, H-TP10B-19 11, H-TP10B-19 Duplicated, H-TP10B-20 5, H-TP10B-20 6, H-TP10B-20 11, H-TP10B-22 2, H-TP10B-25 6, H-TP10B-25 11	22-May-2023	27-Jul-2023	21-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-13 5, H-TP10B-14 2, H-TP10B-14 9, H-TP10B-15 2, H-TP10B-15 10, H-TP10B-17 4, H-TP10B-17 10, H-TP10B-21 2, H-TP10B-21 Duplicated, H-TP10B-23 1, H-TP10B-23 9, H-TP10B-23 Duplicated, H-TP10B-24 4, H-TP10B-27 5, H-TP10B-27 9	23-May-2023	27-Jul-2023	22-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-03 8, H-TP10B-11 1, H-TP10B-11 5, H-TP10B-26 12, H-TP10B-28 1, H-TP10B-28 2	24-May-2023	27-Jul-2023	23-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-01 1, H-TP10B-01 2, H-TP10B-01 11, H-TP10B-04 2, H-TP10B-04 9, H-TP10B-04 12, H-TP10B-05 6, H-TP10B-06 1, H-TP10B-06 8, H-TP10B-06 11, H-TP10B-08 1, H-TP10B-08 2, H-TP10B-08 12, H-TP10B-09 5, H-TP10B-09 10, H-TP10B-09 Duplicated, H-TP10B-10 7	25-May-2023	27-Jul-2023	24-May-2024	✓	03-Aug-2023	25-Oct-2023	✓

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting							
Snap Lock Bag - frozen (EA033)							
H-TP10B-12 5, H-TP10B-12 11, H-TP10B-16 5, H-TP10B-18 3, H-TP10B-18 8, H-TP10B-18 12, H-TP10B-19 2, H-TP10B-19 11, H-TP10B-19 Duplicated, H-TP10B-20 5, H-TP10B-20 6, H-TP10B-20 11, H-TP10B-22 2, H-TP10B-25 6, H-TP10B-25 11	22-May-2023	27-Jul-2023	21-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-13 5, H-TP10B-14 2, H-TP10B-14 9, H-TP10B-15 2, H-TP10B-15 10, H-TP10B-17 4, H-TP10B-17 10, H-TP10B-21 2, H-TP10B-21 Duplicated, H-TP10B-23 1, H-TP10B-23 9, H-TP10B-23 Duplicated, H-TP10B-24 4, H-TP10B-27 5, H-TP10B-27 9	23-May-2023	27-Jul-2023	22-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-03 8, H-TP10B-11 1, H-TP10B-11 5, H-TP10B-26 12, H-TP10B-28 1, H-TP10B-28 2	24-May-2023	27-Jul-2023	23-May-2024	✓	03-Aug-2023	25-Oct-2023	✓
Snap Lock Bag - frozen (EA033)							
H-TP10B-01 1, H-TP10B-01 2, H-TP10B-01 11, H-TP10B-04 2, H-TP10B-04 9, H-TP10B-04 12, H-TP10B-05 6, H-TP10B-06 1, H-TP10B-06 8, H-TP10B-06 11, H-TP10B-08 1, H-TP10B-08 2, H-TP10B-08 12, H-TP10B-09 5, H-TP10B-09 10, H-TP10B-09 Duplicated, H-TP10B-10 7	25-May-2023	27-Jul-2023	24-May-2024	✓	03-Aug-2023	25-Oct-2023	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	6	53	**11.32**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	3	53	**5.66**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	3	53	**5.66**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2317249**	Page	: 1 of 4
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 30 Nov 2023
Site	: Wagerup	Issue Date	: 14-Dec-2023
Sampler	: Jerry Zhang	No. of samples received	: 51
Order number	: 368360-1	No. of samples analysed	: 51

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-MW-01: 1 - 250mm,	H-MW-01: 2 - 500mm,	28-Nov-2023	08-Dec-2023	23-Aug-2026	✓	08-Dec-2023	07-Mar-2024	✓
H-MW-01: 3 - 750mm,	H-MW-01: 4 - 1000mm,							
H-MW-01: 5 - 1250mm,	H-MW-09: 1 - 250mm,							
H-MW-09: 2 - 500mm,	H-MW-09: 3 - 750mm,							
H-MW-09: 4 - 1000mm,	H-MW-09: 5 - 1250mm,							
H-MW-10: 3 - 750mm,	H-MW-10: 4 - 1000mm,							
H-MW-10: 5 - 1250mm,	H-MW-10: 6 - 1500mm,							
H-MW-11: 2 - 500mm,	H-MW-11: 3 - 750mm,							
H-MW-11: 4 - 1000mm,	H-MW-11: 5 - 1250mm,							
H-MW-11: 6 - 1500mm,	H-MW-4: 6 - 1500mm							
Snap Lock Bag - frozen (EA003)								
H-MW02: 2 - 500mm,	H-MW02: 3 - 750mm,	29-Nov-2023	08-Dec-2023	24-Aug-2026	✓	08-Dec-2023	07-Mar-2024	✓
H-MW02: 4 - 1000mm,	H-MW02: 5 - 1250mm,							
H-MW02: 6 - 1500mm,	H-MW-03: 3 - 750mm,							
H-MW-03: 4 - 1000mm,	H-MW-03: 5 - 1250mm,							
H-MW-03: 6 - 1500mm,	H-MW-04: 2 - 500mm,							
H-MW-04: 3 - 750mm,	H-MW-04: 4 - 1000mm,							
H-MW-04: 5 - 1250mm,	H-MW-05: 2 - 500mm,							
H-MW-05: 3 - 750mm,	H-MW-05: 4 - 1000mm,							
H-MW-05: 5 - 1250mm,	H-MW-06: 2 - 500mm,							
H-MW-06: 3 - 750mm,	H-MW-06: 4 - 1000mm,							
H-MW-06: 5 - 1250mm,	H-MW-06: 6 - 1500mm,							
H-MW-07: 2 - 500mm,	H-MW-07: 3 - 750mm,							
H-MW-07: 4 - 1000mm,	H-MW-07: 5 - 1250mm,							
H-MW-08: 2 - 500mm,	H-MW-08: 3 - 750mm,							
H-MW-08: 4 - 1000mm,	H-MW-08: 5 - 1250mm,							
H-MW-08: 6 - 1500mm								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	5	51	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2317262**	Page	: 1 of 5
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 30 Nov 2023
Site	: Wagerup	Issue Date	: 14-Dec-2023
Sampler	: Jerry Zhang	No. of samples received	: 61
Order number	: 368360-1	No. of samples analysed	: 61

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Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen (EA003)								
H-MW-12: 2 - 500mm,	H-MW-12: 3 - 750mm,	28-Nov-2023	11-Dec-2023	23-Aug-2026	✓	11-Dec-2023	10-Mar-2024	✓
H-MW-12: 4 - 1000mm,	H-MW-12: 5 - 1250mm,							
H-MW-12: 6 - 1500mm,	H-MW-17: 1 - 250mm,							
H-MW-17: 2 - 500mm,	H-MW-17: 3 - 750mm,							
H-MW-17: 4 - 1000mm,	H-MW-17: 5 - 1250mm,							
H-MW-17: 6 - 1500mm,	H-MW-17: 7 - 1725mm,							
H-MW-17: 8 - 2000mm,	H-MW-17: 9 - 2250mm,							
H-MW-17: 10 - 2500mm,	H-MW-18: 1 - 250mm,							
H-MW-18: 2 - 500mm,	H-MW-18: 3 - 750mm,							
H-MW-18: 4 - 1000mm,	H-MW-18: 5 - 1250mm,							
H-MW-18: 6 - 1500mm,	H-MW-18: 7 - 1725mm,							
H-MW-18: 8 - 2000mm,	H-MW-18: 9 - 2250mm,							
H-MW-18: 10 - 2500mm								
Snap Lock Bag - frozen (EA003)								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-MW-13: 4 - 1000mm,	H-MW-13: 5 - 1250mm,	29-Nov-2023	11-Dec-2023	24-Aug-2025	✓	11-Dec-2023	10-Mar-2024	✓
H-MW-13: 6 - 1500mm,	H-MW-14: 2 - 500mm,							
H-MW-14: 3 - 750mm,	H-MW-14: 4 - 1000mm,							
H-MW-14: 5 - 1250mm,	H-MW-14: 6 - 1500mm,							
H-MW-15: 3 - 750mm,	H-MW-15: 4 - 1000mm,							
H-MW-15: 5 - 1250mm,	H-MW-15: 6 - 1500mm,							
H-MW-16: 2 - 500mm,	H-MW-16: 3 - 750mm,							
H-MW-16: 4 - 1000mm,	H-MW-16: 5 - 1250mm,							
H-MW-16: 6 - 1500mm,	H-MW-19: 2 - 500mm,							
H-MW-19: 3 - 750mm,	H-MW-19: 4 - 1000mm,							
H-MW-19: 5 - 1250mm,	H-MW-19: 6 - 1500mm,							
H-MW-19: 7 - 1725mm,	H-MW-19: 8 - 2000mm,							
H-MW-19: 9 - 2250mm,	H-MW-19: 10 - 2500mm,							
H-MW-20: 1 - 250mm,	H-MW-20: 2 - 500mm,							
H-MW-20: 3 - 750mm,	H-MW-20: 4 - 1000mm,							
H-MW-20: 5 - 1250mm,	H-MW-20: 6 - 1500mm,							
H-MW-20: 7 - 1725mm,	H-MW-20: 8 - 2000mm,							
H-MW-20: 9 - 2250mm,	H-MW-20: 10 - 2500mm							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/fox	EA003	7	61	**11.48**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2401600**	Page	: 1 of 6
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 30 Nov 2023
Site	: Wagerup	Issue Date	: 21-Feb-2024
Sampler	: Jerry Zhang	No. of samples received	: 30
Order number	: 368360-1	No. of samples analysed	: 30

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Outliers : Quality Control Samples

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- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

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Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
80° dried soil (EA033)								
H-MW-01: 1 - 250mm,	H-MW-01: 3 - 750mm,	28-Nov-2023	13-Feb-2024	27-Nov-2024	✓	14-Feb-2024	13-May-2024	✓
H-MW-09: 3 - 750mm,	H-MW-10: 4 - 1000mm,							
H-MW-17: 2 - 500mm,	H-MW-17: 3 - 750mm,							
H-MW-18: 3 - 750mm,	H-MW-18: 4 - 1000mm							
80° dried soil (EA033)								
H-MW-02: 4 - 1000mm,	H-MW-02: 6 - 1500mm,	29-Nov-2023	13-Feb-2024	28-Nov-2024	✓	14-Feb-2024	13-May-2024	✓
H-MW-03: 3 - 750mm,	H-MW-03: 5 - 1250mm,							
H-MW-03: 6 - 1500mm,	H-MW-04: 3 - 750mm,							
H-MW-04: 6 - 1500mm,	H-MW-05: 2 - 500mm,							
H-MW-05: 3 - 750mm,	H-MW-06: 3 - 750mm,							
H-MW-07: 2 - 500mm,	H-MW-07: 4 - 1000mm,							
H-MW-08: 2 - 500mm,	H-MW-08: 4 - 1000mm,							
H-MW-13: 4 - 1000mm,	H-MW-14: 4 - 1000mm,							
H-MW-15: 4 - 1000mm,	H-MW-15: 5 - 1250mm,							
H-MW-16: 2 - 500mm,	H-MW-16: 3 - 750mm,							
H-MW-19: 2 - 500mm,	H-MW-20: 5 - 1250mm							

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-B: Potential Acidity								
80° dried soil (EA033)								
H-MW-01: 1 - 250mm,	H-MW-01: 3 - 750mm,	28-Nov-2023	13-Feb-2024	27-Nov-2024	✓	14-Feb-2024	13-May-2024	✓
H-MW-09: 3 - 750mm,	H-MW-10: 4 - 1000mm,							
H-MW-17: 2 - 500mm,	H-MW-17: 3 - 750mm,							
H-MW-18: 3 - 750mm,	H-MW-18: 4 - 1000mm							
80° dried soil (EA033)								
H-MW-02: 4 - 1000mm,	H-MW-02: 6 - 1500mm,	29-Nov-2023	13-Feb-2024	28-Nov-2024	✓	14-Feb-2024	13-May-2024	✓
H-MW-03: 3 - 750mm,	H-MW-03: 5 - 1250mm,							
H-MW-03: 6 - 1500mm,	H-MW-04: 3 - 750mm,							
H-MW-04: 6 - 1500mm,	H-MW-05: 2 - 500mm,							
H-MW-05: 3 - 750mm,	H-MW-06: 3 - 750mm,							
H-MW-07: 2 - 500mm,	H-MW-07: 4 - 1000mm,							
H-MW-08: 2 - 500mm,	H-MW-08: 4 - 1000mm,							
H-MW-13: 4 - 1000mm,	H-MW-14: 4 - 1000mm,							
H-MW-15: 4 - 1000mm,	H-MW-15: 5 - 1250mm,							
H-MW-16: 2 - 500mm,	H-MW-16: 3 - 750mm,							
H-MW-19: 2 - 500mm,	H-MW-20: 5 - 1250mm							
EA033-C: Acid Neutralising Capacity								
80° dried soil (EA033)								
H-MW-01: 1 - 250mm,	H-MW-01: 3 - 750mm,	28-Nov-2023	13-Feb-2024	27-Nov-2024	✓	14-Feb-2024	13-May-2024	✓
H-MW-09: 3 - 750mm,	H-MW-10: 4 - 1000mm,							
H-MW-17: 2 - 500mm,	H-MW-17: 3 - 750mm,							
H-MW-18: 3 - 750mm,	H-MW-18: 4 - 1000mm							
80° dried soil (EA033)								
H-MW-02: 4 - 1000mm,	H-MW-02: 6 - 1500mm,	29-Nov-2023	13-Feb-2024	28-Nov-2024	✓	14-Feb-2024	13-May-2024	✓
H-MW-03: 3 - 750mm,	H-MW-03: 5 - 1250mm,							
H-MW-03: 6 - 1500mm,	H-MW-04: 3 - 750mm,							
H-MW-04: 6 - 1500mm,	H-MW-05: 2 - 500mm,							
H-MW-05: 3 - 750mm,	H-MW-06: 3 - 750mm,							
H-MW-07: 2 - 500mm,	H-MW-07: 4 - 1000mm,							
H-MW-08: 2 - 500mm,	H-MW-08: 4 - 1000mm,							
H-MW-13: 4 - 1000mm,	H-MW-14: 4 - 1000mm,							
H-MW-15: 4 - 1000mm,	H-MW-15: 5 - 1250mm,							
H-MW-16: 2 - 500mm,	H-MW-16: 3 - 750mm,							
H-MW-19: 2 - 500mm,	H-MW-20: 5 - 1250mm							

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity							
80° dried soil (EA033)							
H-MW-01: 1 - 250mm, H-MW-01: 3 - 750mm, H-MW-09: 3 - 750mm, H-MW-10: 4 - 1000mm, H-MW-17: 2 - 500mm, H-MW-17: 3 - 750mm, H-MW-18: 3 - 750mm, H-MW-18: 4 - 1000mm	28-Nov-2023	13-Feb-2024	27-Nov-2024	✓	14-Feb-2024	13-May-2024	✓
80° dried soil (EA033)							
H-MW-02: 4 - 1000mm, H-MW-02: 6 - 1500mm, H-MW-03: 3 - 750mm, H-MW-03: 5 - 1250mm, H-MW-03: 6 - 1500mm, H-MW-04: 3 - 750mm, H-MW-04: 6 - 1500mm, H-MW-05: 2 - 500mm, H-MW-05: 3 - 750mm, H-MW-06: 3 - 750mm, H-MW-07: 2 - 500mm, H-MW-07: 4 - 1000mm, H-MW-08: 2 - 500mm, H-MW-08: 4 - 1000mm, H-MW-13: 4 - 1000mm, H-MW-14: 4 - 1000mm, H-MW-15: 4 - 1000mm, H-MW-15: 5 - 1250mm, H-MW-16: 2 - 500mm, H-MW-16: 3 - 750mm, H-MW-19: 2 - 500mm, H-MW-20: 5 - 1250mm	29-Nov-2023	13-Feb-2024	28-Nov-2024	✓	14-Feb-2024	13-May-2024	✓
EA033-E: Acid Base Accounting							
80° dried soil (EA033)							
H-MW-01: 1 - 250mm, H-MW-01: 3 - 750mm, H-MW-09: 3 - 750mm, H-MW-10: 4 - 1000mm, H-MW-17: 2 - 500mm, H-MW-17: 3 - 750mm, H-MW-18: 3 - 750mm, H-MW-18: 4 - 1000mm	28-Nov-2023	13-Feb-2024	27-Nov-2024	✓	14-Feb-2024	13-May-2024	✓
80° dried soil (EA033)							
H-MW-02: 4 - 1000mm, H-MW-02: 6 - 1500mm, H-MW-03: 3 - 750mm, H-MW-03: 5 - 1250mm, H-MW-03: 6 - 1500mm, H-MW-04: 3 - 750mm, H-MW-04: 6 - 1500mm, H-MW-05: 2 - 500mm, H-MW-05: 3 - 750mm, H-MW-06: 3 - 750mm, H-MW-07: 2 - 500mm, H-MW-07: 4 - 1000mm, H-MW-08: 2 - 500mm, H-MW-08: 4 - 1000mm, H-MW-13: 4 - 1000mm, H-MW-14: 4 - 1000mm, H-MW-15: 4 - 1000mm, H-MW-15: 5 - 1250mm, H-MW-16: 2 - 500mm, H-MW-16: 3 - 750mm, H-MW-19: 2 - 500mm, H-MW-20: 5 - 1250mm	29-Nov-2023	13-Feb-2024	28-Nov-2024	✓	14-Feb-2024	13-May-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	3	30	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2403511**	Page	: 1 of 4
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: Wagerup RSA10N	Date Samples Received	: 14 Mar 2024
Site	: ----	Issue Date	: 22-Mar-2024
Sampler	: Monica Niven	No. of samples received	: 56
Order number	: 368360-1	No. of samples analysed	: 56

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)								
Snap Lock Bag - frozen on receipt at ALS (EA003)								
MW-28-1,	MW-28-2,	**11-Mar-2024**	**22-Mar-2024**	05-Dec-2026	✓	**22-Mar-2024**	20-Jun-2024	✓
MW-28-3,	MW-31-1,							
MW-31-2,	MW-31-3,							
MW-25-1,	MW-25-2,							
MW-25-3,	MW-24-1,							
MW-24-2,	MW-24-3,							
MW-26-1,	MW-26-2,							
MW-26-3,	Unlabelled,							
MW-36-2-a,	MW-36-2-b							
Snap Lock Bag - frozen on receipt at ALS (EA003)								
MW-23-1,	MW-23-2,	**12-Mar-2024**	**22-Mar-2024**	06-Dec-2026	✓	**22-Mar-2024**	20-Jun-2024	✓
MW-23-3,	MW-22-1,							
MW-22-2,	MW-22-3,							
MW-21-1,	MW-21-2,							
MW-27-1,	MW-27-2,							
MW-27-3,	MW-34-1,							
MW-34-2,	MW-34-3,							
MW-30-2,	MW-33-1,							
MW-33-2,	MW-33-3,							
DS-1,	MW-30-3,							
MW-29-3								
Snap Lock Bag - frozen on receipt at ALS (EA003)								
DS-2,	MW-32-1,	**13-Mar-2024**	**22-Mar-2024**	07-Dec-2026	✓	**22-Mar-2024**	20-Jun-2024	✓
MW-32-2,	MW-32-3,							
MW-35-1,	MW-35-2,							
MW-35-3,	MW-37-1,							
MW-37-2,	MW-37-3,							
MW-36-1,	MW-39-1,							
MW-39-2,	MW-39-3,							
MW-38-1,	MW-38-2,							
MW-38-3								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	6	56	**10.71**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2403707**	Page	: 1 of 5
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: Wagerup RSA10N	Date Samples Received	: 15 Mar 2024
Site	: ----	Issue Date	: 28-Mar-2024
Sampler	: Monica Niven	No. of samples received	: 80
Order number	: 368360-1	No. of samples analysed	: 80

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Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA003 :pH (field/fox)								
Snap Lock Bag - frozen on receipt at ALS (EA003)								
H-DP10B-04-:1,	H-DP10B-04-:2,	**13-Mar-2024**	**26-Mar-2024**	07-Dec-2026	✓	**28-Mar-2024**	24-Jun-2024	✓
H-DP10B-04-:3,	H-DP10B-04-:4,							
H-DP10B-04-:5,	H-DP10B-04-:6,							
H-DP10B-04-:7,	H-DP10B-04-:8,							
H-DP10B-04-:9,	H-DP10B-04-:10							
Snap Lock Bag - frozen on receipt at ALS (EA003)								
DP-03,	H-DP10B-08-:10	**13-Mar-2024**	**27-Mar-2024**	07-Dec-2026	✓	**28-Mar-2024**	25-Jun-2024	✓
Snap Lock Bag - frozen on receipt at ALS (EA003)								
H-DP10B-03-:1,	H-DP10B-03-:2,	**14-Mar-2024**	**26-Mar-2024**	08-Dec-2026	✓	**28-Mar-2024**	24-Jun-2024	✓
H-DP10B-03-:3,	H-DP10B-03-:4,							
H-DP10B-03-:5,	H-DP10B-03-:6,							
H-DP10B-03-:7,	H-DP10B-03-:8,							
H-DP10B-03-:9,	H-DP10B-03-:10,							
H-DP10B-01-:1,	H-DP10B-01-:2,							
H-DP10B-01-:3,	H-DP10B-01-:4,							
H-DP10B-01-:5,	H-DP10B-01-:6,							
H-DP10B-01-:7,	H-DP10B-01-:8,							
H-DP10B-01-:9,	H-DP10B-01-:10,							
H-DP10B-02-:1,	H-DP10B-02-:2,							
H-DP10B-02-:3,	H-DP10B-02-:4,							
H-DP10B-02-:5,	H-DP10B-02-:6,							
H-DP10B-02-:7,	H-DP10B-02-:8,							
H-DP10B-02-:9,	H-DP10B-02-:10							
Snap Lock Bag - frozen on receipt at ALS (EA003)								

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-DP10B-05-:1,	H-DP10B-05-:2,	14-Mar-2024	27-Mar-2024	08-Dec-2025	✓	28-Mar-2024	25-Jun-2024	✓
H-DP10B-05-:3,	H-DP10B-05-:4,							
H-DP10B-05-:5,	H-DP10B-05-:6,							
H-DP10B-05-:7,	H-DP10B-05-:8,							
H-DP10B-05-:9,	H-DP10B-05-:10,							
DP-05,	H-DP10B-08-:1,							
H-DP10B-08-:2,	H-DP10B-08-:3,							
H-DP10B-08-:4,	H-DP10B-08-:5,							
H-DP10B-08-:6,	H-DP10B-08-:7,							
H-DP10B-08-:8,	H-DP10B-08-:9,							
H-DP10B-08-:11,	H-DP10B-08-:12,							
H-DP10B-08-:13,	H-DP10B-08-:14,							
H-DP10B-08-:15,	H-DP10B-08-:16,							
H-DP10B-08-:17,	H-DP10B-08-:18,							
H-DP10B-08-:19,	H-DP10B-08-:20,							
H-DP10B-08-:21,	H-DP10B-08-:22,							
H-DP10B-08-:23,	H-DP10B-08-:24,							
H-DP10B-08-:25,	H-DP10B-08-:26,							
DP-07,	DP-08							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/lox	EA003	8	80	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2403718**	Page	: 1 of 5
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: Wagerup RSA10N	Date Samples Received	: 15 Mar 2024
Site	: ----	Issue Date	: 04-Apr-2024
Sampler	: Monica Niven	No. of samples received	: 74
Order number	: 368360-1	No. of samples analysed	: 74

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Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

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- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox)							
Snap Lock Bag - frozen on receipt at ALS (EA003)							
MW-29-2	**12-Mar-2024**	**04-Apr-2024**	06-Dec-2026	✓	**04-Apr-2024**	03-Jul-2024	✓
Snap Lock Bag - frozen on receipt at ALS (EA003)							
H-DP10B-04-11, H-DP10B-04-12, H-DP10B-04-13, H-DP10B-04-14, H-DP10B-04-15, H-DP10B-04-16, H-DP10B-04-17, H-DP10B-04-18, H-DP10B-04-19, H-DP10B-04-20	**13-Mar-2024**	**04-Apr-2024**	07-Dec-2026	✓	**04-Apr-2024**	03-Jul-2024	✓
Snap Lock Bag - frozen on receipt at ALS (EA003)							
H-DP10B-07-1, H-DP10B-07-2, H-DP10B-07-3, H-DP10B-07-4, H-DP10B-07-5, H-DP10B-07-6, H-DP10B-07-7, H-DP10B-07-8, H-DP10B-07-9, H-DP10B-07-10, H-DP10B-07-11, H-DP10B-07-12, H-DP10B-07-13, H-DP10B-07-14, H-DP10B-07-15, H-DP10B-07-16, H-DP10B-07-17, H-DP10B-07-18, H-DP10B-07-19, H-DP10B-07-20, H-DP10B-07-21, H-DP10B-07-22, H-DP10B-07-23, H-DP10B-07-24, H-DP10B-07-25, H-DP10B-07-26, H-DP10B-07-27, H-DP10B-07-28, DP-09, DP-10, DP-04	**14-Mar-2024**	**04-Apr-2024**	08-Dec-2026	✓	**04-Apr-2024**	03-Jul-2024	✓
Snap Lock Bag - frozen on receipt at ALS (EA003)							

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA003 :pH (field/fox) - Continued								
H-DP10B-06-:1,	H-DP10B-06-:2,	**15-Mar-2024**	**04-Apr-2024**	09-Dec-2025	✓	**04-Apr-2024**	03-Jul-2024	✓
H-DP10B-06-:3,	H-DP10B-06-:4,							
H-DP10B-06-:5,	H-DP10B-06-:6,							
H-DP10B-06-:7,	H-DP10B-06-:8,							
H-DP10B-06-:9,	H-DP10B-06-:10,							
H-DP10B-06-:11,	H-DP10B-06-:12,							
H-DP10B-06-:13,	H-DP10B-06-:14,							
H-DP10B-06-:15,	H-DP10B-06-:16,							
H-DP10B-06-:17,	H-DP10B-06-:18,							
H-DP10B-06-:19,	H-DP10B-06-:20,							
H-DP10B-06-:21,	H-DP10B-06-:22,							
H-DP10B-06-:23,	H-DP10B-06-:24,							
H-DP10B-06-:25,	H-DP10B-06-:26,							
DP-11,	DP-12,							
H-MW-36A-1,	H-MW-36A-2,							
H-MW-36A-3,	DP-13							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
pH field/fox	EA003	8	74	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2404889**	Page	: 1 of 9
Client	: **Hatch Pty Ltd**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: Wagerup RSA10N	Date Samples Received	: 15 Mar 2024
Site	: ----	Issue Date	: 26-Apr-2024
Sampler	: ----	No. of samples received	: 60
Order number	: 368360-1	No. of samples analysed	: 60

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
80° dried soil (EA033)							
MW-24-1, MW-24-2, MW-25-1, MW-26-2, MW-28-2	**11-Mar-2024**	**16-Apr-2024**	11-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓
80° dried soil (EA033)							
MW-21-1, MW-22-1, MW-23-1, MW-29-3, MW-30-2, MW-31-1, MW-33-1, MW-34-2	**12-Mar-2024**	**16-Apr-2024**	12-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓
80° dried soil (EA033)							
DS-2, MW-35-1, MW-37-2, MW-38-2, MW-38-3, MW-39-1, MW-39-2, H-DP10B-01-.7, H-DP10B-04-.2, H-DP10B-04-.3, H-DP10B-04-.19, H-DP10B-06-.24, H-DP10B-07-.1	**13-Mar-2024**	**16-Apr-2024**	13-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓
80° dried soil (EA033)							
H-DP10B-01-.1, H-DP10B-01-.3, H-DP10B-01-.9, H-DP10B-02-.1, H-DP10B-02-.5, H-DP10B-03-.2, H-DP10B-03-.3, H-DP10B-03-.4, H-DP10B-05-.1, H-DP10B-05-.2, H-DP10B-05-.3, H-DP10B-05-.4, H-DP10B-05-.7, DP-11, H-DP10B-07-.2, H-DP10B-07-.6, H-DP10B-07-.12, H-DP10B-07-.21, H-DP10B-07-.27, H-DP10B-08-.1, H-DP10B-08-.2, H-DP10B-08-.9, H-DP10B-08-.13, H-DP10B-08-.17, H-DP10B-08-.22, H-DP10B-08-.25, DP-08	**14-Mar-2024**	**16-Apr-2024**	14-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity - Continued							
80° dried soil (EA033)							
DP-13, H-MW-36A-3, H-DP10B-06-:1, H-DP10B-06-:2, H-DP10B-06-:4, H-DP10B-06-:11, H-DP10B-06-:18	**15-Mar-2024**	**16-Apr-2024**	15-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-B: Potential Acidity							
80° dried soil (EA033)							
MW-24-1, MW-24-2, MW-25-1, MW-26-2, MW-28-2	11-Mar-2024	16-Apr-2024	11-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
MW-21-1, MW-22-1, MW-23-1, MW-29-3, MW-30-2, MW-31-1, MW-33-1, MW-34-2	12-Mar-2024	16-Apr-2024	12-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
DS-2, MW-35-1, MW-37-2, MW-38-2, MW-38-3, MW-39-1, MW-39-2, H-DP10B-01-:7, H-DP10B-04-:2, H-DP10B-04-:3, H-DP10B-04-:19, H-DP10B-06-:24, H-DP10B-07-:1	13-Mar-2024	16-Apr-2024	13-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
H-DP10B-01-:1, H-DP10B-01-:3, H-DP10B-01-:9, H-DP10B-02-:1, H-DP10B-02-:5, H-DP10B-03-:2, H-DP10B-03-:3, H-DP10B-03-:4, H-DP10B-05-:1, H-DP10B-05-:2, H-DP10B-05-:3, H-DP10B-05-:4, H-DP10B-05-:7, DP-11, H-DP10B-07-:2, H-DP10B-07-:6, H-DP10B-07-:12, H-DP10B-07-:21, H-DP10B-07-:27, H-DP10B-08-:1, H-DP10B-08-:2, H-DP10B-08-:9, H-DP10B-08-:13, H-DP10B-08-:17, H-DP10B-08-:22, H-DP10B-08-:25, DP-08	14-Mar-2024	16-Apr-2024	14-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
DP-13, H-MW-36A-3, H-DP10B-06-:1, H-DP10B-06-:2, H-DP10B-06-:4, H-DP10B-06-:11, H-DP10B-06-:18	15-Mar-2024	16-Apr-2024	15-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity							
80° dried soil (EA033)							
MW-24-1, MW-24-2, MW-25-1, MW-26-2, MW-28-2	11-Mar-2024	16-Apr-2024	11-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
MW-21-1, MW-22-1, MW-23-1, MW-29-3, MW-30-2, MW-31-1, MW-33-1, MW-34-2	12-Mar-2024	16-Apr-2024	12-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
DS-2, MW-35-1, MW-37-2, MW-38-2, MW-38-3, MW-39-1, MW-39-2, H-DP10B-01-:7, H-DP10B-04-:2, H-DP10B-04-:3, H-DP10B-04-:19, H-DP10B-06-:24, H-DP10B-07-:1	13-Mar-2024	16-Apr-2024	13-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
H-DP10B-01-:1, H-DP10B-01-:3, H-DP10B-01-:9, H-DP10B-02-:1, H-DP10B-02-:5, H-DP10B-03-:2, H-DP10B-03-:3, H-DP10B-03-:4, H-DP10B-05-:1, H-DP10B-05-:2, H-DP10B-05-:3, H-DP10B-05-:4, H-DP10B-05-:7, DP-11, H-DP10B-07-:2, H-DP10B-07-:6, H-DP10B-07-:12, H-DP10B-07-:21, H-DP10B-07-:27, H-DP10B-08-:1, H-DP10B-08-:2, H-DP10B-08-:9, H-DP10B-08-:13, H-DP10B-08-:17, H-DP10B-08-:22, H-DP10B-08-:25, DP-08	14-Mar-2024	16-Apr-2024	14-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
DP-13, H-MW-36A-3, H-DP10B-06-:1, H-DP10B-06-:2, H-DP10B-06-:4, H-DP10B-06-:11, H-DP10B-06-:18	15-Mar-2024	16-Apr-2024	15-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity							
80° dried soil (EA033)							
MW-24-1, MW-24-2, MW-25-1, MW-26-2, MW-28-2	11-Mar-2024	16-Apr-2024	11-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
MW-21-1, MW-22-1, MW-23-1, MW-29-3, MW-30-2, MW-31-1, MW-33-1, MW-34-2	12-Mar-2024	16-Apr-2024	12-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
DS-2, MW-35-1, MW-37-2, MW-38-2, MW-38-3, MW-39-1, MW-39-2, H-DP10B-01-:7, H-DP10B-04-:2, H-DP10B-04-:3, H-DP10B-04-:19, H-DP10B-06-:24, H-DP10B-07-:1	13-Mar-2024	16-Apr-2024	13-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
H-DP10B-01-:1, H-DP10B-01-:3, H-DP10B-01-:9, H-DP10B-02-:1, H-DP10B-02-:5, H-DP10B-03-:2, H-DP10B-03-:3, H-DP10B-03-:4, H-DP10B-05-:1, H-DP10B-05-:2, H-DP10B-05-:3, H-DP10B-05-:4, H-DP10B-05-:7, DP-11, H-DP10B-07-:2, H-DP10B-07-:6, H-DP10B-07-:12, H-DP10B-07-:21, H-DP10B-07-:27, H-DP10B-08-:1, H-DP10B-08-:2, H-DP10B-08-:9, H-DP10B-08-:13, H-DP10B-08-:17, H-DP10B-08-:22, H-DP10B-08-:25, DP-08	14-Mar-2024	16-Apr-2024	14-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓
80° dried soil (EA033)							
DP-13, H-MW-36A-3, H-DP10B-06-:1, H-DP10B-06-:2, H-DP10B-06-:4, H-DP10B-06-:11, H-DP10B-06-:18	15-Mar-2024	16-Apr-2024	15-Mar-2025	✓	17-Apr-2024	15-Jul-2024	✓

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting							
80° dried soil (EA033)							
MW-24-1, MW-24-2, MW-25-1, MW-26-2, MW-28-2	**11-Mar-2024**	**16-Apr-2024**	11-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓
80° dried soil (EA033)							
MW-21-1, MW-22-1, MW-23-1, MW-29-3, MW-30-2, MW-31-1, MW-33-1, MW-34-2	**12-Mar-2024**	**16-Apr-2024**	12-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓
80° dried soil (EA033)							
DS-2, MW-35-1, MW-37-2, MW-38-2, MW-38-3, MW-39-1, MW-39-2, H-DP10B-01-:7, H-DP10B-04-:2, H-DP10B-04-:3, H-DP10B-04-:19, H-DP10B-06-:24, H-DP10B-07-:1	**13-Mar-2024**	**16-Apr-2024**	13-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓
80° dried soil (EA033)							
H-DP10B-01-:1, H-DP10B-01-:3, H-DP10B-01-:9, H-DP10B-02-:1, H-DP10B-02-:5, H-DP10B-03-:2, H-DP10B-03-:3, H-DP10B-03-:4, H-DP10B-05-:1, H-DP10B-05-:2, H-DP10B-05-:3, H-DP10B-05-:4, H-DP10B-05-:7, DP-11, H-DP10B-07-:2, H-DP10B-07-:6, H-DP10B-07-:12, H-DP10B-07-:21, H-DP10B-07-:27, H-DP10B-08-:1, H-DP10B-08-:2, H-DP10B-08-:9, H-DP10B-08-:13, H-DP10B-08-:17, H-DP10B-08-:22, H-DP10B-08-:25, DP-08	**14-Mar-2024**	**16-Apr-2024**	14-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓
80° dried soil (EA033)							
DP-13, H-MW-36A-3, H-DP10B-06-:1, H-DP10B-06-:2, H-DP10B-06-:4, H-DP10B-06-:11, H-DP10B-06-:18	**15-Mar-2024**	**16-Apr-2024**	15-Mar-2025	✓	**17-Apr-2024**	15-Jul-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

Appendix D
Surface Water Test Results

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CERTIFICATE OF ANALYSIS

Work Order	: **EP2307016**	Page	: 1 of 4
Amendment	: **1**		
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	RSA 10N	Date Samples Received	26-May-2023 15:40
Order number	: 368360-1	Date Analysis Commenced	: 26-May-2023
C-O-C number	: ----	Issue Date	: 06-Jun-2023 14:12
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	EP/968/22		
No. of samples received	: 4		
No. of samples analysed	4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA

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 Contract 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.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- Amendment (06/06/2023): This report has been amended following a change to ED038A: Acidity result reported for sample 'Barrow – 1', 'Barrow – 2', 'Barrow – 3' and 'Barrow – 4' due to a transcription error (wrong sample volume used for acidity calculation). All details are recorded in client query 23PECC081 and a full investigation will be detailed in corrective action request 23PEC030. Unable to report acidity for 'Barrow – 4' due to sample volume constraint.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	Borrow - 1	Borrow - 2	Borrow - 3	Borrow - 4	----
			Sampling date / time	26-May-2023 12:00	26-May-2023 12:00	26-May-2023 12:00	26-May-2023 12:00	----
Compound	CAS Number	LOR	Unit	EP2307016-001	EP2307016-002	EP2307016-003	EP2307016-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.66	7.49	7.71	7.69	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2360	2360	2380	2360	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1310	1290	1270	1270	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	68	52	70	69	----
Total Alkalinity as CaCO3	----	1	mg/L	68	52	70	69	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	1	5	5	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	73	117	69	70	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	697	688	704	703	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	8	10	8	8	----
Magnesium	7439-95-4	1	mg/L	40	44	40	39	----
Sodium	7440-23-5	1	mg/L	409	401	414	403	----
Potassium	7440-09-7	1	mg/L	3	3	3	3	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L	<0.001	0.005	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Borrow - 1	Borrow - 2	Borrow - 3	Borrow - 4	----
				Sampling date / time	26-May-2023 12:00	26-May-2023 12:00	26-May-2023 12:00	26-May-2023 12:00	----
Compound	CAS Number	LOR	Unit		EP2307016-001	EP2307016-002	EP2307016-003	EP2307016-004	--------
					Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued									
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		3.19	2.86	2.46	2.56	----
Iron	7439-89-6	0.05	mg/L		1.84	1.59	1.03	1.03	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		<0.01	0.17	0.01	0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.03	0.13	0.02	0.02	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.4	0.5	0.3	0.4	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.4	0.6	0.3	0.4	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.02	0.03	0.01	0.02	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK085M: Sulfide as S2-									
Sulfide as S2-	18496-25-8	0.1	mg/L		<0.1	<0.1	<0.1	<0.1	----
EN055: Ionic Balance									
ø Total Anions	----	0.01	meq/L		22.5	22.9	22.7	22.7	----
ø Total Cations	----	0.01	meq/L		21.6	21.6	21.8	21.2	----
ø Ionic Balance	----	0.01	%		2.22	2.79	2.06	3.31	----

QUALITY CONTROL REPORT

Work Order	: **EP2307016**	Page	: 1 of 7
Amendment	: **1**		
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Contact	: Customer Services EP
Address	: 144 Stirling Street Perth	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: ----	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 26-May-2023
Order number	: 368360-1	Date Analysis Commenced	: 26-May-2023
C-O-C number	: ----	Issue Date	: 06-Jun-2023
Sampler	: Jerry Zhang		
Site	: Wagerup		
Quote number	: EP/968/22		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA005P: pH by PC Titrator (QC Lot: 5083708)									
EP2307019-024	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.76	7.78	0.3	0% - 20%
EP2306999-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.59	7.60	0.1	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5083706)									
EP2307019-024	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1430	1430	0.4	0% - 20%
EP2306999-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	474	473	0.2	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5085619)									
EP2307016-001	Borrow - 1	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1310	1320	0.5	0% - 20%
EP2307019-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	310	318	2.2	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 5083709)									
EP2307019-024	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	254	246	3.2	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	254	246	3.2	0% - 20%
EP2306999-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	94	96	2.1	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	94	96	2.1	0% - 20%
ED038A: Acidity (QC Lot: 5087361)									
EP2306972-003	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	153	153	0.0	0% - 20%
EP2306972-012	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	44	44	0.0	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5076104)									
EP2306963-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	63	65	3.2	0% - 20%
EP2307001-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	758	743	2.0	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED045G: Chloride by Discrete Analyser (QC Lot: 5076105)									
EP2306963-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	169	194	14.0	0% - 20%
EP2307001-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	3200	3070	4.1	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 5079514)									
EP2306827-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	175	175	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	107	105	1.8	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	457	450	1.7	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	401	396	1.3	0% - 20%
EP2306996-006	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	27	27	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	8	7	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	122	119	2.8	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5079512)									
EP2306827-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.006	0.006	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.022	0.022	0.0	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.076	0.078	2.5	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.011	0.011	0.0	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.03	0.03	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.36	0.35	0.0	No Limit
EP2306996-006	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.020	0.020	0.0	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.08	0.08	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5084943)									
EP2307006-001	Anonymous	EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EP2307140-001	Anonymous	EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.18	0.20	6.7	0% - 50%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 5084943) - continued									
EP2307140-001	Anonymous	EG020A-T: Iron	7439-89-6	0.05	mg/L	0.14	0.16	19.1	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5076115)									
EP2306989-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP2306995-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.12	0.12	0.0	0% - 50%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5076116)									
EP2306989-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.83	0.83	0.0	0% - 20%
EP2306995-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	2.70	2.93	8.5	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5086388)									
EP2307016-001	Borrow - 1	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.4	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5086387)									
EP2307019-007	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.05	0.0	No Limit
EP2307016-001	Borrow - 1	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.02	0.02	0.0	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5076107)									
EP2307001-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK085M: Sulfide as S2- (QC Lot: 5077730)									
EP2306867-001	Anonymous	EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EP2307016-004	Borrow - 4	EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 5083708)								
EA005-P: pH Value	---	---	pH Unit	---	4 pH Unit	100	98.5	102
				---	7 pH Unit	99.8	98.5	102
EA010P: Conductivity by PC Titrator (QCLot: 5083706)								
EA010-P: Electrical Conductivity @ 25°C	---	1	µS/cm	<1	24800 µS/cm	94.2	92.1	105
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5085619)								
EA015H: Total Dissolved Solids @180°C	---	10	mg/L	<10	246 mg/L	101	94.7	109
				<10	1000 mg/L	101	94.7	109
ED037P: Alkalinity by PC Titrator (QCLot: 5083709)								
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	---	---	---	---
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	---	---	---	---
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	---	---	---	---
ED037-P: Total Alkalinity as CaCO3	---	1	mg/L	<1	20 mg/L	114	87.8	118
				<1	200 mg/L	104	87.8	118
ED038A: Acidity (QCLot: 5087361)								
ED038: Acidity as CaCO3	---	---	mg/L	---	20 mg/L	106	70.0	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5076104)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	107	89.9	112
				<1	500 mg/L	105	89.9	112
ED045G: Chloride by Discrete Analyser (QCLot: 5076105)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	100	88.6	113
				<1	1000 mg/L	97.8	88.6	113
ED093F: Dissolved Major Cations (QCLot: 5079514)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	102	86.5	117
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	100	88.4	110
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	102	91.4	113
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	98.6	84.6	108
EG020F: Dissolved Metals by ICP-MS (QCLot: 5079512)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	100	90.2	111
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	90.3	113
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	101	89.7	108

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 5079512) - continued								
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.7	87.3	107
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	97.0	88.8	109
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.2	88.9	108
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	100	89.4	106
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.5	87.6	106
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.5	87.2	108
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	90.5	83.8	102
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.0	89.5	112
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	94.8	89.9	120
EG020T: Total Metals by ICP-MS (QCLot: 5084943)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	106	91.6	114
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	102	95.0	132
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5076115)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	105	86.2	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5076116)								
EK059G: Nitrite + Nitrate as N	---	0.01	mg/L	<0.01	0.5 mg/L	97.8	90.5	110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5086388)								
EK061G: Total Kjeldahl Nitrogen as N	---	0.1	mg/L	<0.1	10 mg/L	88.3	75.8	100
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5086387)								
EK067G: Total Phosphorus as P	---	0.01	mg/L	<0.01	4.42 mg/L	89.5	70.0	110
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5076107)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	96.6	89.4	109
EK085M: Sulfide as S2- (QCLot: 5077730)								
EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	0.5 mg/L	100	84.1	115

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5076104)							
EP2306874-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	# Not Determined	70.4	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Acceptable Limits (%) Low	Matrix Spike (MS) Report: Acceptable Limits (%) High
ED045G: Chloride by Discrete Analyser (QCLot: 5076105)							
EP2306874-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	94.2	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5079512)							
EP2306875-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	108	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	106	70.0	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	100	70.0	130
		EG020A-F: Cobalt	7440-48-4	0.2 mg/L	101	70.0	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	99.3	70.0	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	97.1	70.0	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	99.3	70.0	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	99.6	70.0	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	104	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5076115)							
EP2306989-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	100	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5076116)							
EP2306989-001	Anonymous	EK059G: Nitrite + Nitrate as N	---	0.5 mg/L	101	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5086388)							
EP2307016-002	Borrow - 2	EK061G: Total Kjeldahl Nitrogen as N	---	5 mg/L	92.0	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5086387)							
EP2307016-002	Borrow - 2	EK067G: Total Phosphorus as P	---	1 mg/L	90.7	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5076107)							
EP2307001-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	88.7	70.0	130
EK085M: Sulfide as S2- (QCLot: 5077730)							
EP2306867-001	Anonymous	EK085: Sulfide as S2-	18496-25-8	1 mg/L	105	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2307016**	Page	: 1 of 8
Amendment	: **1**		
Client	: **HATCH**	Laboratory	: Environmental Division Perth
Contact	: Simon Hope	Telephone	: +61-8-9406 1301
Project	: RSA 10N	Date Samples Received	: 26-May-2023
Site	: Wagerup	Issue Date	: 06-Jun-2023
Sampler	: Jerry Zhang	No. of samples received	: 4
Order number	: 368360-1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EP2306874--001	Anonymous	**Sulfate as SO4 - Turbidimetric**	14808-79-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
Borrow - 1,	Borrow - 2,	----	----	----	01-Jun-2023	26-May-2023	6
Borrow - 3,	Borrow - 4						

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC 0	Regular	Actual	Expected	
Matrix Spikes (MS)					
Total Metals by ICP-MS - Suite A	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✘ = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
Borrow - 1, Borrow - 2,	**26-May-2023**	----	----	----	**01-Jun-2023**	26-May-2023	✘
Borrow - 3, Borrow - 4							

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	26-May-2023	----	---	----	01-Jun-2023	23-Jun-2023	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	26-May-2023	----	---	----	01-Jun-2023	02-Jun-2023	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	26-May-2023	----	---	----	01-Jun-2023	09-Jun-2023	✓
ED038A: Acidity							
Clear Plastic Bottle - Natural (ED038)							
Borrow - 1, Borrow - 2, Borrow - 3	26-May-2023	----	---	----	02-Jun-2023	09-Jun-2023	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	26-May-2023	----	---	----	26-May-2023	23-Jun-2023	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	26-May-2023	----	---	----	26-May-2023	23-Jun-2023	✓
ED093F: Dissolved Major Cations							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	26-May-2023	----	---	----	01-Jun-2023	23-Jun-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	26-May-2023	----	---	----	01-Jun-2023	22-Nov-2023	✓
EG020T: Total Metals by ICP-MS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020A-T)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	26-May-2023	01-Jun-2023	22-Nov-2023	✓	01-Jun-2023	22-Nov-2023	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	26-May-2023	----	---	----	26-May-2023	23-Jun-2023	✓

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	**26-May-2023**	----	---	----	**26-May-2023**	23-Jun-2023	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	**26-May-2023**	**02-Jun-2023**	23-Jun-2023	✓	**02-Jun-2023**	23-Jun-2023	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	**26-May-2023**	**02-Jun-2023**	23-Jun-2023	✓	**02-Jun-2023**	23-Jun-2023	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	**26-May-2023**	----	---	----	**26-May-2023**	28-May-2023	✓
EK085M: Sulfide as S2-							
Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)							
Borrow - 1, Borrow - 2, Borrow - 3, Borrow - 4	**26-May-2023**	----	---	----	**29-May-2023**	02-Jun-2023	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by Auto Titrator	ED037-P	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	4	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by Auto Titrator	ED037-P	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.53	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by Auto Titrator	ED037-P	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✱ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Chloride by Discrete Analyser	ED045G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	**5.26**	**5.26**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfide as S2-	EK085	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	0	15	**0.00**	**5.00**	✱	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by manual titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. The sulphides are coloured using methylene blue indicator. Non-detects may be screened by comparison against a standard at half-LOR, otherwise samples are measured using UV-VIS detection at 664nm. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)

Appendix E
Net Acidity Heat Maps

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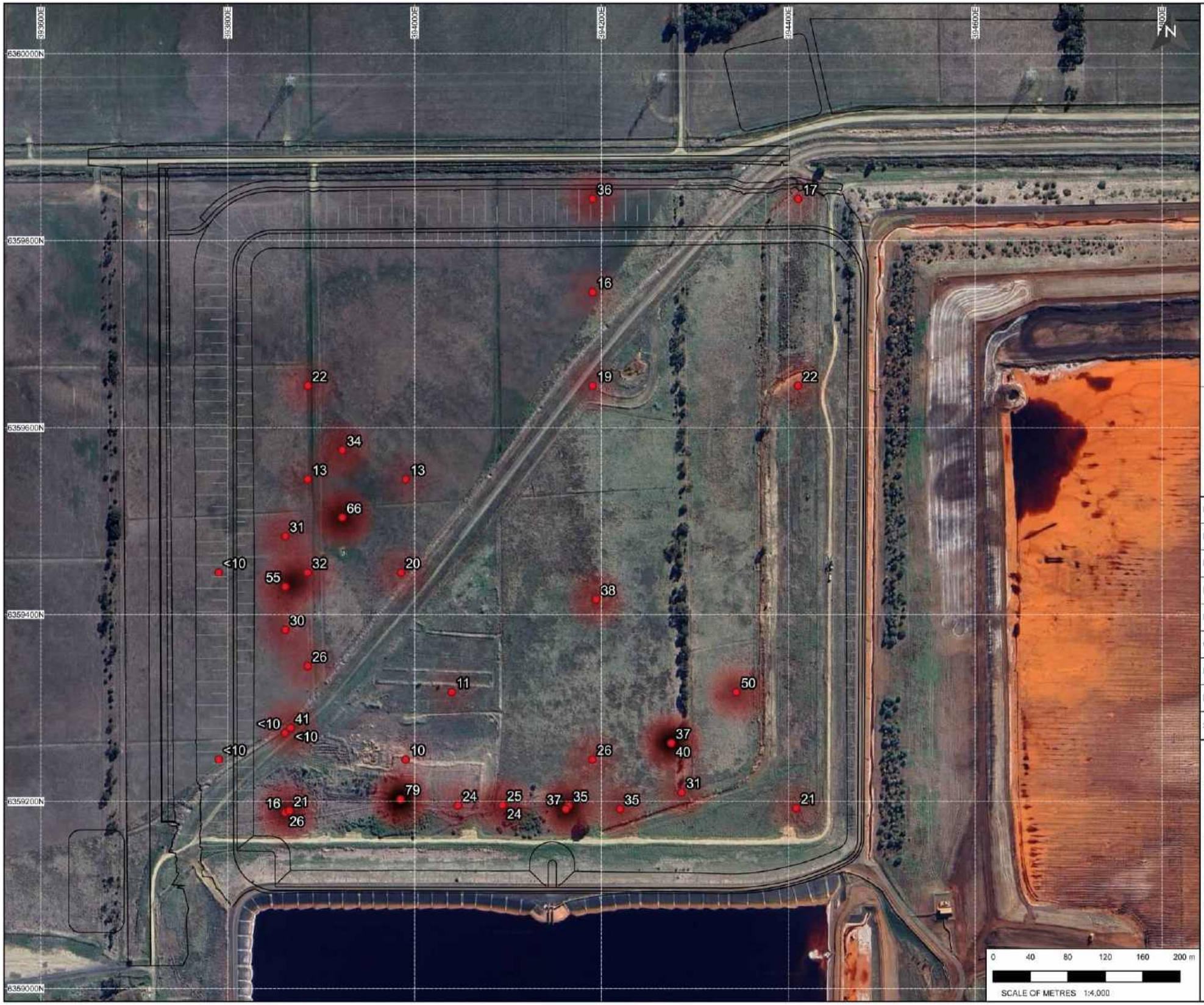

LEGEND:

- Net Acidity_RSA10N Footprint 0-800mm

Net Acidity (Mol/+T)

- 0 - 16
- 16 - 32
- 32 - 48
- 48 - 64
- 64 - 80

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E1
DRAWING TITLE	RSA10N Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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LEGEND:

- Net Acidity_RSA10N Footprint 800-1350mm

Net Acidity (Mol/+T)

- 0 - 9
- 9 - 18
- 18 - 27
- 27 - 36
- 36 - 55

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E2
DRAWING TITLE	RSA10N Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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LEGEND:

- Net Acidity_RSA10N Footprint 1350-1900mm

Net Acidity (Mol/+T)

- 0 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 51

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E3
DRAWING TITLE	RSA10N Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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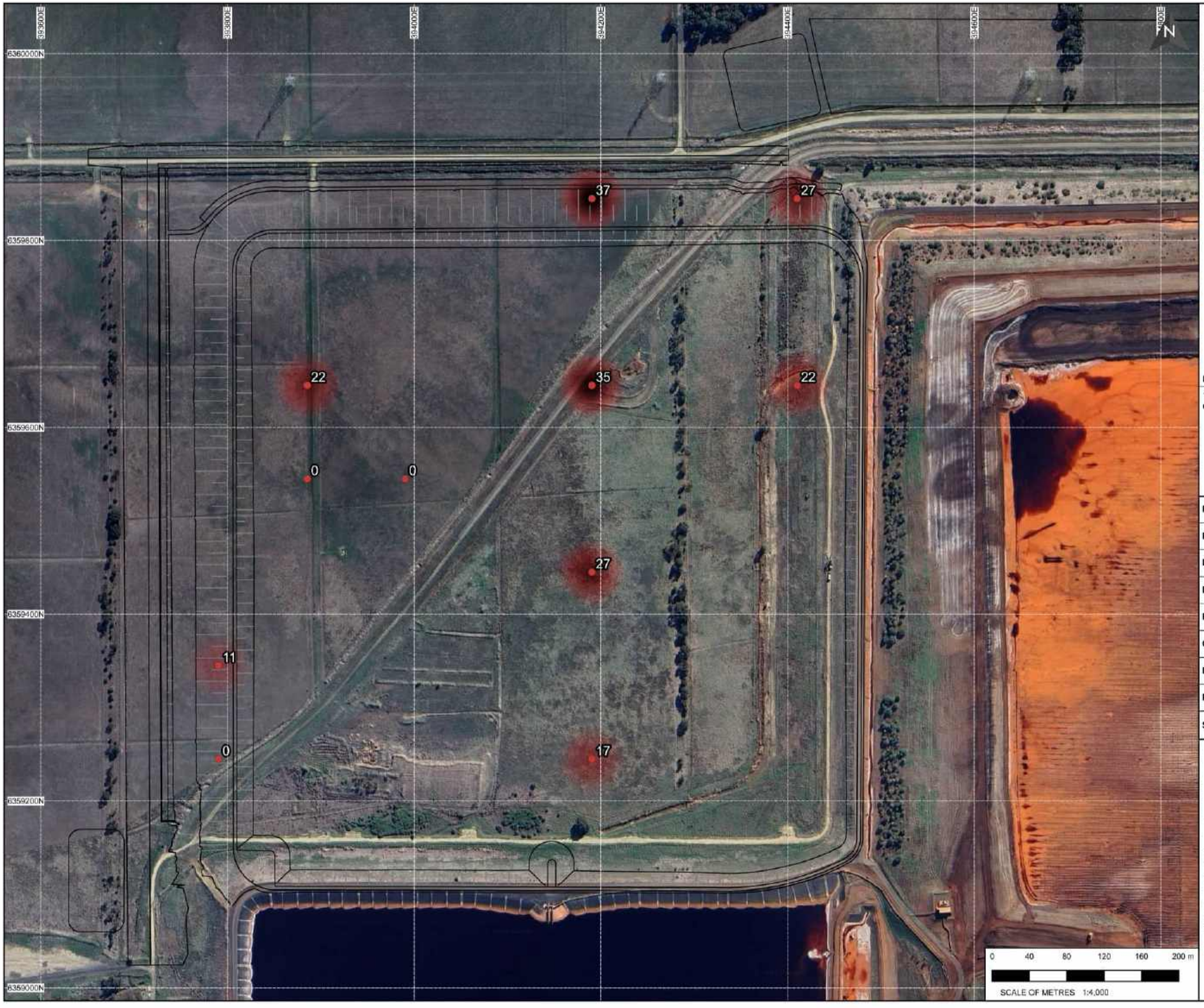

LEGEND:

- Net Acidity_RSA10N Footprint 1900-2450mm

Net Acidity (Mol/+T)

- 0 - 8
- 8 - 16
- 16 - 24
- 24 - 32
- 32 - 40

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E4
DRAWING TITLE	RSA10N Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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LEGEND:

- Net Acidity_RSA10N Footprint 2450-3000mm

Net Acidity (Mol/+T)

- 0 - 7
- 7 - 14
- 14 - 21
- 21 - 28
- 28 - 34

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E5
DRAWING TITLE	RSA10N Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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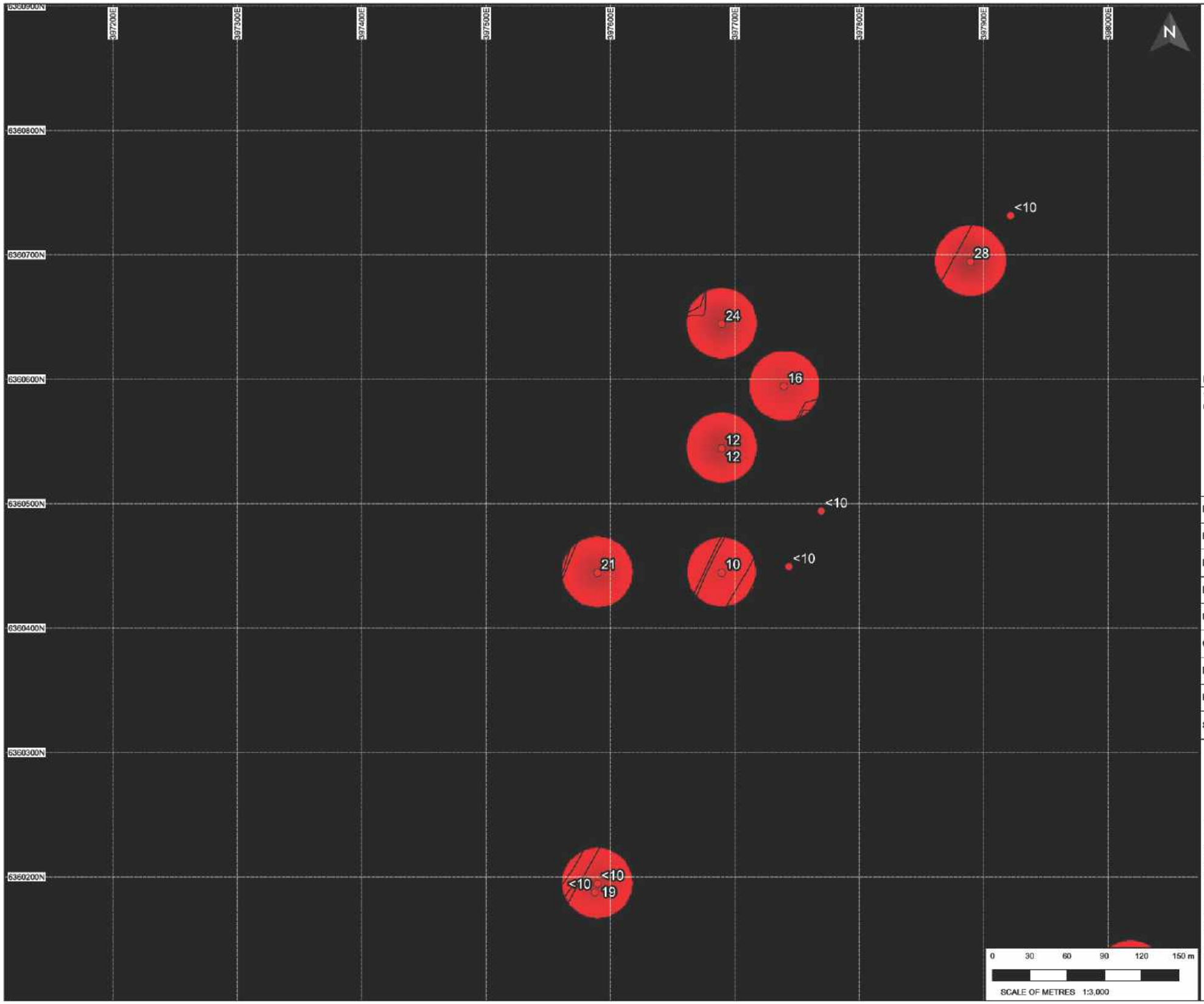

LEGEND:

- Net Acidity_Existing Borrow Pit 0-800mm

Net Acidity (Mol/+T)

- 0 - 6
- 6 - 12
- 12 - 18
- 18 - 24
- 24 - 28

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soil Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E6
DRAWING TITLE	Existing Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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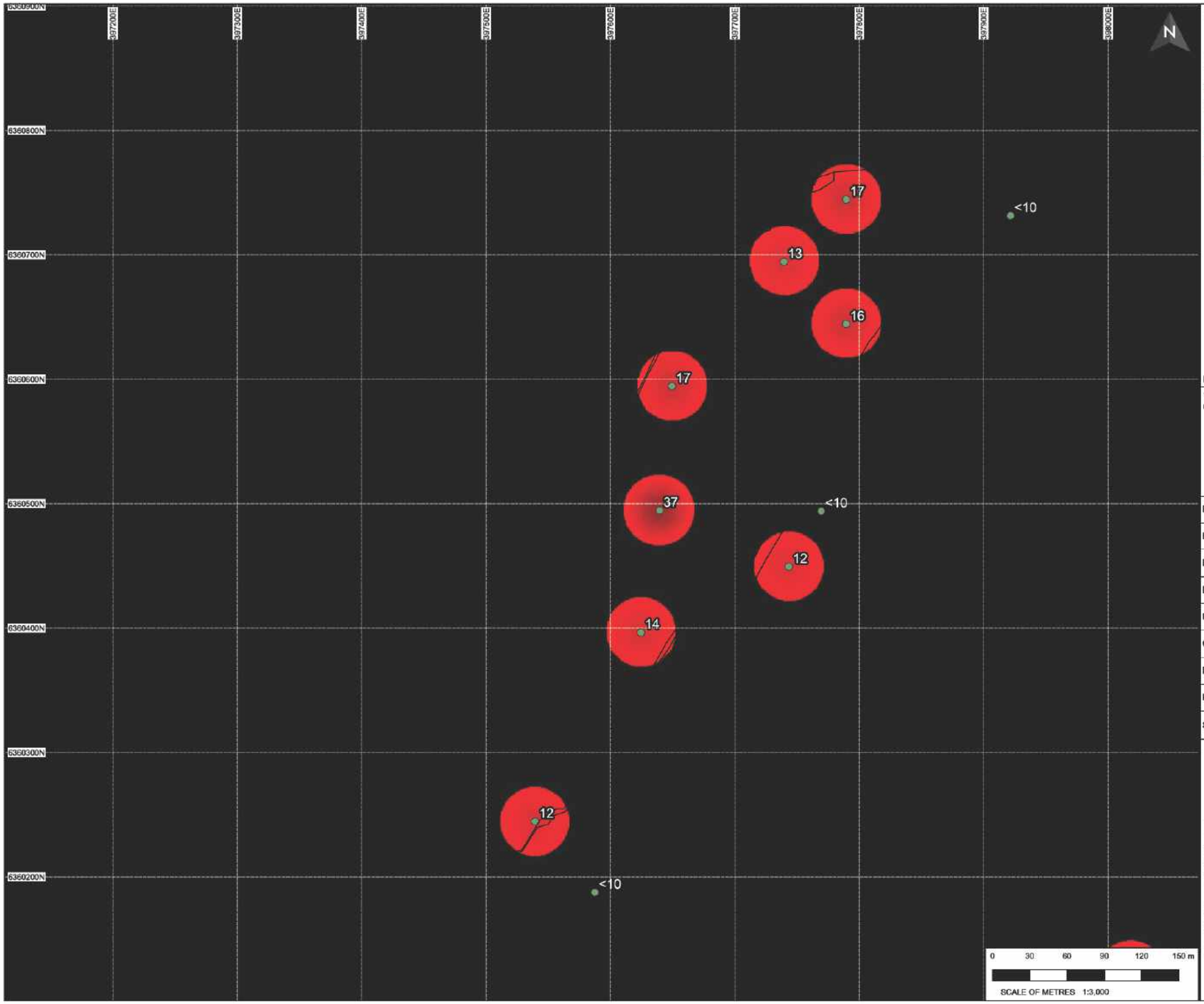

LEGEND:

- Net Acidity_Existing Borrow Pit 800-1350mm

Net Acidity (Mol/+T)

- 0 - 4
- 4 - 12
- 12 - 16
- 16 - 20
- 20 - 40

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soil Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E7
DRAWING TITLE	Existing Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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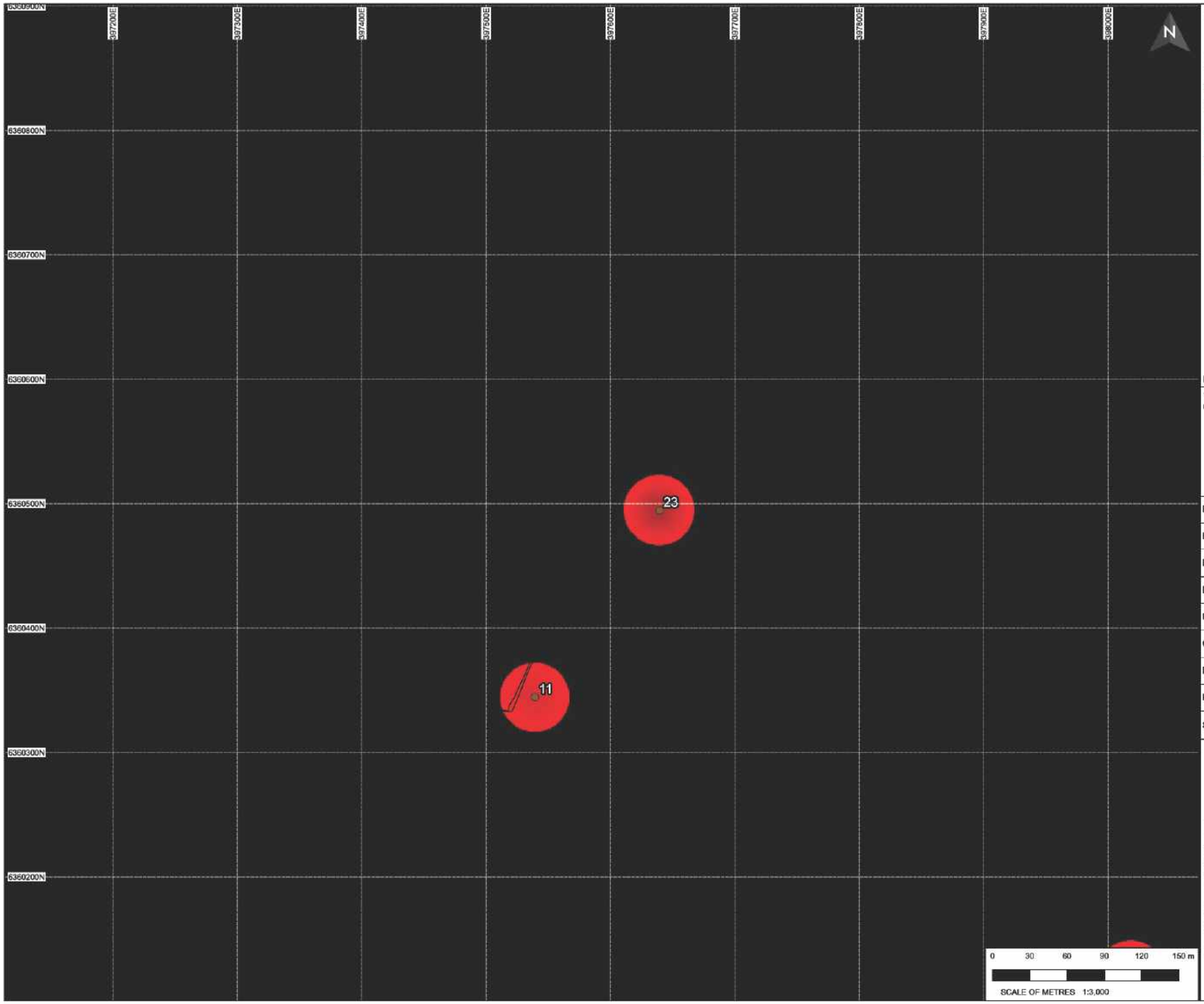

LEGEND:

- Net Acidity_Existing Borrow Pit 1350-1900mm

Net Acidity (Mol/+T)

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soil Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E8
DRAWING TITLE	Existing Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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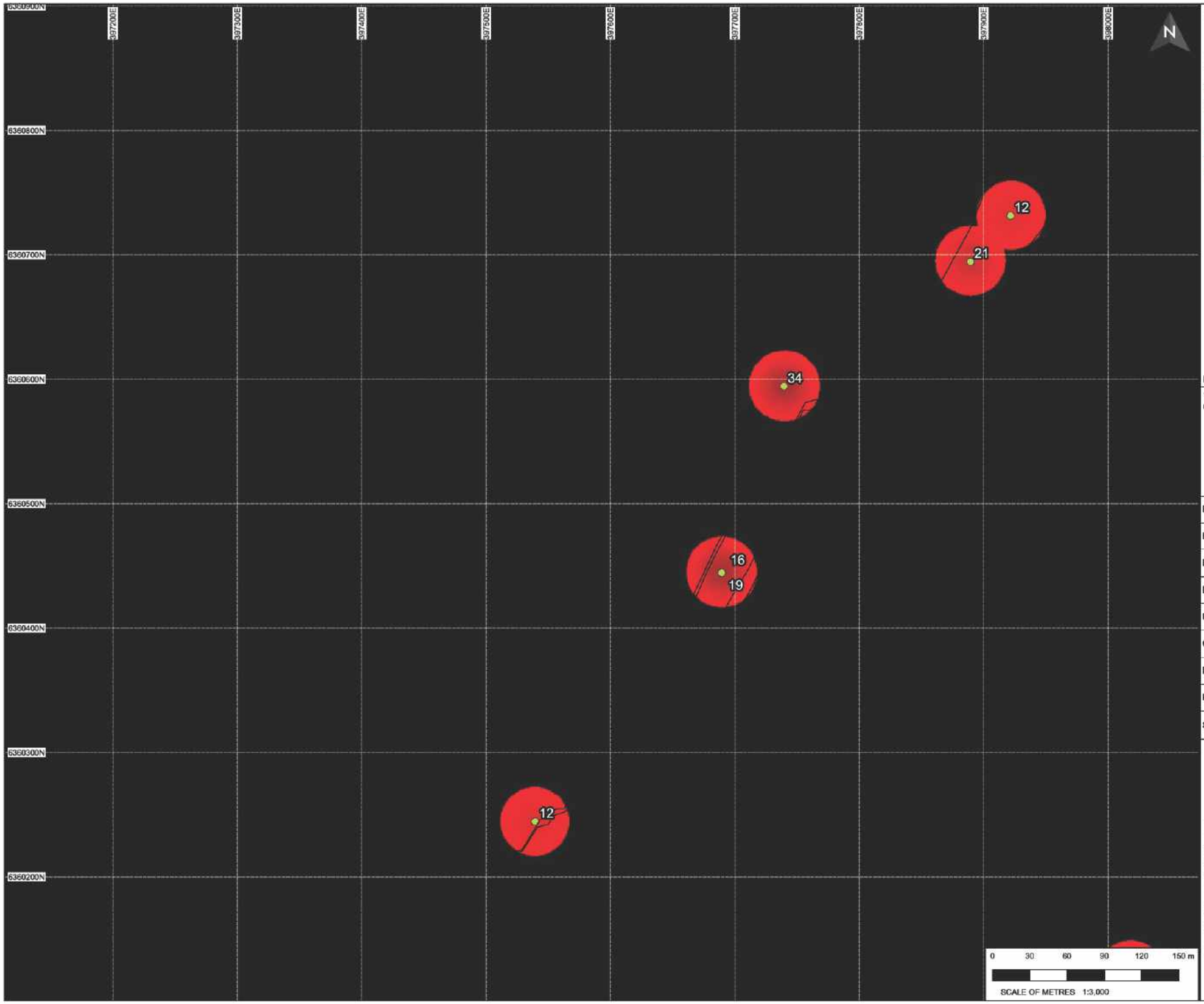

LEGEND:

- Net Acidity_Existing Borrow Pit 1900-2400mm

Net Acidity (Mol/+T)

- 0 - 7
- 7 - 14
- 14 - 21
- 21 - 28
- 28 - 35

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soil Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E9
DRAWING TITLE	Existing Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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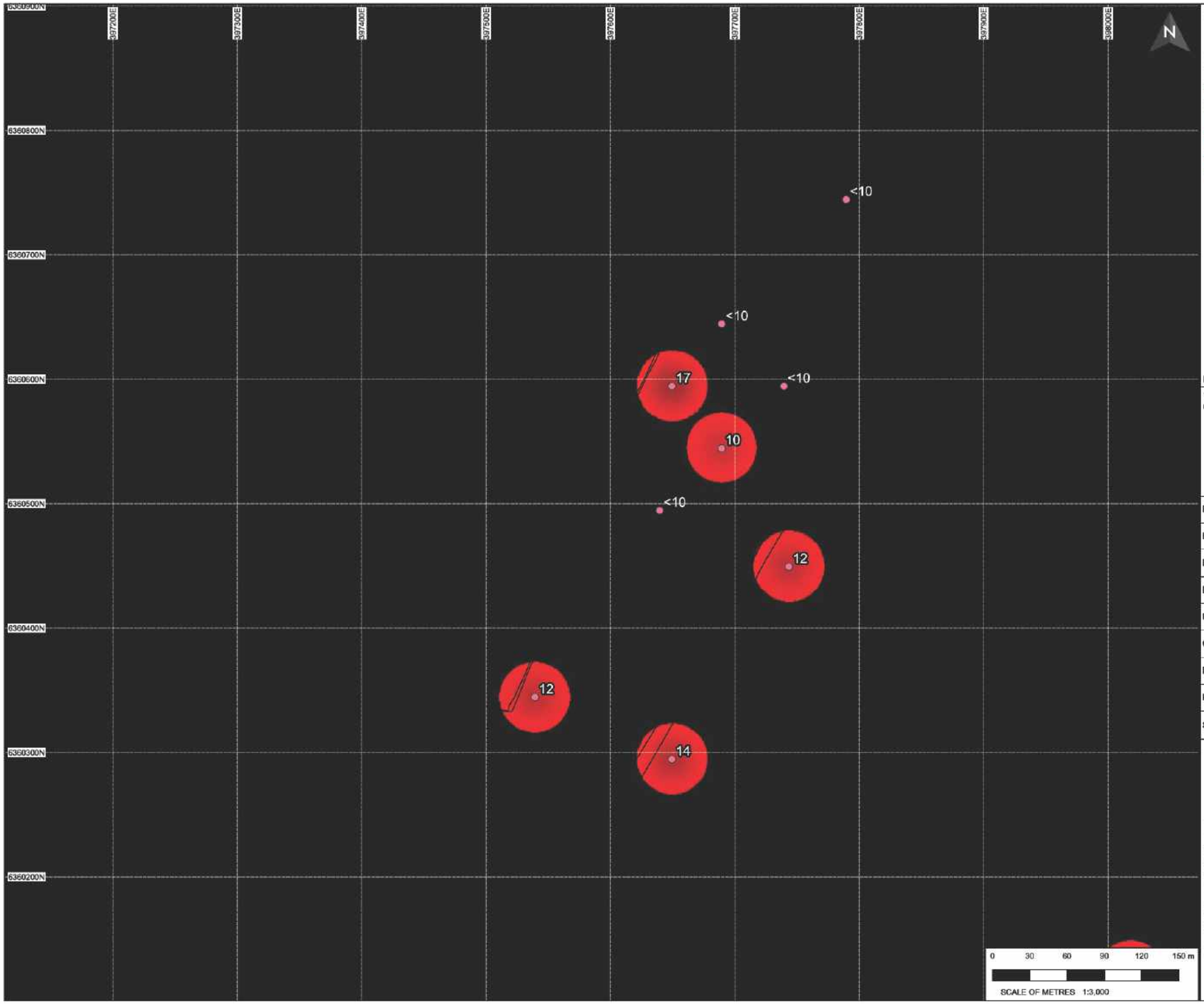

LEGEND:

- Net Acidity_Existing Borrow Pit 2400-3000mm

Net Acidity (Mol/+T)

- 0 - 3
- 3 - 6
- 6 - 9
- 9 - 12
- 12 - 18

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soil Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E10
DRAWING TITLE	Existing Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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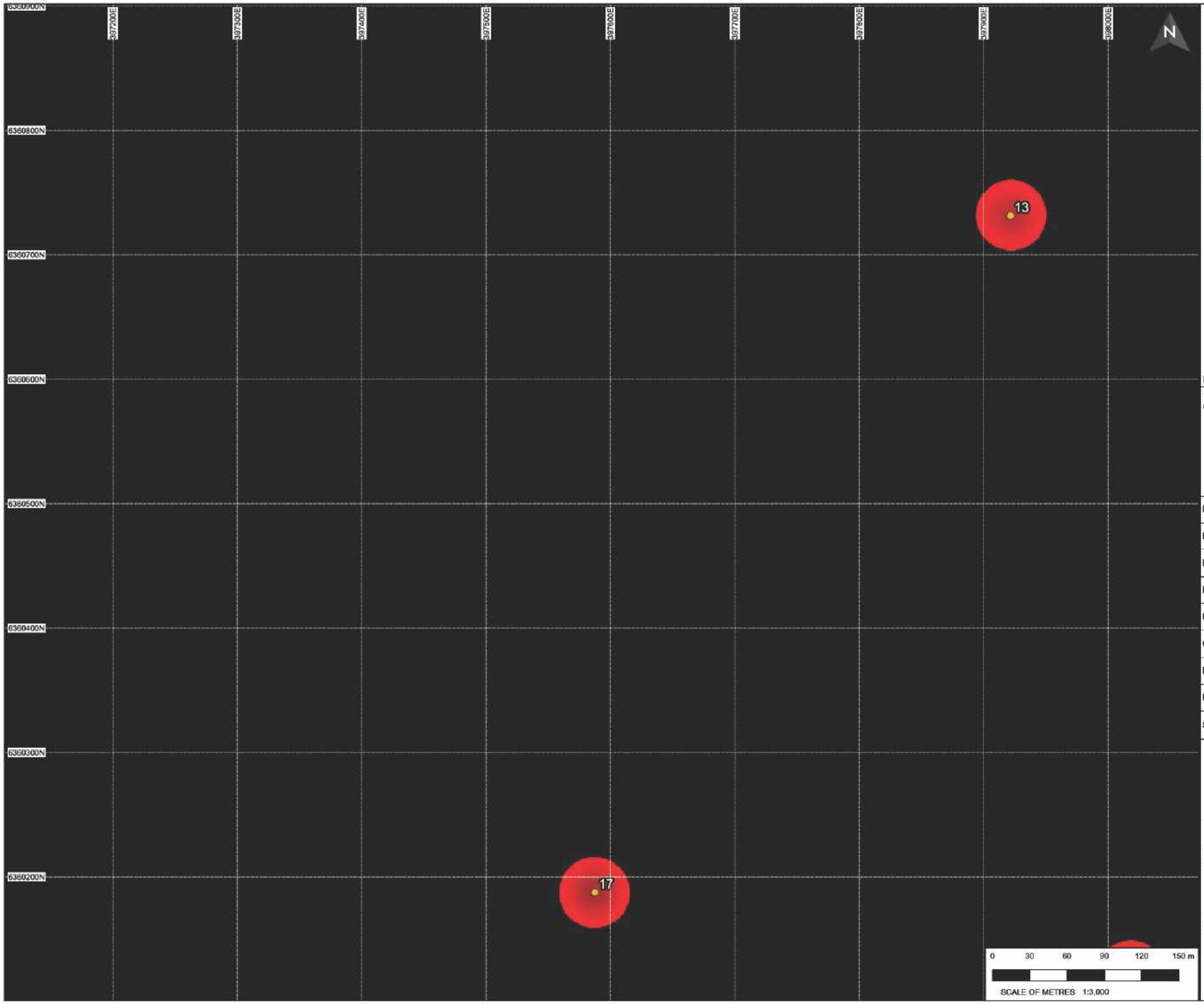

LEGEND:

- Net Acidity_Existing Borrow Pit 3000-5500mm

Net Acidity (Mol/+T)

- 0 - 3
- 3 - 6
- 6 - 9
- 9 - 12
- 12 - 18

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soil Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E11
DRAWING TITLE	Existing Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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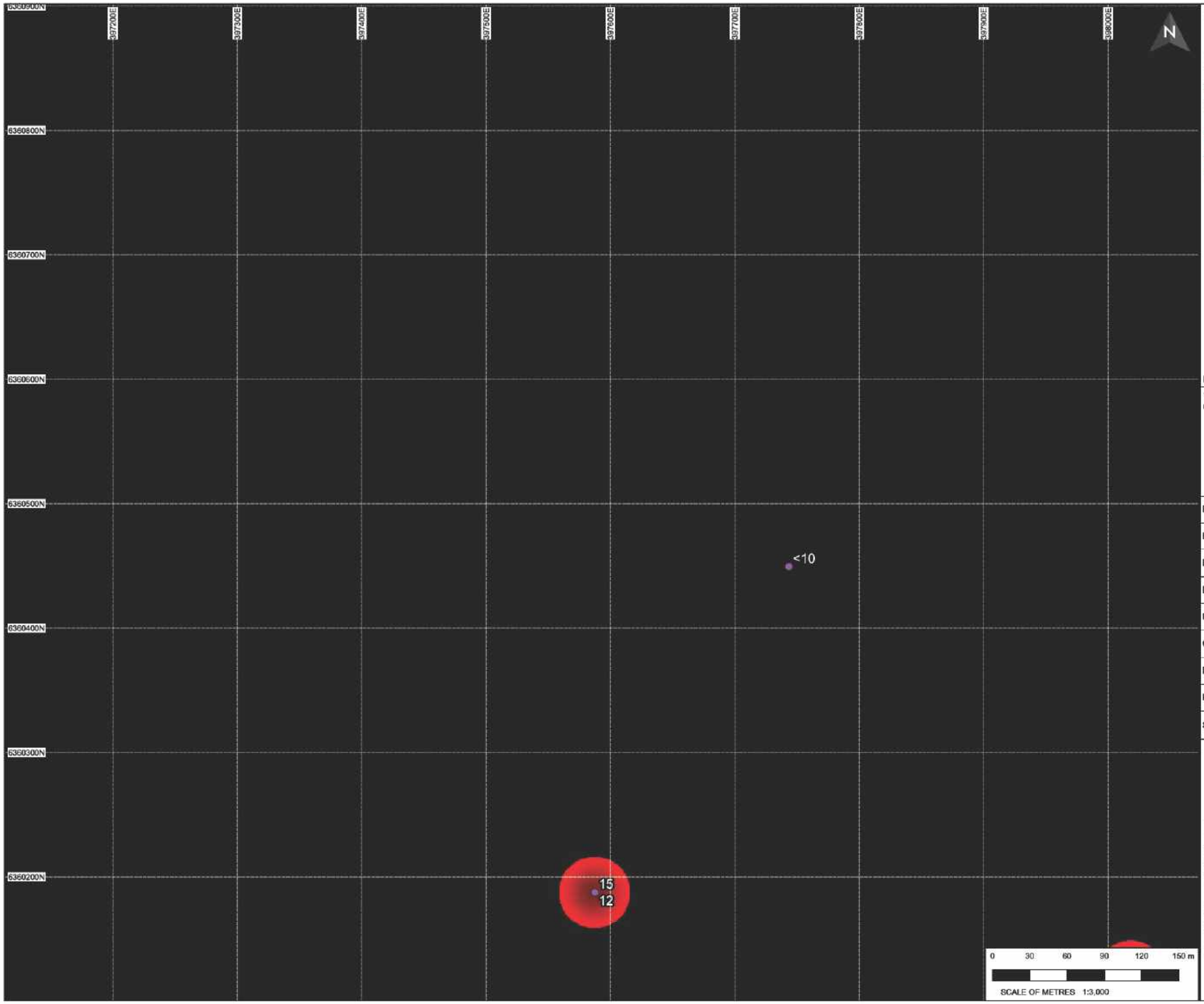

LEGEND:

- Net Acidity_Existing Borrow Pit 5500-8500mm

Net Acidity (Mol/+T)

- 0 - 3
- 3 - 6
- 6 - 9
- 9 - 12
- 12 - 18

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soil Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E12
DRAWING TITLE	Existing Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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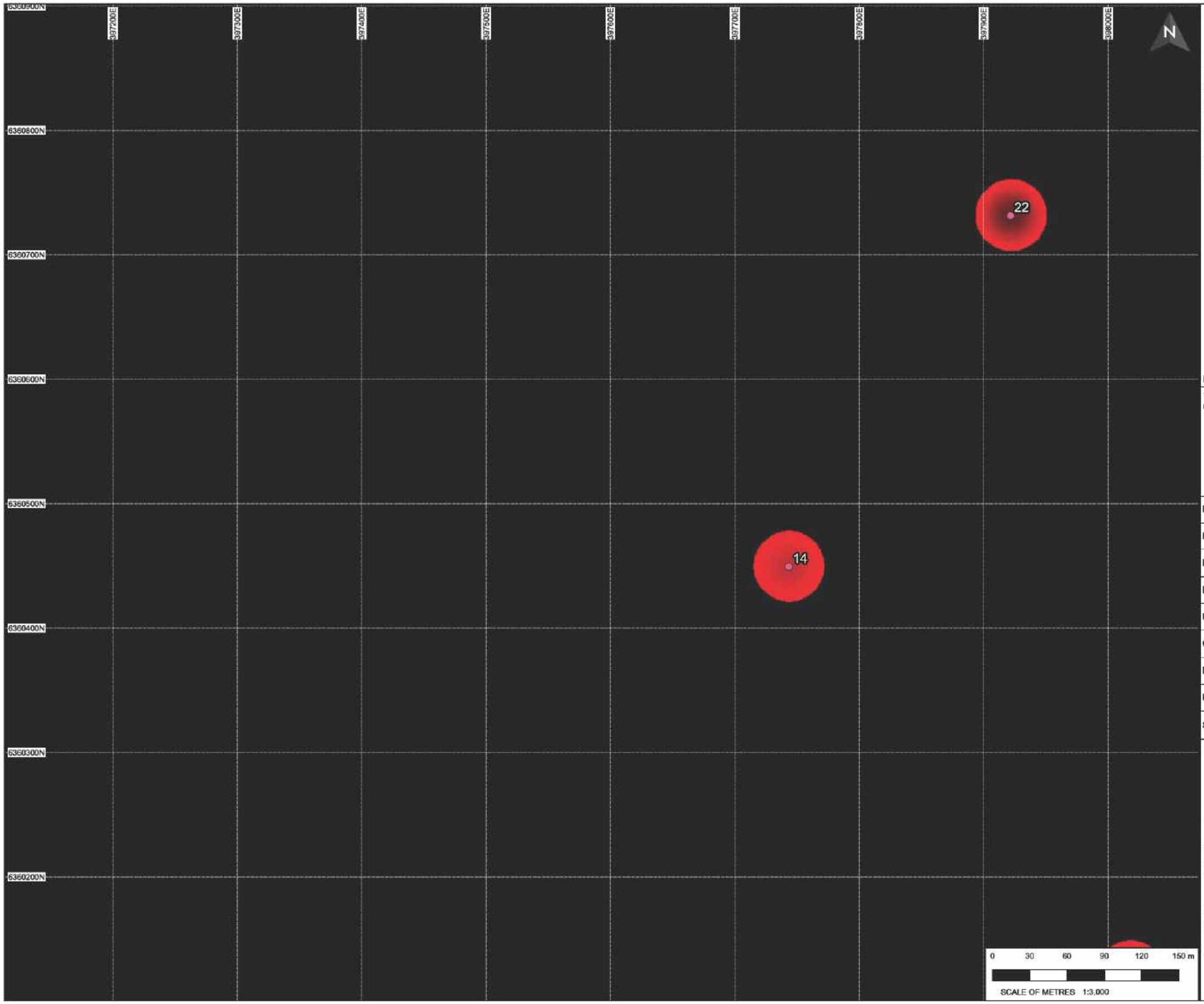

LEGEND:

- Net Acidity_Existing Borrow Pit 8500-10500mm

Net Acidity (Mol/+T)

- 0 - 4
- 4 - 8
- 8 - 12
- 12 - 16
- 16 - 22

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soil Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E13
DRAWING TITLE	Existing Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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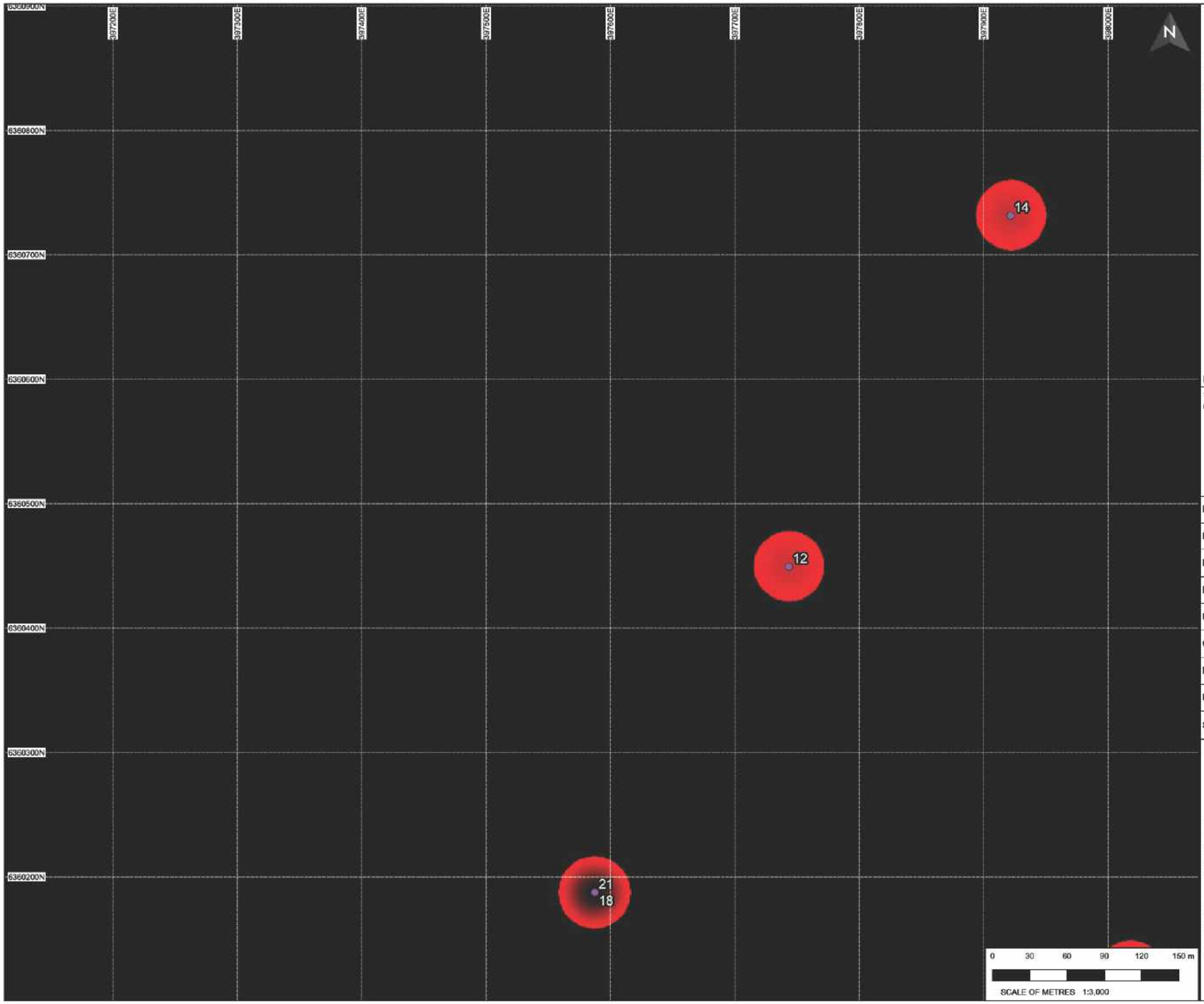

LEGEND:

- Net Acidity_Existing Borrow Pit 10500-13500mm

Net Acidity (Mol/+T)

- 0 - 4
- 4 - 8
- 8 - 12
- 12 - 16
- 16 - 21

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soil Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E14
DRAWING TITLE	Existing Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satellite Hybrid

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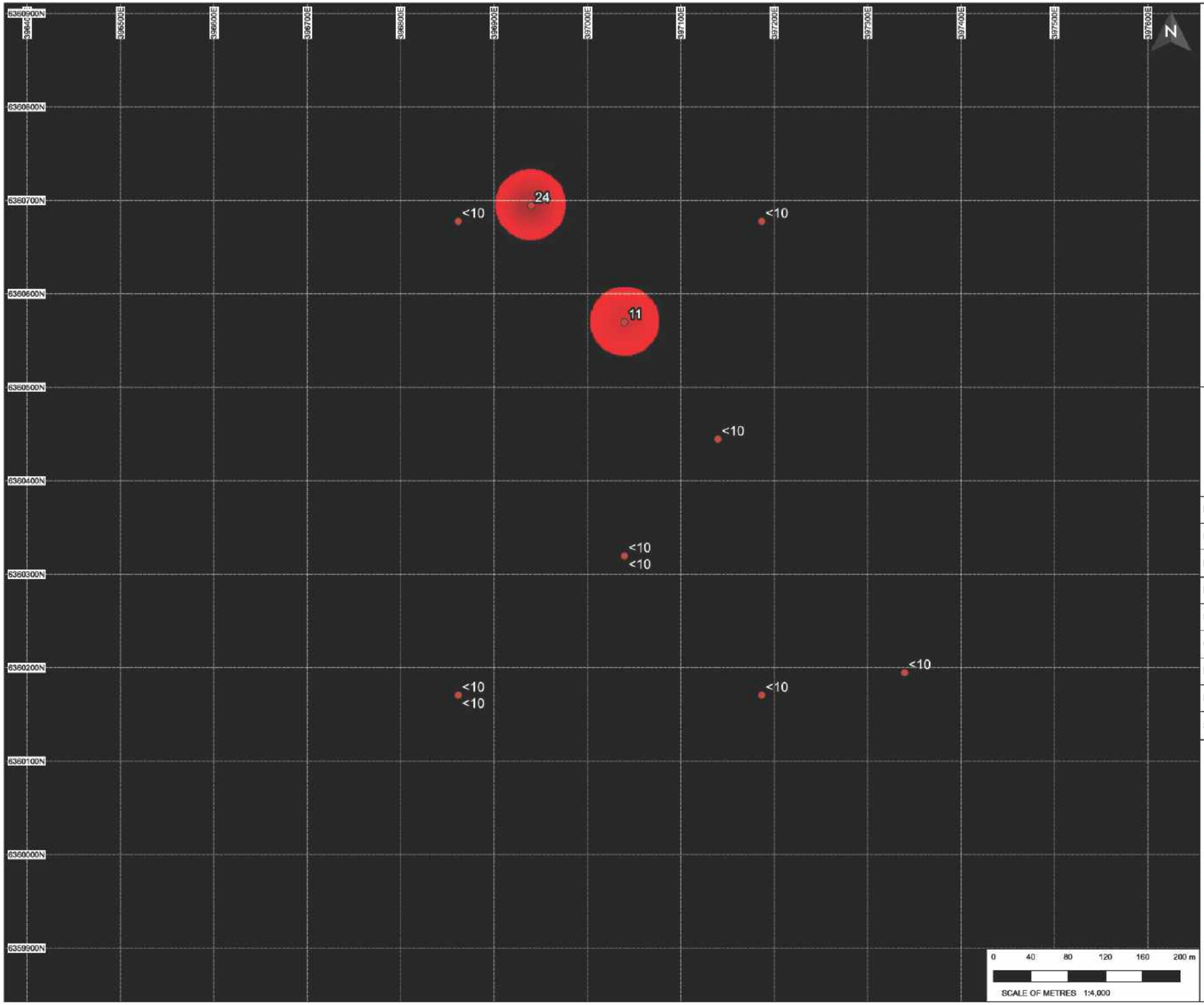

LEGEND:

- Net Acidity_Potential Borrow Pit 0-800mm

Net Acidity (Mol/+T)

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 24

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E15
DRAWING TITLE	Future Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satelite Hybrid

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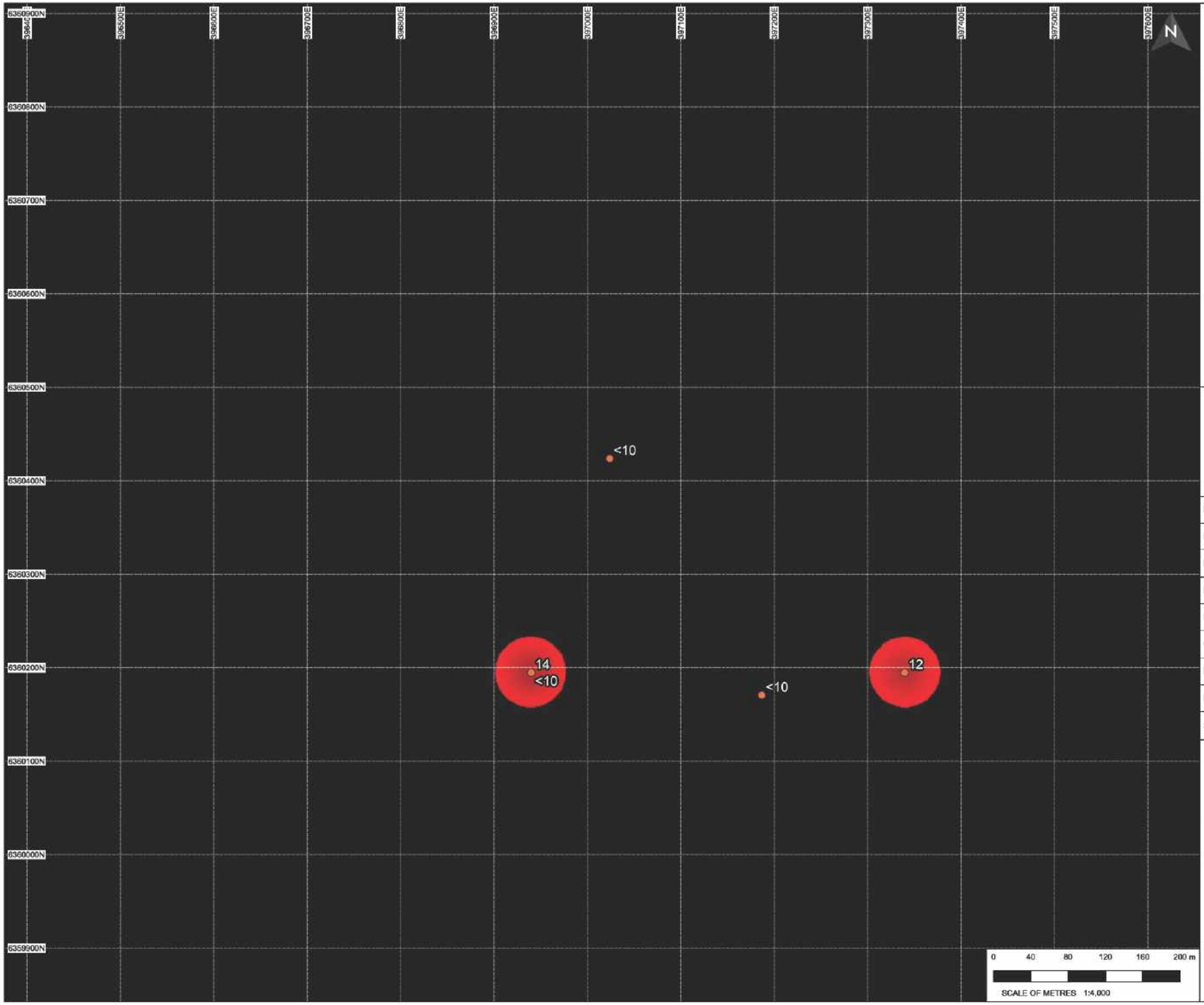

LEGEND:

- Net Acidity_Potential Borrow Pit 800-1350mm

Net Acidity (Mol/+T)

- 0 - 3
- 3 - 6
- 6 - 9
- 9 - 12
- 12 - 15

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E16
DRAWING TITLE	Future Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satelite Hybrid

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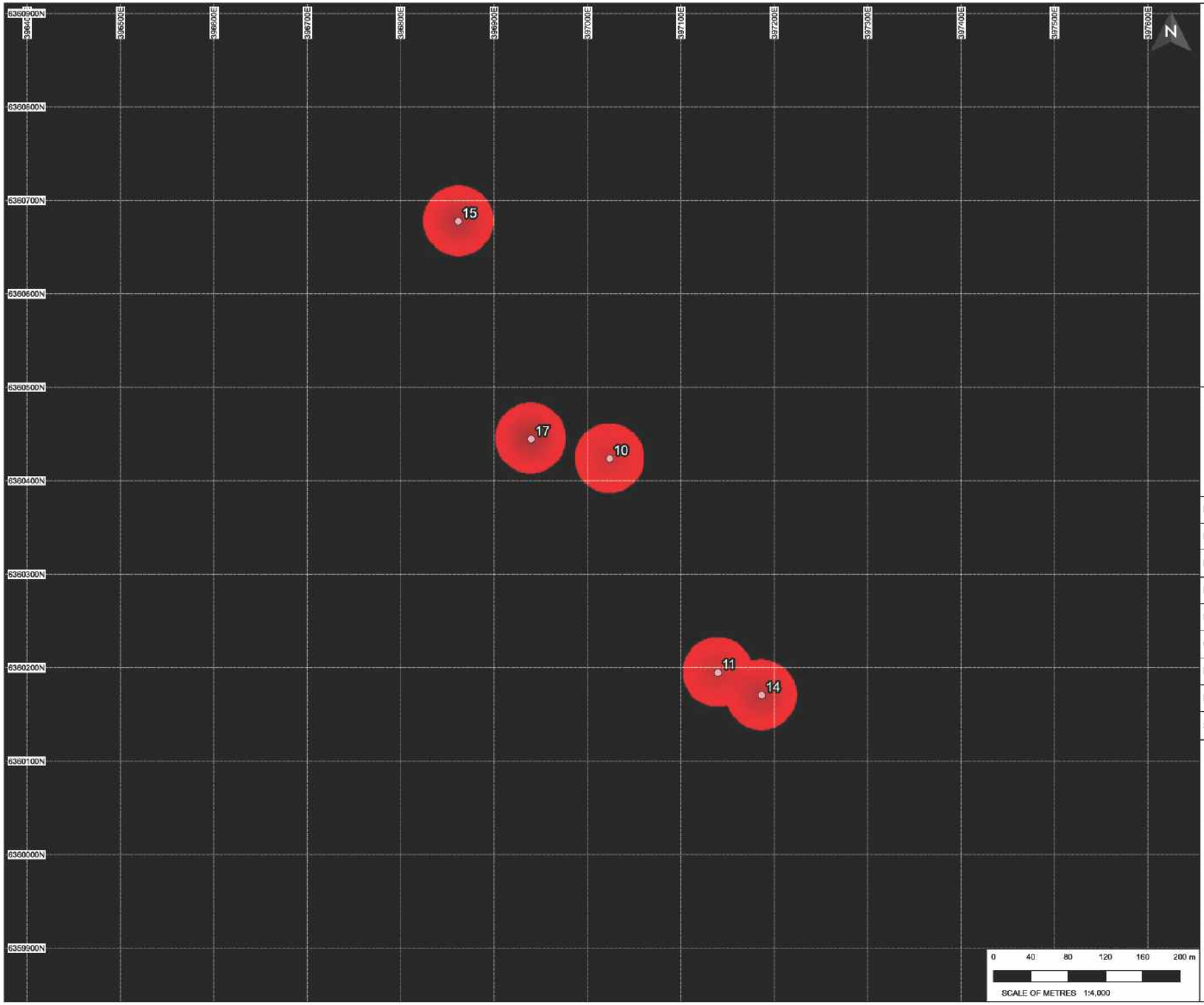

LEGEND:

Net Acidity_Potential Borrow Pit 1350-1900mm

Net Acidity (Mol/+T)

- 0 - 4
- 4 - 8
- 8 - 12
- 12 - 16
- 16 - 18

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E17
DRAWING TITLE	Future Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satelite Hybrid

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ACN 59 005 630 500

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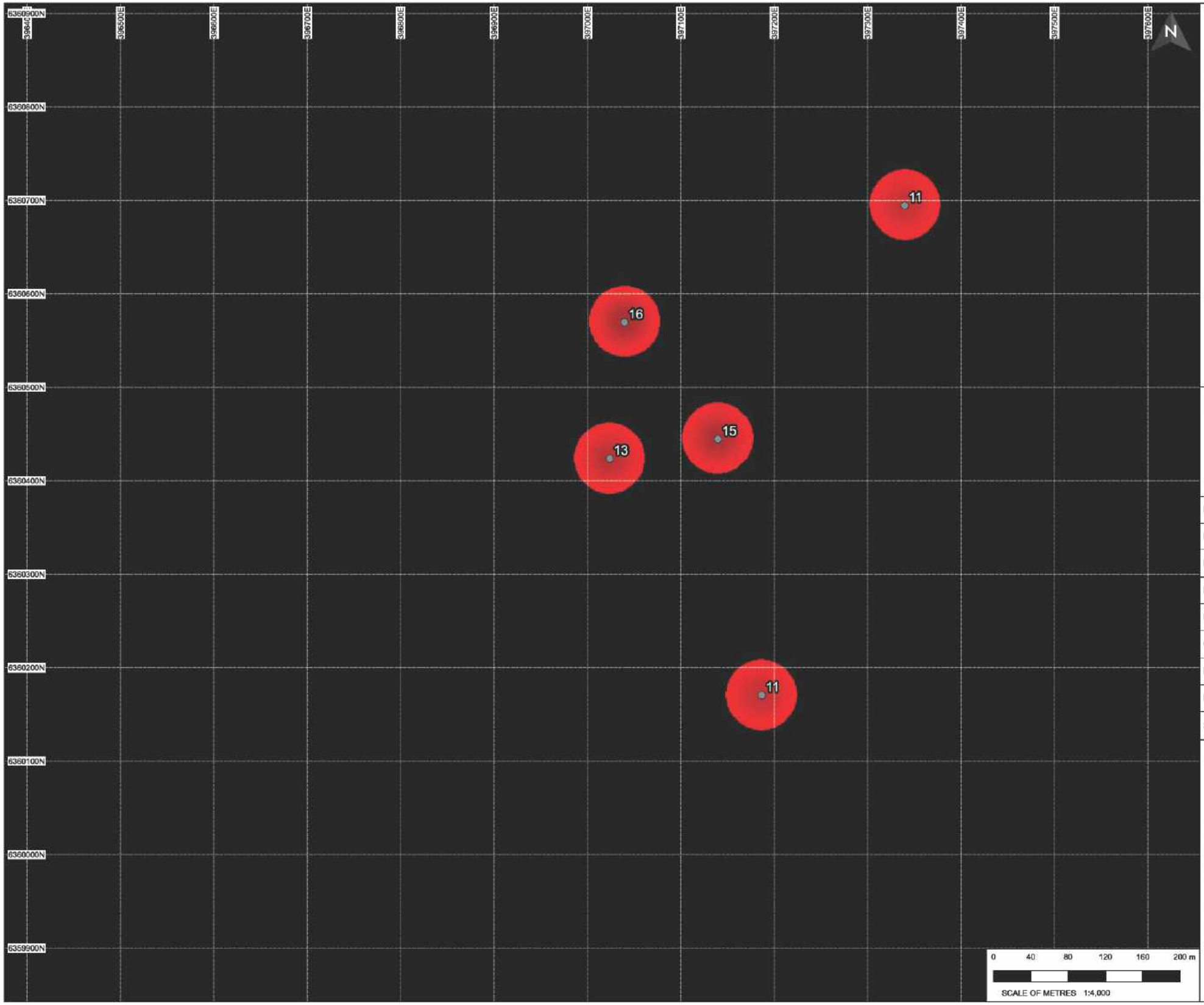

LEGEND:

- Net Acidity_Potential Borrow Pit 1900-2450mm

Net Acidity (Mol/+T)

- 0 - 3
- 3 - 6
- 6 - 9
- 9 - 12
- 12 - 16

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E18
DRAWING TITLE	Future Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satelite Hybrid

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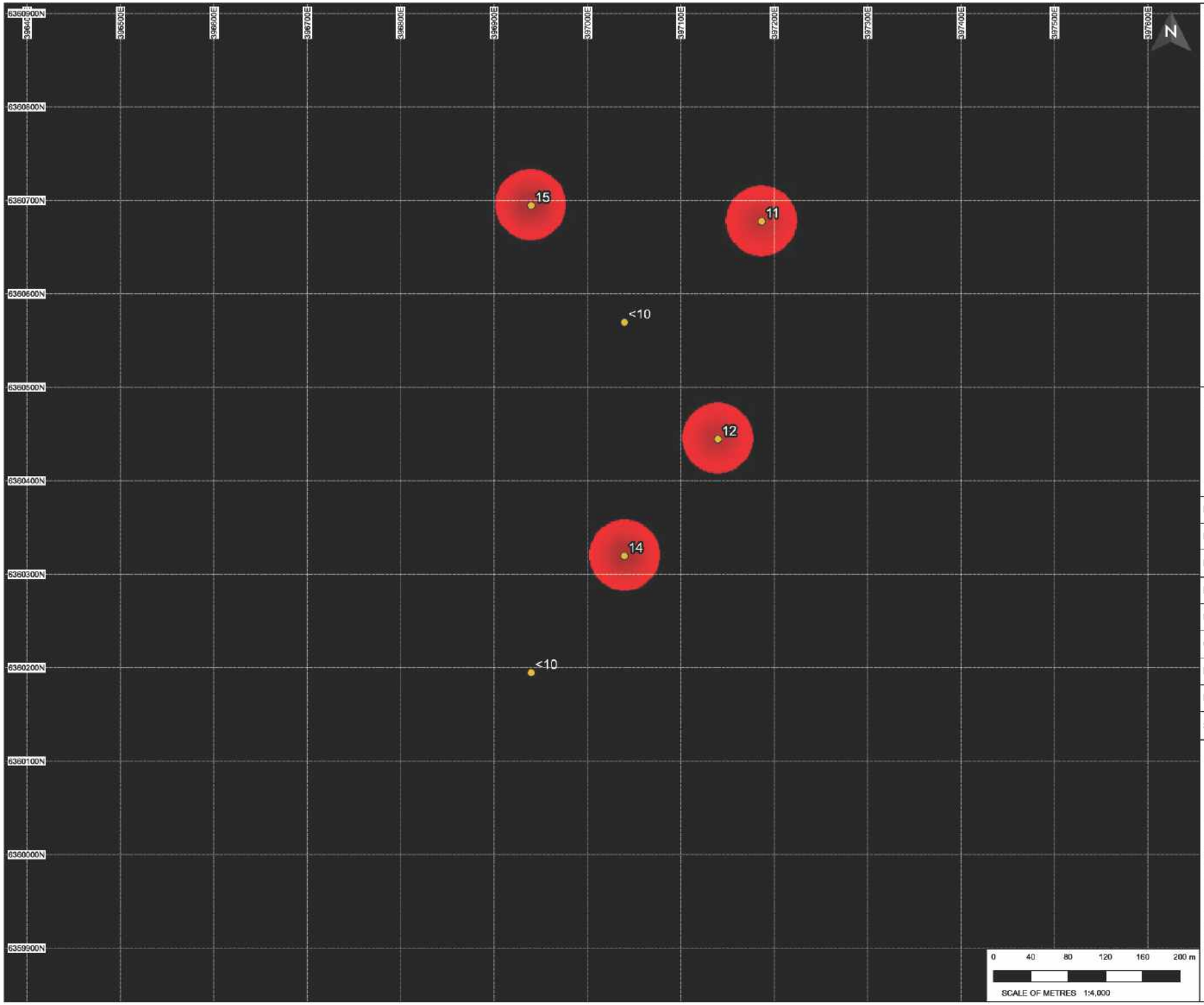

LEGEND:

Net Acidity_Potential Borrow Pit 2450-3000mm

Net Acidity (Mol/+T)

- 0 - 3
- 3 - 6
- 6 - 9
- 9 - 12
- 12 - 16

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E19
DRAWING TITLE	Future Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satelite Hybrid

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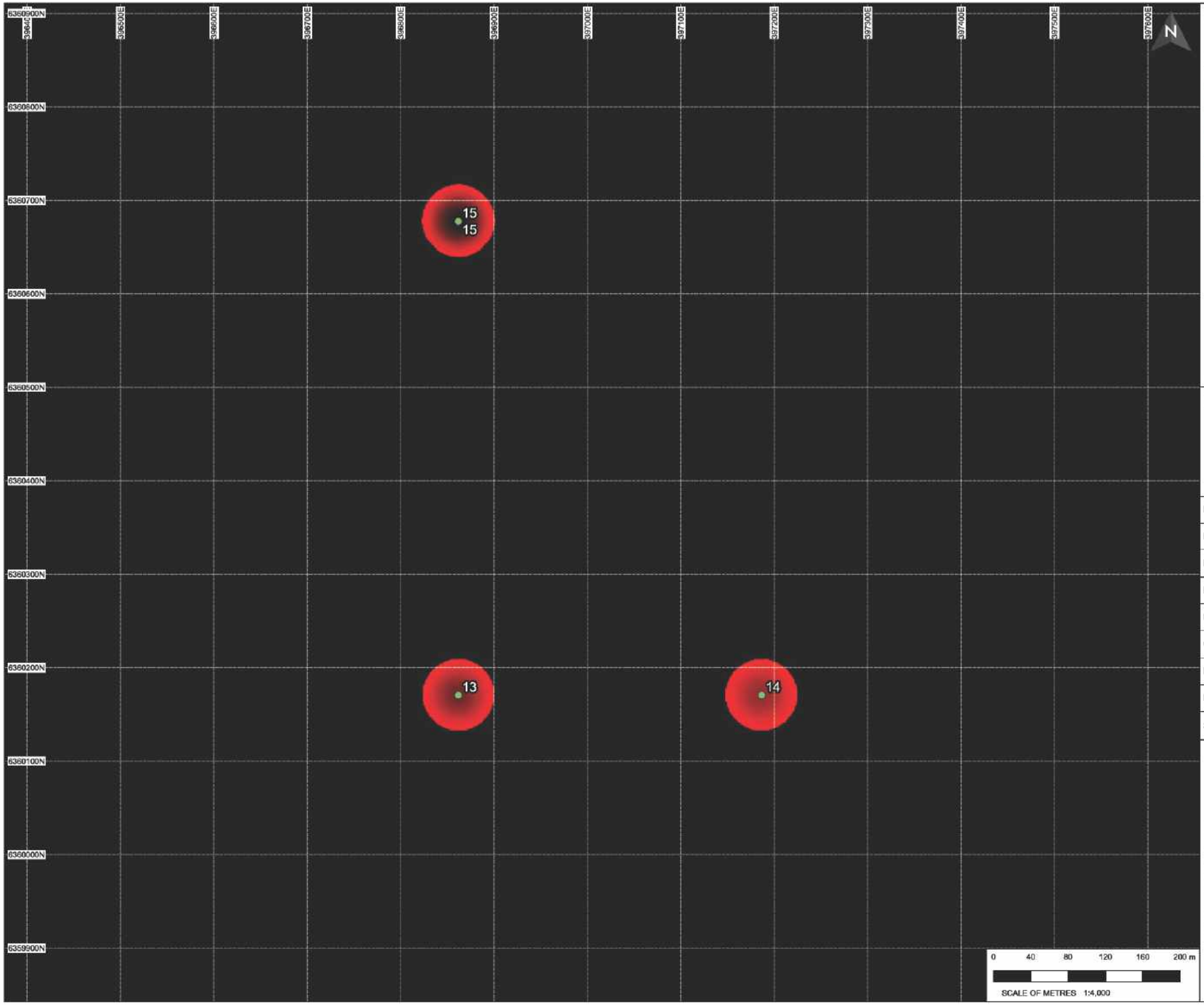

LEGEND:

- Net Acidity_Potential Borrow Pit 3000-5000mm

Net Acidity (Mol/+T)

- 0 - 3
- 3 - 6
- 6 - 9
- 9 - 12
- 12 - 15

NOTES:

1. All Dimensions, Elevations and Coordinates are in metres, except where indicated otherwise.

PROJECT TITLE	Wagerup Acid Sulfate Soils Report
PROJECT NUMBER	H368360
DRAWING NUMBER	Appendix E - E20
DRAWING TITLE	Future Borrow Pit Heat Map
REVISION NUMBER	2
CREATED BY	M.Niven
DATE	03-05-2024
PROJECTION	EPSG:28350 GDA94 / MGA zone 50
SOURCES	Google Satelite Hybrid

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