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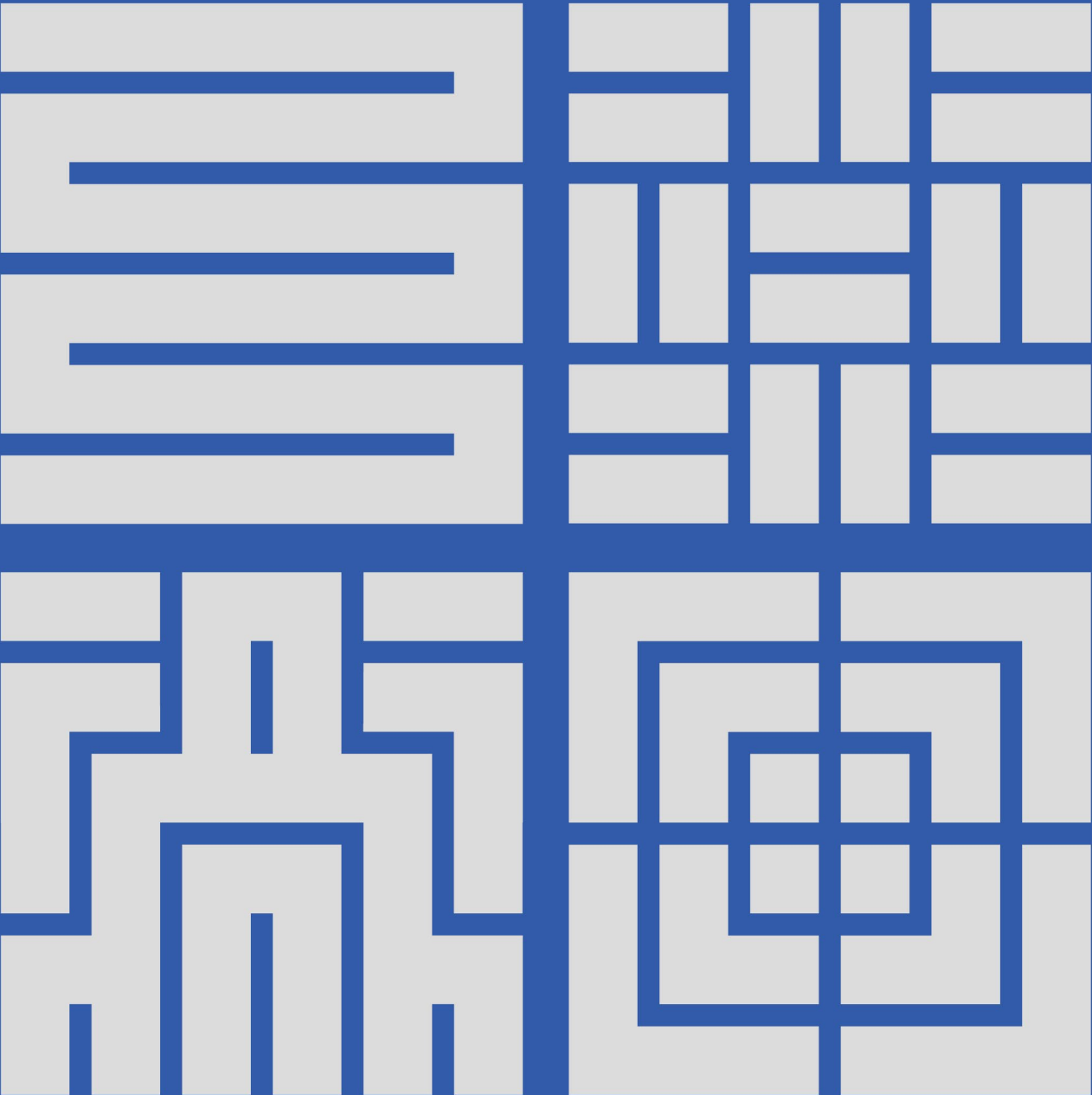
The report was prepared to inform the Due Diligence process for Werribee Junction and Mambourin East.

When planing for these precincts progress to plan preparation, the report will need to be reviewed and updated, as required, to inform that process.



**SOIL SODICITY AND ACID SULFATE SOIL SURVEY
WERRIBEE JUNCTION PSP**

VICTORIAN PLANNING AUTHORITY
FINAL | 14 April 2023



SOIL SODICITY AND ACID SULFATE SOIL SURVEY WERRIBEE JUNCTION PSP

VICTORIAN PLANNING AUTHORITY
FINAL

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This version, Rev1 (Final), incorporates comments and corrections suggested by VPA following their review of the Rev A version, together with data from additional boreholes investigated in areas of concern to Melbourne Water.

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EXECUTIVE SUMMARY

PROJECT OVERVIEW

On behalf of the Victorian Planning Authority (VPA), Fyfe Pty Ltd (Fyfe) has undertaken a preliminary survey of the incidence of soil sodicity and the presence of acid sulfate soils across the Werribee Junction Precinct Structure Plan (PSP) area to the west of Werribee.

Much of the area is flat with a gentle slope towards Port Phillip Bay to the southeast, and is subject to infrequent, sporadic flooding by both Lollypop Creek and Cherry Creek. The Precinct is largely intended to be used for purposes such as warehousing and light industrial or fabrication premises, and as such may require significant earthworks to provide the necessary foundations for large slab-on-ground buildings and the attendant hardstand areas.

VPA understands that there are likely to be sodic soils and possibly acid sulfate soils within the area. Sodic soils are of particular concern because they can be prone to rapid structural loss and severe erosion when exposed to surface water flows and stormwater, while acid sulfate soils, which are common in Victorian coastal areas including Port Phillip Bay, may exhibit offensive odours and can produce sulphuric acid when exposed to air, leading to potentially severe corrosion of concrete and metal structures and adverse impacts to vegetation and wildlife, including fish. Accordingly, VPA wishes to understand the extent and potential severity of these soils across the PSP area.

OUR INVESTIGATION and FINDINGS

Fyfe's investigation has been developed from a conceptual grid sampling pattern across the area, using soil bores to collect soil samples through the soil profile to depths of 1 to 3 m below ground level (bgl). With the assistance of VPA, Fyfe was able to access most of the relevant properties, as well as the road reserves along Wests Road and Browns Road, to undertake sampling using either a solid auger drill rig mounted on a 4WD utility or a hand auger. Each bore location was logged with respect to both its latitude and longitude and to the soil profile encountered. A comprehensive and representative pattern of sampling bores has been achieved, with an intentional slight bias to locations close to Lollypop and Cherry Creeks.

The soil samples collected have been analysed by a laboratory accredited by the National Association of Testing Authorities (NATA) for key parameters of soil sodicity, dispersivity and potential for acidogenesis – soil pH, cation exchange capacity, exchangeable sodium percentage (ESP%), net acid production after oxidation and liming rate. The analytical data and the field records have been collated and interpreted to provide the following outputs, as presented in or appended to this Report:

- MS Excel master files containing the complete laboratory analytical dataset and the GIS co-ordinates of each borehole, in decimal degrees and GDA2020 co-ordinates, together with GIS shapefiles of the data
- Figures 1 - 5, which provide a visual representation of the distribution and severity of sodic and dispersive soils encountered across the PSP. The data are also summarised in Tables 3.1 and 3.2.

In summary, there are significant areas of high or extreme sodicity and potential dispersivity across the area, but no acid sulfate soils were encountered to depths of 3 m below ground level.

This Report also provides details of the methods used and particularly the criteria by which soils have been classified as sodic and/or dispersive, together with recommendations for further actions and for managing sodic soils.

1. INTRODUCTION

1.1 Background

The Victorian Planning Authority (VPA) has engaged Fyfe Pty Ltd to undertake an investigation to support the identification and management of risks from sodic/dispersive soils and acid sulfate soils within the Werribee Junction Precinct Structure Plan (PSP) area.

The precinct, which has a total area of 1,111 hectares, is located between the Princes Freeway and the Melbourne – Geelong passenger rail line approximately 32km southwest of the Melbourne CBD. The Melbourne Water Western Treatment Plant is located to the south of the precinct, on the opposite side of the Princes Freeway, but an area at the western end of the PSP, called the Northern Grasslands, is also owned by Melbourne Water. Part of the PSP is also occupied by an area owned by the City of Wyndham, comprising the Werribee Landfill and former and active quarries, which has been excluded from this investigation.

The Western Treatment Plant is an identified RAMSAR area (Western Shoreline of Port Phillip Bay), and the PSP area is transected by two natural waterways – Cherry Creek and Lollipop Creek. Both creeks are often dry for much of the year but can deliver significant flows to the Western Treatment Plant and Port Phillip Bay. As manager of the RAMSAR wetlands, Melbourne Water takes an active interest in the water flows and sediment loads that these creeks can deliver into the Treatment Plant site.

The bulk of the PSP's land use is proposed to be for commercial/industrial premises such as warehouses and distribution centres. Substantial earthwork will be required to provide the large, flat areas on which such buildings can be constructed, to raise certain areas beyond potential flooding levels, and to provide stormwater retention basins and stormwater management systems of adequate capacity. Because of their susceptibility to erosion, sodic and dispersive soils are of significant concern in the PSP area because:

- exposure of the soils to rainfall could lead to the soils swelling or dispersing and subsequent structural deformation causing failure of slab foundations, and
- creek flows would likely increase with the reduction in permeable areas due to the developments, and this water flowing past exposed soils could become heavily laden with silt and seriously impact the RAMSAR wetlands and Port Phillip Bay.

Similarly, acid sulfate soils (ASS), which can produce significant quantities of sulphuric acid after exposure to air, present a risk for site developers, because the acid produced can erode and weaken concrete and metal structures. In ASS, the acid is produced by the action of the oxygen in air on sulfide minerals such as iron pyrite and arsenopyrite that are naturally present in the soil. Victorian bedrock, particularly granite and basalt, is enriched in these sulfides, and erosion over millions of years has led to many coastal sediments being enriched in forms of these minerals that are highly susceptible to oxidation. Consequently, these 'acidogenic' soils are common in the Port Phillip Bay area, around the Victorian coastline and in and adjacent to river and creek lines.

Organisations such as CSIRO and the Victorian Department of Agriculture have conducted extensive soil investigations and mapping exercises across Victoria since the 1950s or even earlier.

Unfortunately, notwithstanding the agricultural importance of the Werribee area further to the east, very little information on soil attributes such as salinity, sodicity and dispersivity is publicly available and accessible for soils within the PSP, although limited data on ASS and acidogenic soils is provided by several State agencies.

Two investigations by Mayer and Martin (undated and 1979) do provide useful information about the soil types and characteristics in the Melbourne Water Western Treatment Plant (this report includes sodicity data) and in the area of the former State Research Farm, to the east of Werribee. With respect to acid sulfate soils (ASS), the PSP area is shown on CSIRO's Australian Soil Resources Information System (ASRIS) as ASS Class C4 – *Extremely low probability / Very low confidence*, whereas a large part of the Western Treatment Plant area is classed as ASS Class A1 – *High probability / High confidence*.

1.2 Purpose

VPA requires an investigation and report which provides the following:

- data which allows the presence, extent and severity of acid sulfate, sodic and dispersive soils across the PSP area to be identified
- advice regarding the management and mitigation of risks from sodic/dispersive and acid sulphate soils across the PSP
- visual representations of the data as maps and/or GIS shapefiles

Fyfe understands that VPA proposes to use the report's findings

- to inform the precinct's potential future land use and development
- to support Planning Panel hearings and other parts of the PSP establishment process and
- as the foundation for expert evidence to be presented as required to Planning Panels and Tribunal hearings.

2. METHODOLOGY

This Section describes the assumptions and technical framework underpinning the investigation and the results presented in this Report.

2.1 Definition and testing of Sodic, Dispersive and Acid Sulfate Soils

Fundamental to this investigation is an understanding of what sodic and dispersive soils and acid sulfate soils are, how they are identified and why they are of concern, specifically in a planning and site development context. Fyfe's approach is also to use rigorous quantitative measures and criteria in generating the soil dataset.

2.1.1 Sodic and dispersive soils

One descriptor of all soils is their Cation Exchange Capacity (CEC), which is the ability of the soil to hold cations such as sodium (Na^+), potassium (K^+), calcium (Ca^{2+}) and magnesium (Mg^{2+}) in a way that allows plants to access these cations as nutrients. CEC is thus related to the fertility of soils, and it is also an important factor in their physical structure and ability to retain their permeability in the presence of water.

Experience worldwide has shown that too high a proportion of sodium ion (Na^+) amongst the total exchangeable cations can lead to the weakening of bonds between soil particles when the soil is wetted, in turn leading to soil particles dispersing through and blocking the soil pores. This makes the soil susceptible to both waterlogging and erosion, with the eroding water becoming cloudy due to the now-suspended soil particles. The cause of these effects is referred to as 'sodicity', since, although Na^+ is involved, the effects differ from those of 'salinity', which relates to the level of Na^+ in the soil water. A readily-accessible summary of sodic and saline soils is provided in Rengasamy and Walters, 1994 – *Technical Note 1 – Introduction to soil sodicity*, published by the Cooperative Research Centre (CRC) for Soil and Land Management.

The most commonly adopted definition of sodic soils in Australia is that provided by Northcote and Skene (1972) - *Australian soils with saline and sodic properties*, published by the CSIRO Division of Soils. This 'definition' or sodicity rating is summarised in Table 2.1, below. This table also shows the correlation between sodicity rating and soil dispersion as revealed by the Emerson Dispersion Test (which is described in the **Testing** section after the table).

Table 2.1 The Northcote and Skene Sodicity Scale

Sodicity rating	Exchangeable sodium percentage	Emerson Dispersion test results
Non-sodic (or Low sodic)	<6	No dispersion evident after 24 hours. Aggregates slaked but not dispersed (milky) clay.
Slightly sodic	6–10	Dispersion (milky halo) evident after 24 hours. Soil aggregates slightly disperse.
Moderately sodic	11–15	Dispersion (milky halo) evident after several hours. Soil aggregates partially disperse.
Highly sodic	>15	Dispersion (milky halo) evident in less than 30 minutes. Soil aggregates completely disperse.

Testing for sodicity

Sodicity is most reliably determined by laboratory analysis for exchangeable Na^+ (as Exchangeable Sodium Percentage, or ESP %), which in turn requires quantitative analysis for soil pH, soil electrical conductivity, total CEC and the relative proportions of exchangeable Na^+ , K^+ , Ca^{2+} and Mg^{2+} . All these analyses are readily available from most NATA-accredited analytical laboratories.

Testing for dispersivity and dispersivity risk (R_d)

Unfortunately, equivalent quantitative laboratory analyses for dispersivity are not commonly available or offered by commercial, NATA-accredited laboratories. The most direct semi-quantitative demonstration of dispersivity is provided by the Emerson Dispersivity Test described in Emerson (1967) - *A classification of soil aggregates based on their coherance in water*. In the Emerson Test, small crumbs of the soil are placed into a petri dish containing distilled water, left undisturbed and observed over time. The outcome, scored as described in Table 2.1 above, can be visually striking, as shown in Figure 2.1:



Image from <https://www.agric.wa.gov.au/dispersive-and-sodic-soils/identifying-dispersive-sodic-soils>

Figure 2.1 Results of the Emerson Dispersion Test

However, because the result depends on both the time elapsed and the lateral extent of the 'milky halo' this test is semi-quantitative at best, time-consuming and subjective, meaning that obtaining reliable dispersivity scores can be difficult unless the tests are all undertaken by the same person and generally at the same time. Consequently, Fyfe has not undertaken Emerson testing for this project, but has rather relied upon NATA-accredited quantitative analytical data including ESP % and soil pH.

Instead, we have adopted a simple indicator of dispersivity risk (R_d) that is premised on the observation that the dispersivity of sodic soils is related to the degree of alkalinity, as described in Rengasamy, North and Smith (2010) - *Diagnosis and management of sodicity and salinity in soil and water in the Murray Irrigation region*. As can be seen from Figures 2 - 5 in Appendix A, using the following relationship:

$$\text{Dispersivity risk } (R_d) = [\text{ESP}\%] \times [\text{pH}]$$

allows apparently subtle differences in sodicity expressed as ESP % to be distinguished in terms of the risk that these soils will be dispersive, noting also that both ESP % and soil pH are reliably and reproducibly quantifiable.

2.1.2 Acid sulfate soils

As described in EPA Publication **655.1 – Acid sulfate soil and rock**, acid sulfate soils contain elevated levels of metal sulfides and are likely to produce sulphuric acid on exposure to air. Because many of the rocks underlying Victoria are naturally enriched in metal sulfides, the sediments arising from millennia of erosion of these rocks contain high levels of potentially acidogenic material, and tend to be concentrated in coastal and riverine environments – for example, the Yarra River estuary and the western coast of Port Phillip Bay, where the Werribee River, Lollipop Creek and Little River all discharge, are known to host extensive deposits of acid sulfate soils.

Because of their susceptibility to oxidation, natural undisturbed acid sulfate soils tend to be found in less-oxygenated or anoxic strata in the soil profile, often saturated with water and/or at depth. In this study, only the deepest sample from each borehole was analysed for acidogenic potential. Further, as agreed with VPA, the greatest depth of investigation was 3 m bgl.

Testing for Acid Sulfate Soils

Two well established laboratory analyses for acid sulfate potential in soils are readily available – the suspension peroxide oxidation combined acidity sulfur (SPOCAS) test and the chromium-reducible sulfur (S_{Cr}) test, both of which are described in the **AS4969** series of Standards for *Analysis of acid sulfate soil*. Both methods determine how much oxidisable sulphur is present and how much acid can be produced under standard oxidising conditions.

In both methods, the key outputs are the net amount of hydrogen ion (mol H^+) released per tonne of soil, the percentage of oxidisable sulphur in the soil and the liming rate, the amount of agricultural lime (CaCO_3) required to neutralise the acidity that could be produced. Both methods yield similar results but perform better for different soil types, so Fyfe has used both methods to investigate the soils across the study area.

2.2 Field investigation

2.2.1 Investigation design and assumptions

The original Request for Tender from VPA suggested that the investigation be based on 44 locations on a square 500 m by 500 m grid across the entire Werribee Junction PSP area. However, it was subsequently agreed that the land parcel shown as 'Quarry and landfill area' on Wests Road in Figure 1 in Appendix A should be excluded from the study. Further, many of the locations were contingent on landholder approval being forthcoming.

As shown by the ground level contours in Figure 1 in Appendix 1, the whole PSP area is largely flat, with a slight gradient (approximately 1:200) downwards to the southeast. Both Cherry Creek and Lollipop Creek (and their smaller tributaries) meander across the area in shallow swales, suggesting that these ephemeral waterways may have been following courses through soils that were more susceptible to dispersivity erosion rather than 'kinetic' erosion due simply to the hydraulic effects of water flow. Accordingly, Fyfe considered that there would be benefit in biasing the sampling slightly towards these creek lines. In addition, in order to commence data gathering as soon as possible, it was considered preferable to sample along road reserves in the first instance. This also had the advantage of allowing repeated sampling along and close to Lollipop Creek, which is crossed by Browns Road at least five times.

2.2.2 Soil sampling

Ultimately, 53 boreholes were drilled across the PSP area, as shown in Figure 1, providing a coverage approximating 'random stratified distribution' as described in **AS4482.1:2005 – Guide to the investigation and sampling of sites with potentially contaminated soils**, and therefore likely to provide a statistically valid sample of the area's soils.

By agreement with VPA, bores were advanced to depths of between 1 m (28 bores) and 3 m (25 bores) using a hand auger or a solid auger mounted on a 4WD utility, with soil samples collected at approximately 0.5 m intervals down the soil profile. Drilling and sampling methods were in general accordance with AS4482.1:2005 and **AS1726:1993 – Geotechnical site investigations**.

The soil profile at each borehole was logged in accordance with AS1736:1993 and the position of the hole was determined as latitude and longitude in decimal degrees using a Garmin GPSMAP 66 hand-held GPS receiver.

Soil samples were collected into clean 250 gm glass sample jars provided by the laboratory and stored in chilled containers until they were delivered to the laboratory, Eurofins in Dandenong South, under Chain of Custody protocols and accompanied by an Analytical Request form. Eurofins is NATA-accredited for all analyses requested.

2.2.3 Soil analysis

All samples collected were submitted to the laboratory for analysis and/or storage under appropriate conditions in case additional analysis is required. As shown on the Chain of Custody and Analytical request forms in Appendix B, selected samples from each borehole were analysed for the following:

- Eurofins Suite B20 (Electrical conductivity/CEC/ESP/cations – Na, K, Ca, Mg);
- Soil pH;
- Acid production potential, determined by either the SPOCAS acid sulfate suite or the Chromium-reducible acid sulfate suite.

3. RESULTS

3.1 Data collected

The results, including borehole locations in GDA2020 co-ordinates, apparent soil types and horizon depths, sodicity parameters (CEC, ESP% and dispersivity risk score), and soil pH and acid sulfate parameters, are summarised in **Tables 3.1 and 3.2** on the following pages. The same data is represented graphically in Figures 2 to 5 in Appendix A.

The geotechnical bore logs are presented in Appendix B, while the analytical laboratory's Certificates of Analysis and attendant documentation are presented in Appendix C.

In addition, the following data files have been compiled and have been made available in digital form with this report:

- *Werribee_Junction_PSP_bores_summary_v2.xlsx* (this is the data file for Tables 3.1 and 3.2)
- *Werribee_Junction_PSP_all_analytical_data.xlsx* and *Werribee_Junction_MW_holes_914138_data_Aug22.xlsx* (editable versions of all the analytical data in the laboratory reports)
- *Werribee_Junction_PSP_bores.kmz* and *Werribee_Junction_Aug2022_MelbW_bores.kmz* (Google Earth files showing all the borehole locations)
- *VPA_Werribee_Junction_data.zip* (a zipped folder of GIS heatmap shapefiles etc showing the boreholes)

3.2 Findings

3.2.1 Sodicity and Dispersivity

As can be seen from Figures 2 to 5, sodic and potentially dispersive soils are widespread across the Werribee Junction PSP area. While there may be some variation in the lateral distribution of exchangeable sodium percentage values, the majority of samples collected should be classified as moderately to highly sodic. It would appear from the available borehole and analytical data that sodic soils in the area extend to depths of at least 2 m bgl or deeper.

While not a widely recognised measure of dispersivity, the dispersivity risk score **Rd** is useful for highlighting where sodic soils may be more prone to erosion by fresh water, based on the known propensity of more alkaline sodic soils to disperse structural collapse, as described by Rengasamy *et al* (2010).

Figures 2 to 5 also show that the most sodic soils are not concentrated along the watercourses. It is possible that, because the major creeks have followed these waterways for many years, leaching of the sodium ion from the nearby soil has occurred, thereby reducing the original sodicity.

3.2.2 Acid sulfate Soils

To summarise the analytical data and Table 3.1, no soils meeting the standard description of acid sulfate soils as described in EPA Publication **655.1 – Acid sulfate soil and rock** were encountered in any of the 53 bores drilled across the Werribee Junction PSP area. At locations 39 and 40 only, levels of lime required to neutralise the soil, and the amount of acid produced on oxidation were both marginally above the detection limits of the methods, but well below levels considered to indicate acidogenic potential.

Table 3.1 Sodicity and dispersivity results by borehole

Victorian Planning Authority
WERRIBEE JUNCTION PSP

DATA SUMMARY
Soil sodicity and acid sulfate



WERRIBEE - WESTS ROAD				SOIL PROFILE		SOIL CHEMISTRY					ACID SULFATE	
BORE ID	LATITUDE (Decimal degrees)	LONGITUDE	GDA 2020 MGA ZONE 55 EASTING NORTHING	SOIL Type	A' Horizon thickness	Soil pH	CEC meq/100g	SODICITY ESP %	DISPERSION Risk Score	kg CaCO3/t Mol H+/t		
1	37.936697	144.576567	287030.639 5798438.609	CH	0.40	8.6	50	16	138	<1	<10	
2	37.939686	144.574089	286821.482 5798101.234	CH	0.40	8.4	26	34	286	<1	<10	
3	37.939433	144.570592	286513.404 5798121.299	CH	0.40	6.9	35	42	290	<1	<10	
4	37.942331	144.572161	286659.685 5797803.288	CH	0.30	8.6	20	34	292	<1	<10	
5	37.944276	144.577855	287165.719 5797600.472	CH	0.55	8.1	38	33	267	<1	<10	
6	37.940308	144.585353	287813.248 5798057.934	CH F	≤0.40	8.8	33	30	264	<1	<10	
7	37.941197	144.593142	288500.354 5797976.997	CH F	≤0.60	8.6	46	18	189	<1	<10	
8	37.943144	144.597879	288922.245 5797771.678	CH R	≤0.40	8.6	24	13	112	<1	<10	
9	37.943217	144.602931	289366.444 5797775.017	CL R	≤0.70	7.4	18	24	178	<1	<10	
10	37.940622	144.607659	289774.561 5798073.681	CL F	≤0.30	5.9	16	3.1	18	<1	<10	
11	37.938392	144.611552	290110.359 5798329.936	CL F	≤0.30	6.3	16	13	82	<1	<10	
12	37.935723	144.616232	290514.101 5798636.665	CL F	≤0.20	8.6	11	10	86	<1	<10	
13	37.934480	144.617483	290620.526 5798777.419	CL F	≤0.30	7.7	7	20	154	<1	<10	
14	37.932798	144.617772	290641.154 5798964.728	CL F	≤0.20	8.6	13	26	224	<1	<10	
15	37.930093	144.618374	290686.393 5799266.267	CL F	≤0.20	6.9	23	13	90	<1	<10	
16	37.926292	144.619022	290732.571 5799689.536	CL F	≤0.20	6.1	16	3.5	20	<1	<10	
17	37.921613	144.619890	290795.606 5800210.735	CL F	≤0.30	5.9	19	8.3	49	<1	<10	
18	37.919127	144.620307	290825.218 5800487.553	CL	>3.00	6.6	20	22	145	<1	<10	
19	37.941572	144.580725	287410.148 5797907.106	CH	0.40	8.9	43	2.4	21	<1	<10	
20	37.943042	144.582136	287538.391 5797747.192	CH	0.60	9.0	56	18	162	<1	<10	
21	37.945231	144.583550	287668.963 5797507.493	CH	0.60	8.4	25	34	286	<1	<10	
22	37.948342	144.587000	287981.101 5797170.111	CH	0.60	9.1	56	19	173	<1	<10	
23	37.946981	144.591825	288401.207 5797332.125	CH	0.40	7.7	40	28	216	<1	<10	
24	37.944961	144.590939	288317.546 5797554.281	CH	0.60	8.5	24	31	264	<1	<10	
25	37.943403	144.590361	288262.276 5797725.866	CH	0.40	6.7	39	26	174	<1	<10	
26	37.950936	144.582361	287580.909 5796871.666	CH	0.60	8.9	37	28	249	<1	<10	
27	37.949789	144.579950	287365.734 5796993.451	CH	0.40	8.5	41	31	264	<1	<10	
28	37.928514	144.613381	290243.022 5799430.263	CL	0.60	6.1	11	2.3	14	<1	<10	
29	37.924328	144.613319	290225.671 5799894.663	CL	0.60	7.4	26	19	141	<1	<10	
30	37.924214	144.611622	290076.170 5799903.491	CL	0.60	8.6	26	31	267	<1	<10	
31	37.925314	144.610061	289942.079 5799777.900	SC	0.40	6.3	6	0.1	10	<1	<10	
32	37.918908	144.613931	290264.066 5800497.522	CL	1.20	6.9	16	36	248	<1	<10	
33	37.927267	144.616489	290512.678 5799575.643	CL	1.20	8.4	16	3.6	30	<1	<10	
34	37.927892	144.618053	290651.932 5799509.800	CL	0.50	8.2	16	13	107	<1	<10	
35	37.930678	144.617383	290600.945 5799199.119	CH	0.60	8.7	14	9.8	85	<1	<10	
36	37.929140	144.614582	290350.370 5799363.497	CH	0.45	6.1	16	3.3	20	<1	<10	
37	37.939742	144.604594	289502.676 5798164.415	CH	0.55	5.8	10	4	23	<1	<10	
38	37.936069	144.603394	289386.722 5798569.312	CH	0.55	6.9	17	3.8	26	<1	<10	
39	37.932136	144.603236	289361.604 5799005.418	CH	0.55	5.8	10	1.5	9	1	12	
40	37.933872	144.601372	289202.725 5798808.549	CL	0.30	5.4	12	13	70	1.1	14	
41	37.935531	144.600211	289105.422 5798621.813	CL	0.30	8.7	22	27	235	<1	<10	
42	37.938083	144.600622	289148.842 5798339.536	CL	0.55	6.9	15	20	138	<1	<10	
43	37.939564	144.600131	289109.923 5798174.070	CL	0.60	7.0	11	12	84	<1	<10	
44	37.941603	144.597851	288915.374 5797942.627	CL F	0.40	9.0	49	6.4	58	<1	<10	
M1	37.945754	144.595795	288746.573 5797477.306	CH	2.0	6.5	37	6.5	42	<1	<10	
M2	37.947197	144.593556	288553.946 5797312.087	CH	0.8	7.4	510	12	89	<1	<10	
M3	37.946155	144.594412	288626.183 5797429.667	CH	0.8	8.7	1200	21	183	<1	<10	
M4	37.934770	144.605030	289526.807 5798717.167	CH	2.0	8.0	680	15	120	<1	<10	
M5	37.935797	144.603954	289435.165 5798600.763	CH	0.6	7.9	850	11	87	<1	<10	
M6	37.919997	144.622955	291060.473 5800396.947	CH	2.7	8.7	880	25	218	<1	<10	
M7	37.918646	144.624769	291216.123 5800550.940	CH	>3	9.2	76	26	239	<1	<10	
M8	37.931408	144.620160	290847.109 5799124.348	CH	1.0	7.7	440	7.6	59	<1	<10	
M9	37.932852	144.620401	290872.386 5798964.642	CH	0.4	9.4	590	13	122	<1	<10	
SOIL TYPE & CLASSIFICATION: CL - Low-plasticity clays CH - Highly-plastic clays SC - Sandy clays, clayey sands F - Fill / imported soil R - Reworked local soil SODICITY RANKING: Non-sodic (ESP <6%) 4 Slightly sodic (ESP 6-10%) 7 Moderately sodic (ESP 11-15%) 14 Highly sodic (ESP >15%) 20 DISPERSIVITY RANKING: Low dispersive risk 50 Moderate disp risk 150 High dispersive risk 250 Dispersion risk = [ESP%] x [pH] ACID SULFATE: Not ASS: Trace acid: Bores identified as M1 - M9 are reported as SB1 - SB9 in August 2022 laboratory data												

Table 3.2 Sodicity and dispersivity results by depth

Victorian Planning Authority
WERRIBEE JUNCTION PSP

SODICITY RATING and DISPERSIVITY RISK
as a function of DEPTH

FYFE

Sample ID	Sample Depth	SODICITY ESP%	SOIL pH	DISPERSIVITY RATING (Rd)
3C	1.00	38.0	6.9	290
3F	2.50	42.0		
3G	2.70			
5E	2.00	33.0	8.1	267
5F	2.50	33.0		
5G	3.00			
6A	0.10	9.0	8.8	264
6B	0.50	30.0		
6C	1.00			
7B	0.50	6.3	8.6	189
7E	1.00	18.0		
7H	2.50	22.0		
7I	3.00		8.6	112
8A	0.10	3.3		
8B	0.50	13.0		
8C	1.00		8.6	86
12A	0.10	7.2		
12B	0.50	10.0		
12C	1.00		7.7	154
13B	0.50	12.0		
13D	1.50	20.0		
13G	3.00		6.9	90
15B	0.50	5.1		
15D	1.50	13.0		
15E	2.00	13.0	6.1	20
15F	2.50			
16B	0.50	3.5		
16F	2.50	3.2	6.6	145
16G	3.00			
18A	0.10	8.9		
18D	1.50	22.0	7.7	193
18F	2.50			
23C	1.00	28		
23D	1.80	25	8.6	267
23E	3.00			
30D	2.00	31		
30E	3.00	21	6.9	248
32D	2.00	36		
32E	3.00	31		
39B	0.50	0.1	5.8	1
39C	1.00	1.5		
M2 (SB2_0.15)	0.15	7.7		
M2 (SB2_1.1)	1.10	12	6.5	78
M6 (SB6_0.15)	0.15	11		
M6 (SB6_1.5)	1.50	25		
M7 (SB7_1.5)	1.50	17	7.3	124
M7 (SB7_3.0)	3.00	26		

SODICITY RANKING:

Non-sodic (ESP <6%)	4
Slightly sodic (ESP 6-10%)	7
Moderately sodic (ESP 11-15%)	14
Highly sodic (ESP >15%)	20

DISPERSIVITY RANKING:

Low	50
Moderate	150
High	250

Rd = [ESP%] x [pH]

Distribution_with_depth

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Based on the Exchangeable Sodium Percentage (ESP%) results for soil samples from 53 boreholes drilled to depths of up to 3 m bgl on a random stratified grid pattern across the area, the soils within the Werribee Junction PSP must be classified as moderately to extremely sodic. On the other hand, at least to depths of around 3 m bgl, no acid sulfate soils were encountered.

Soils at eight locations are non-sodic, six locations have slightly sodic soil, a further seven have moderately sodic soil while there are 32 locations with highly to extremely sodic soils. There is no clear relationship between sodicity and depth in the soil profile, and it is difficult to make a robust prediction based on the results obtained as to the likelihood of sodicity or dispersivity at any given location. Rather, it may be more helpful to assume that there will be a potential for sodic and dispersive soils to be present at any location within the PSP area.

These findings are consistent with the findings of Maher and Martin (undated), who surveyed soils within the MMBW sewerage farm (now known as the Melbourne Water Western Treatment Plant). It appears that the soils on this area of the Werribee Plains are considerably more sodic than those within the former State Research Farm, which was located on the east side of Werribee, but still within the Werribee River catchment (see Maher and Martin, 1979).

Given the extent of sodic and potentially dispersive soils across the PSP area, Fyfe considers that further soil surveying for sodicity may not be particularly helpful in the development of the PSP. Rather, as discussed below, any earthworks in the area should adopt measures to minimise dispersive impacts.

4.2 Recommendations

Given the widespread occurrence of sodic soils across the Werribee Junction PSP area, Fyfe recommends that:

- Further investigations of soil sodicity, as field surveys or even additional analysis of samples already collected, need not be undertaken, unless VPA needs detailed and specific information about a targeted area, when a high-resolution investigation (for example, boreholes at 25 m intervals, samples collected at 300 mm depth increments to target depth) would probably be a suitable approach, which might be adopted at locations where stormwater retention basins and similar structures are planned.
- As the main problem with sodic soil is its tendency to disperse and erode when exposed to wet weather, it would be prudent to ensure that
 - all proposed earthworks within the PSP are scheduled and carried out as far as practicable at times when there is minimal risk of rain;
 - no earthworks are permitted unless the works are conducted in accordance with a VPA-approved Earthworks Management Plan which includes appropriate erosion and sedimentation controls;
 - suitable erosion and sediment controls are implemented wherever soil is exposed, particularly where surface slopes are greater than the angle at which run-off exceeds the infiltration capacity of the soil;
 - finished exposed soil surfaces are planted with suitable species designed to minimise over-surface water flow, or with 'instant turf', or are covered with other suitable erosion-minimising materials;

-
- works exposing soil be undertaken only when suitable erosion-control measures, such as erosion-control matting and alginate-based soil stabilisation / dust suppression treatments (for example) are available for immediate application in the event of unexpected bad weather;
 - drainage pathways through and out of the PSP area are designed and constructed to minimise erosion and equipped with suitable sediment traps / sedimentation basins, possibly including constructed wetlands, with the overall aim of reducing hydraulic flows and sediment transport into the Melbourne Water Western Treatment Plant and the RAMSAR wetlands to the south of the PSP.

Fyfe considers that despite the widespread presence of highly sodic and potentially dispersive soil across the PSP area, management measures are available that would enable the Werribee Junction PSP to be developed for its proposed commercial industrial uses. These measures should include approaches and design features that both minimise the energy of water flows across the surfaces and minimise (and ideally, prevent) the formation and transport of sediment from exposed soil surfaces.

We also understand that one of the drivers for this survey is the expectation that significant flood mitigation and stormwater management works, including large retention basins, will be required, because the proposed commercial/industrial development will radically alter stormwater flows and flow energies across the PSP area. The findings of the survey reported here imply that earthworks for these structures will clearly intersect and expose potentially dispersive soils, and will therefore need to be conducted under plans developed with the properties of these soils in mind, with the aim of mitigating whatever sodicity and dispersivity is present at the proposed location.

5. REFERENCES

The following documents have been referred to during the preparation of this Report:

- Australian Standard **AS1726:1993** – *Geotechnical site investigations*
- Australian Standard **AS4482.1:2005** – *Guide to the investigation and sampling of sites with potentially contaminated soils.*
- Australian Standard **AS4969.7:2008** - *Analysis of acid sulfate soil - Dried samples - Methods of test: Determination of chromium reducible sulfur (SCR) (Reconfirmed 2018)*
- Australian Standard **AS4969.12:2009** - *Analysis of acid sulfate soil - Dried samples - Methods of test: Complete suspension peroxide oxidation combined acidity and sulfur (SPOCAS) method (Reconfirmed 2018)*
- Chartres, C.J., 1993: 'Sodic soils: an introduction to their formation and distribution in Australia'. *Australian Journal of Soil Research*, **31**: 751-760.
- Emerson, W. W. (1967). 'A classification of soil aggregates based on their coherence in water'. *Australian Journal of Soil Research*, **5**: 47-57
- Emerson, W.W. and Bakker, A.C., 1973: 'The comparative effects of exchangeable calcium, magnesium, and sodium on some physical properties of red-brown earth subsoils. II. The spontaneous dispersion of aggregates in water'. *Australian Journal of Soil Research*, **11**: 151-157.
- Isbell, R.F., 1995: 'The use of sodicity in Australian soil classification systems'. Pages 41-45 in Naidu, R., Sumner, M.E. and Rengasamy, P. (eds) '*Australian Sodic Soils - Distribution, Properties and Management*'. CSIRO Australia, East Melbourne.
- Maher, J. M. and Martin, J. J., undated: '*Soils of the M.M.B.W. farm, Werribee.*' Research Project Series No. 41, Victorian Department of Agriculture. ISSN 0313-4652, ISBN O 7241 8008 7.
- Maher, J. M. and Martin, J. J., 1979: '*Soil and land survey of the State research farm, Werribee.*' Research Project Series No. 42, Victorian Department of Agriculture.
- Northcote, K.H. and Skene, J.K.M., 1972: '*Australian soils with saline and sodic properties.*' CSIRO Australia, Division of Soils Soil Publication No. 27.
- Rengasamy, P. and Walters, P., 1994 – *Technical Note 1 – Introduction to soil sodicity*, published by the Cooperative Research Centre (CRC) for Soil and Land Management.
- Rengasamy, P., North, S. and Smith, A., 2010. *Diagnosis and management of sodicity and salinity in soil and water in the Murray Irrigation region*. The University of Adelaide, SA.
- Sumner, M.E., 1993: 'Sodic soils: new perspectives.' *Australian Journal of Soil Research* **31**: 683-750.
- Victorian EPA, 2009. Publication **655.1**. 'Information Bulletin – *Acid sulfate soil and rock*'.

6. LIMITATIONS

The opinions and conclusions presented in this report are specific to the conditions of the land and the state of legislation currently enacted as at the date of this report. Fyfe does not make any representation or warranty that the opinions and conclusions in this report will be applicable in the future as there may be changes in the condition of the site, applicable legislation or other factors that would affect the opinions and conclusions contained in this report.

Fyfe has used the degree of skill and care ordinarily exercised by reputable members of our profession practising in the same or similar locality. This report has been prepared for the Victorian Planning Authority, for the specific purpose identified in the report. Fyfe accepts no liability or responsibility to any third party for the accuracy of any information contained in the report or any opinion or conclusion expressed in the report. Neither the whole of the report nor any part or reference thereto may be in any way used, relied upon or reproduced by any third party without Fyfe's prior written approval. This report must be read in its entirety, including all tables, figures and attachments.

APPENDIX A
PLANS SHOWING BOREHOLE LOCATIONS AND FINDINGS



BOREHOLE LOCATION AND FINDINGS PLANS

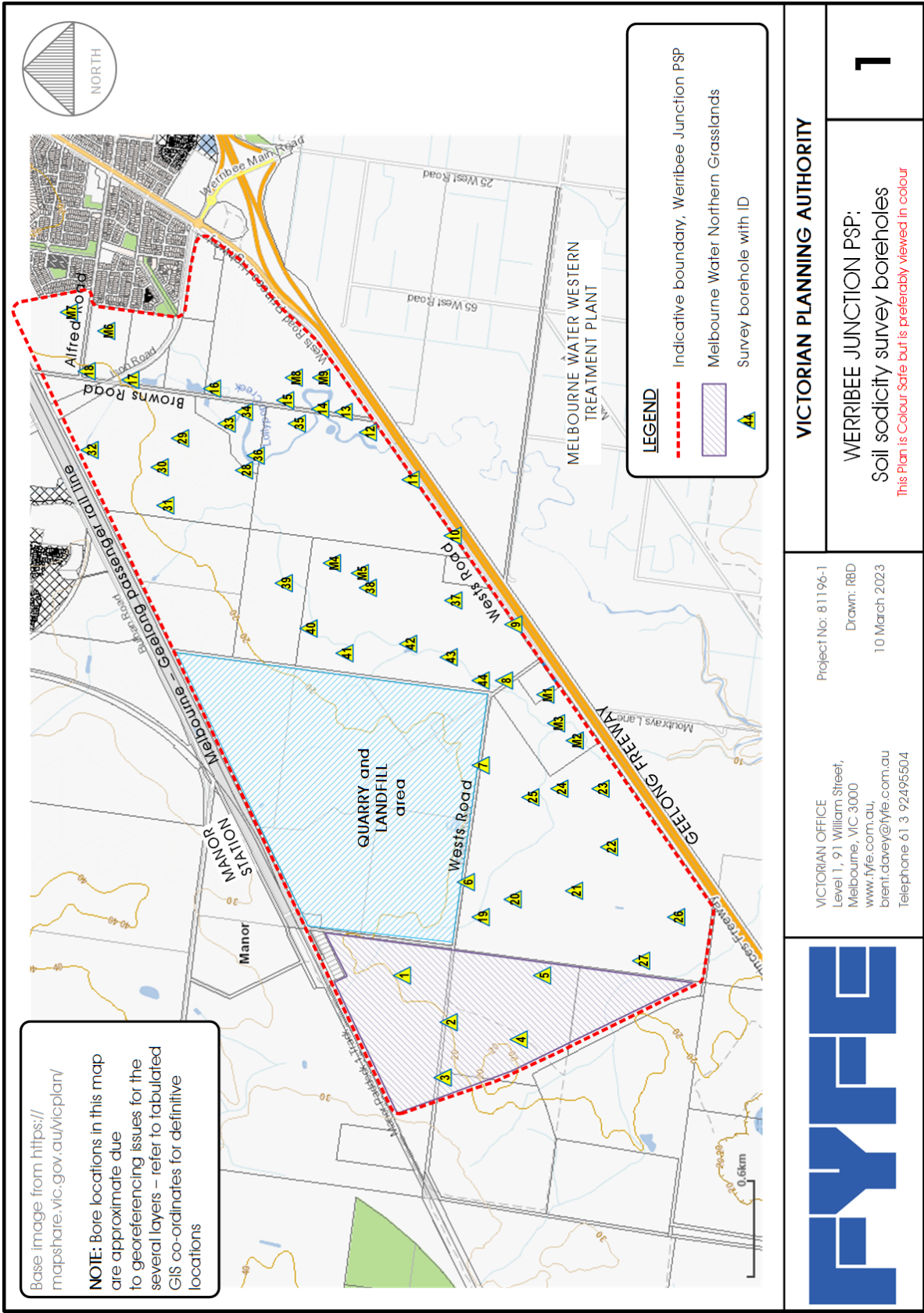
Figure 1 – Soil sodicity survey boreholes

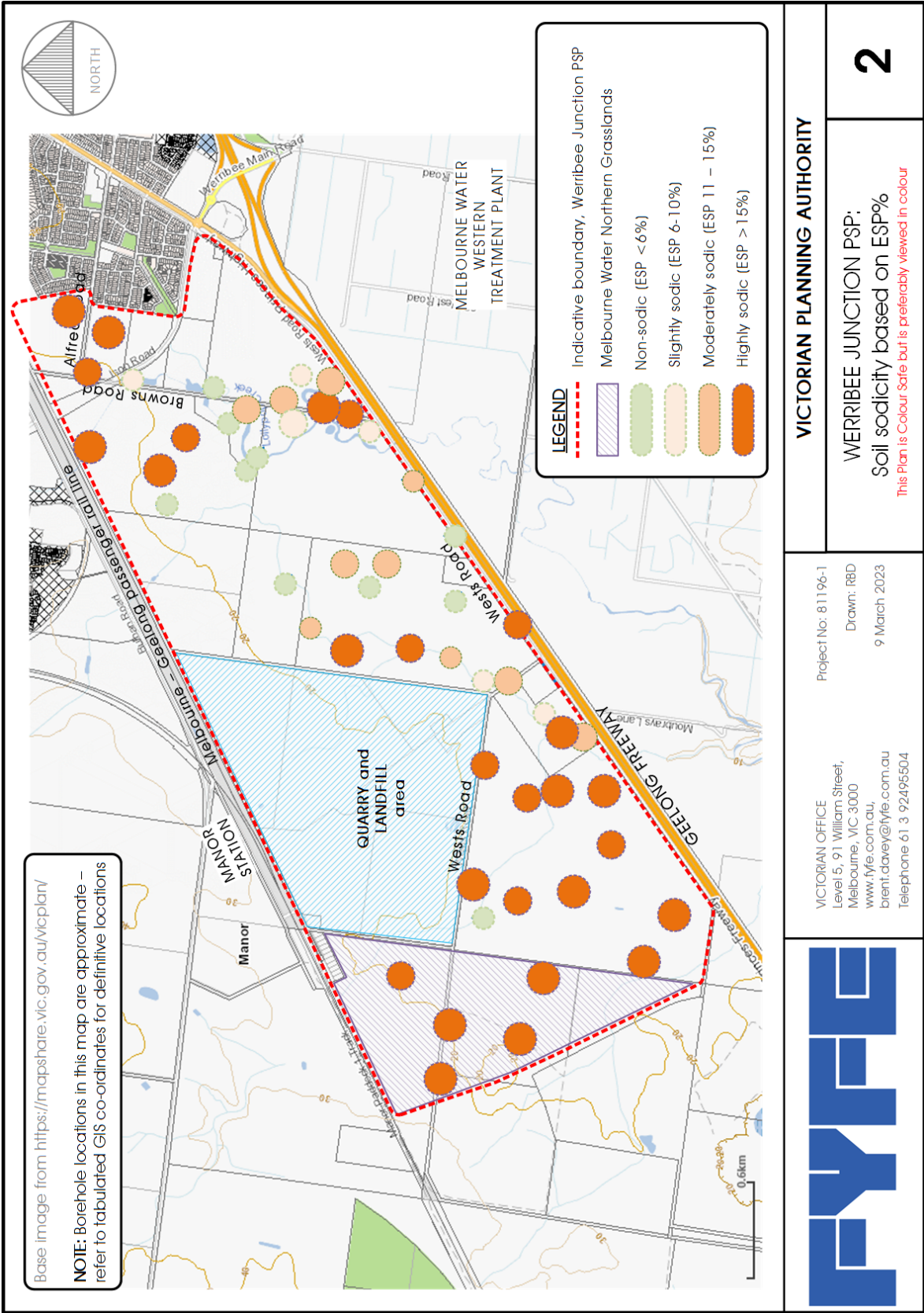
Figure 2 – Soil sodicity based on ESP %

Figure 3 – Soil dispersivity risk

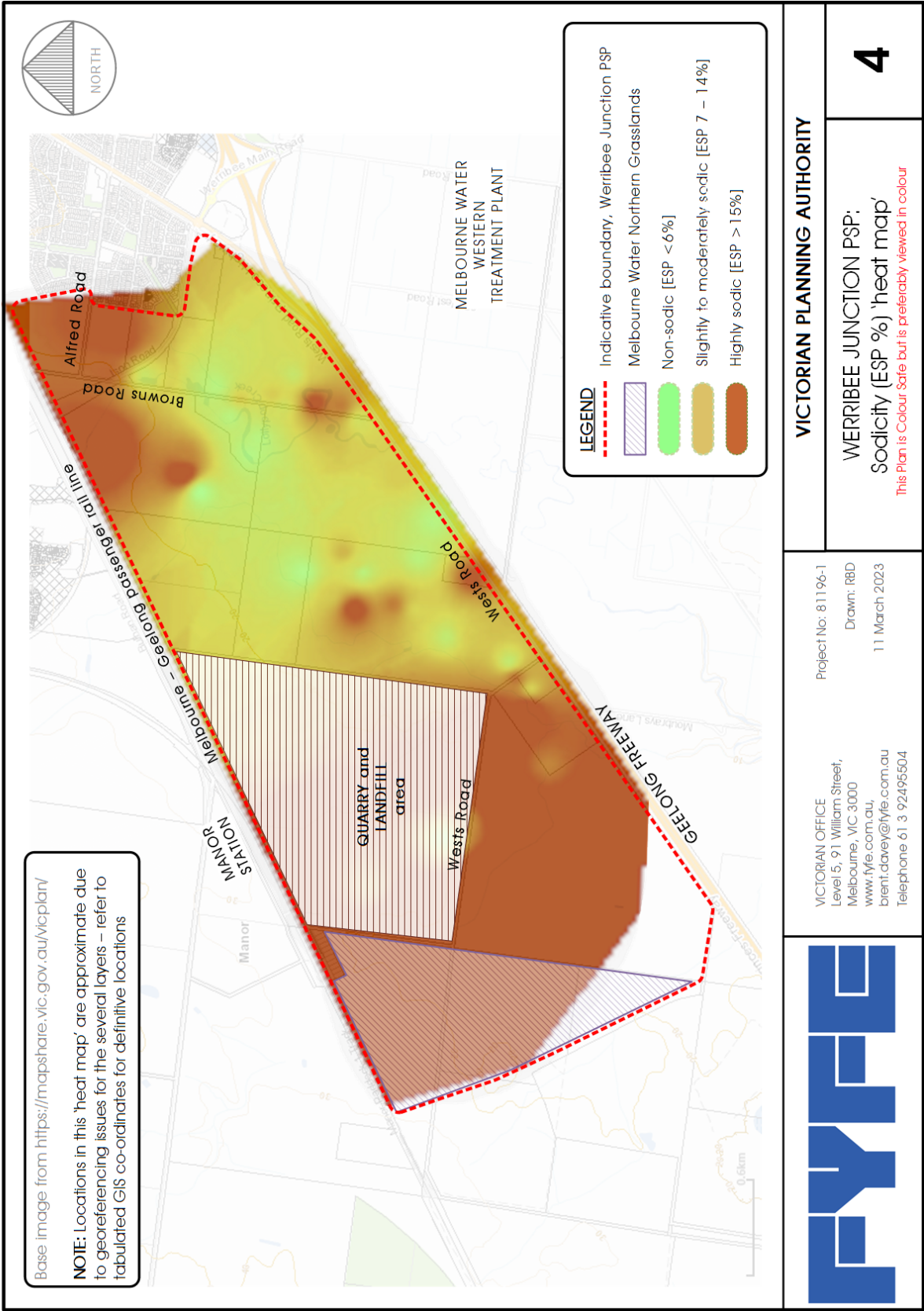
Figure 4 – Sodicity (ESP %) ‘heat map’

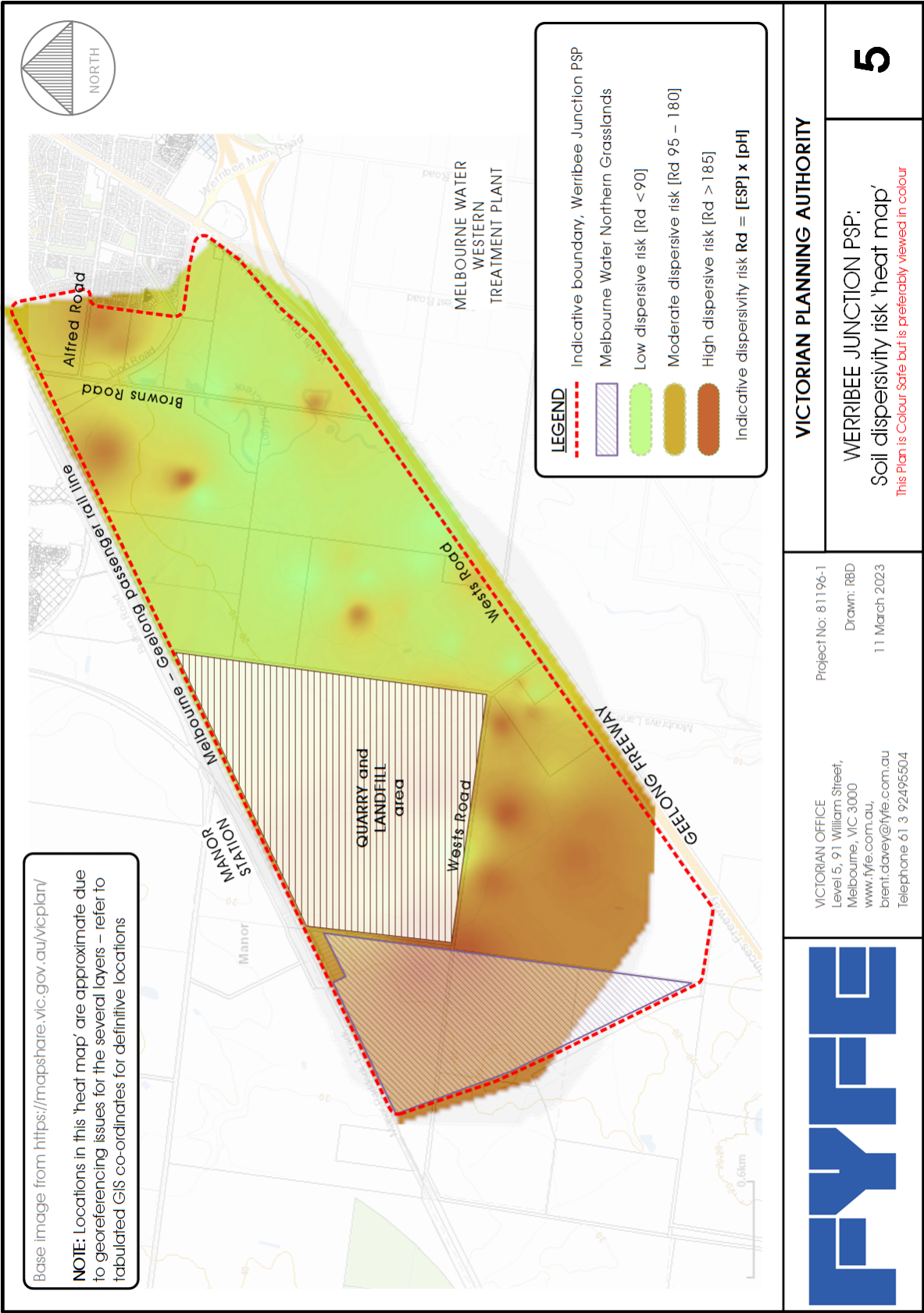
Figure 5 – Soil dispersivity risk ‘heat map’











APPENDIX B
GEOTECHNICAL DRILLING REPORT AND BORELOGS



TEST LOCATION PLAN

WESTERN TREATMENT PLANT BULBAN ROAD WERRIBEE



☛ Denotes Borehole Location

NOT TO SCALE

THIS STETCH IS NOT INTENDED TO BE AN
ACCURATE DEPICTION OF THE NUMBER, SIZE OR
LOCATION OF TREES AND/OR SHRUBS

CIVIL *TEST* PTY. LTD.

TEST LOCATION PLAN

WESTERN TREATMENT PLANT BULBAN ROAD WERRIBEE



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TEST LOCATION PLAN

WESTERN TREATMENT PLANT BULBAN ROAD WERRIBEE



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NOT TO SCALE

THIS STETCH IS NOT INTENDED TO BE AN
ACCURATE DEPICTION OF THE NUMBER, SIZE OR
LOCATION OF TREES AND/OR SHRUBS

DATE: 27-JAN-2022

DRILLING METHOD: Land Cruiser Mounted Rig

PROJECT LOCATION: Western Treatment Plant Bulban Road WERRIBEE

[illegible]

ENGINEERING LOG

REPORT NO. 1220039-1

BOREHOLE NO. 11

DATE: 27-JAN-2022

FIELD TECHNICIAN: MC

DRILLING METHOD: Land Cruiser Mounted Rig

PROJECT LOCATION: Western Treatment Plant Bulban Road WERRIBEE

DEPTH (m) NOT TO SCALE	STRATA DESCRIPTION	NOTES	GRAPHIC LOG	TESTING					
				DEPTH (m) NOT TO SCALE	RESULTS				
					DCP Blows/100mm	FIELD CBR (%)	SPT	MC (%)	PP (kg/cm²)
0.2	FILL , CLAY, silty, trace gravel Brown; Dry to moist; Stiff								
0.7	CL CLAY, silty, trace gravel Brown; Dry to moist; Firm to stiff Gravel is rounded, fine grained								
2.5	CL CLAY, silty, trace gravel Orange brown; Moist to wet; Stiff Gravel is rounded, fine grained More moist with depth wet from 2.3m to 2.4m	PWL@2.4m ▼							
3.0	CL CLAY, silty, trace gravel Orange brown; Moist; Stiff Gravel is rounded to sub-rounded, fine grained								
	END OF BORE (27-Jan-2022)								

ENGINEERING LOG

REPORT NO. 1220039-1

BOREHOLE NO. 13

DATE: 27-JAN-2022

FIELD TECHNICIAN: MC

DRILLING METHOD: Land Cruiser Mounted Rig

PROJECT LOCATION: Western Treatment Plant Bulban Road WERRIBEE

DEPTH (m) NOT TO SCALE	STRATA DESCRIPTION	NOTES	GRAPHIC LOG	TESTING					
				DEPTH (m) NOT TO SCALE	RESULTS				
					DCP Blows/100mm	FIELD CBR (%)	SPT	MC (%)	PP (kg/cm²)
0.3	FILL , SAND, silty, with clay Brown; Moist; Medium dense		▼▼▼▼						
			▼▼▼▼						
0.7	CL CLAY, silty, trace sand Brown; Moist; Firm Sand is rounded, fine grained								
2.8	CL CLAY, silty, with sand Orange brown; Moist; Firm Sand is rounded, fine grained More moist with depth wet at 2.4m								
3.0	CL CLAY, silty, with sand Orange brown; Moist; Firm Sand is rounded, fine grained								
	END OF BORE (27-Jan-2022)								
		</							

ENGINEERING LOG

REPORT NO. 1220039-1

BOREHOLE NO. 44

DATE: 01-FEB-2022

FIELD TECHNICIAN: MC

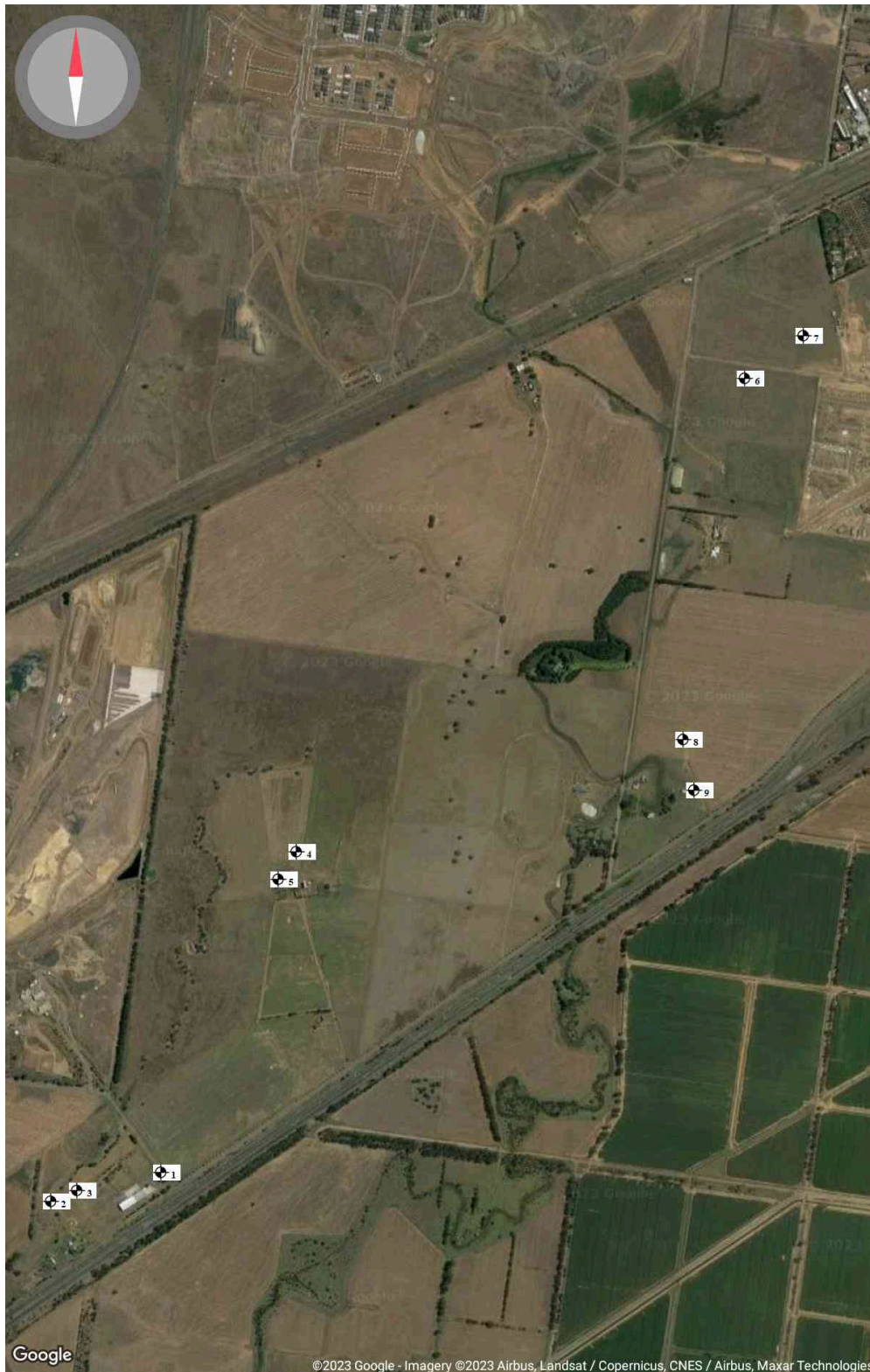
DRILLING METHOD: HiLux Mounted Rig

PROJECT LOCATION: Western Treatment Plant Bulban Road WERRIBEE

DEPTH (m) NOT TO SCALE	STRATA DESCRIPTION	NOTES	GRAPHIC LOG	TESTING					
				DEPTH (m) NOT TO SCALE	RESULTS				
					DCP Blows/100mm	FIELD CBR (%)	SPT	MC (%)	PP (kg/cm²)
0.4	FILL , CRUSHED ROCK, clayey Grey brown; Moist; Dense		▼▼▼▼						
			▼▼▼▼						
0.6	CL CLAY, silty, trace gravel Red brown; Moist; Stiff Gravel is rounded, fine grained								
1.8	CL CLAY, silty, trace gravel Brown mottled grey; Moist; Stiff Gravel is rounded, fine grained basalt floater at 1.1m								
3.0	CH CLAY, gravelly Brown white; Moist; Stiff to very stiff Gravel is rounded to sub-rounded, medium to fine grained basalt throughout								
	END OF BORE (01-Feb-2022)								

TEST LOCATION PLAN

WESTERN TREATMENT PLANT BULBAN ROAD WERRIBEE



NOT TO SCALE

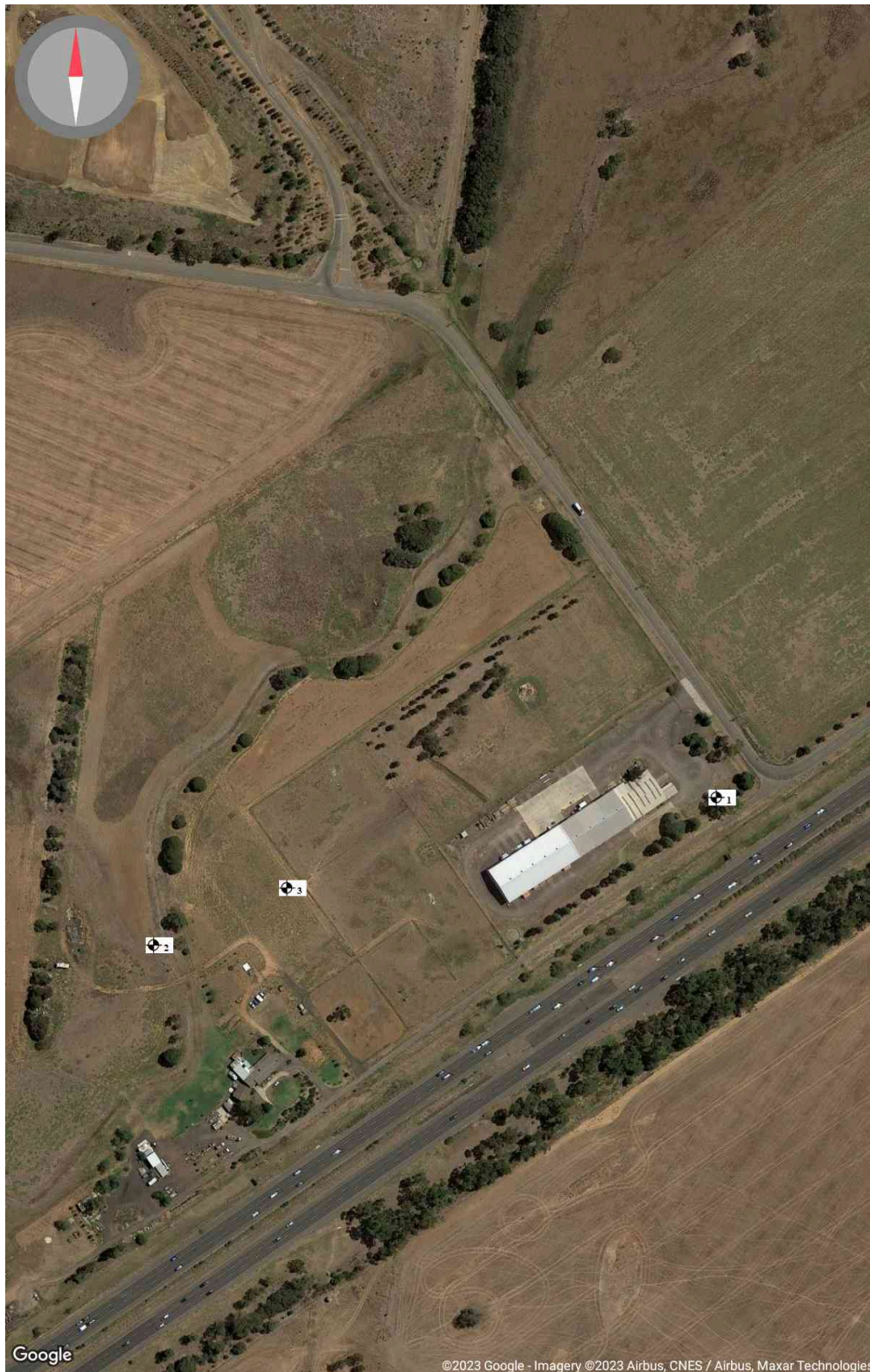
⊕ Denotes Borehole Location

THIS STETCH IS NOT INTENDED TO BE AN
ACCURATE DEPICTION OF THE NUMBER, SIZE OR
LOCATION OF TREES AND/OR SHRUBS



TEST LOCATION PLAN

WESTERN TREATMENT PLANT BULBAN ROAD WERRIBEE



NOT TO SCALE

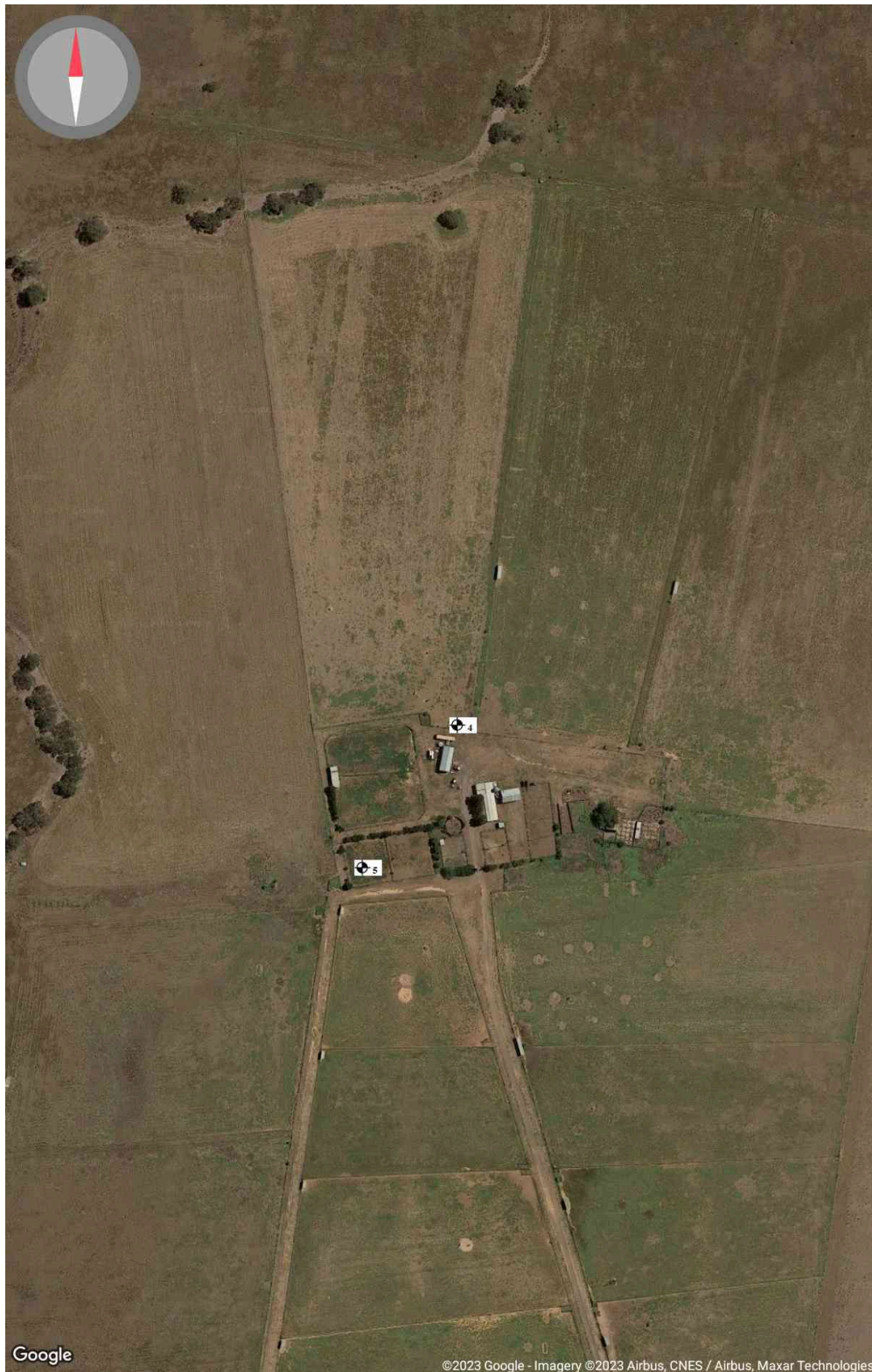
⊕ Denotes Borehole Location

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ACCURATE DEPICTION OF THE NUMBER, SIZE OR
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TEST LOCATION PLAN

WESTERN TREATMENT PLANT BULBAN ROAD WERRIBEE



NOT TO SCALE

⊕ Denotes Borehole Location

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ACCURATE DEPICTION OF THE NUMBER, SIZE OR
LOCATION OF TREES AND/OR SHRUBS



TEST LOCATION PLAN

WESTERN TREATMENT PLANT BULBAN ROAD WERRIBEE



NOT TO SCALE

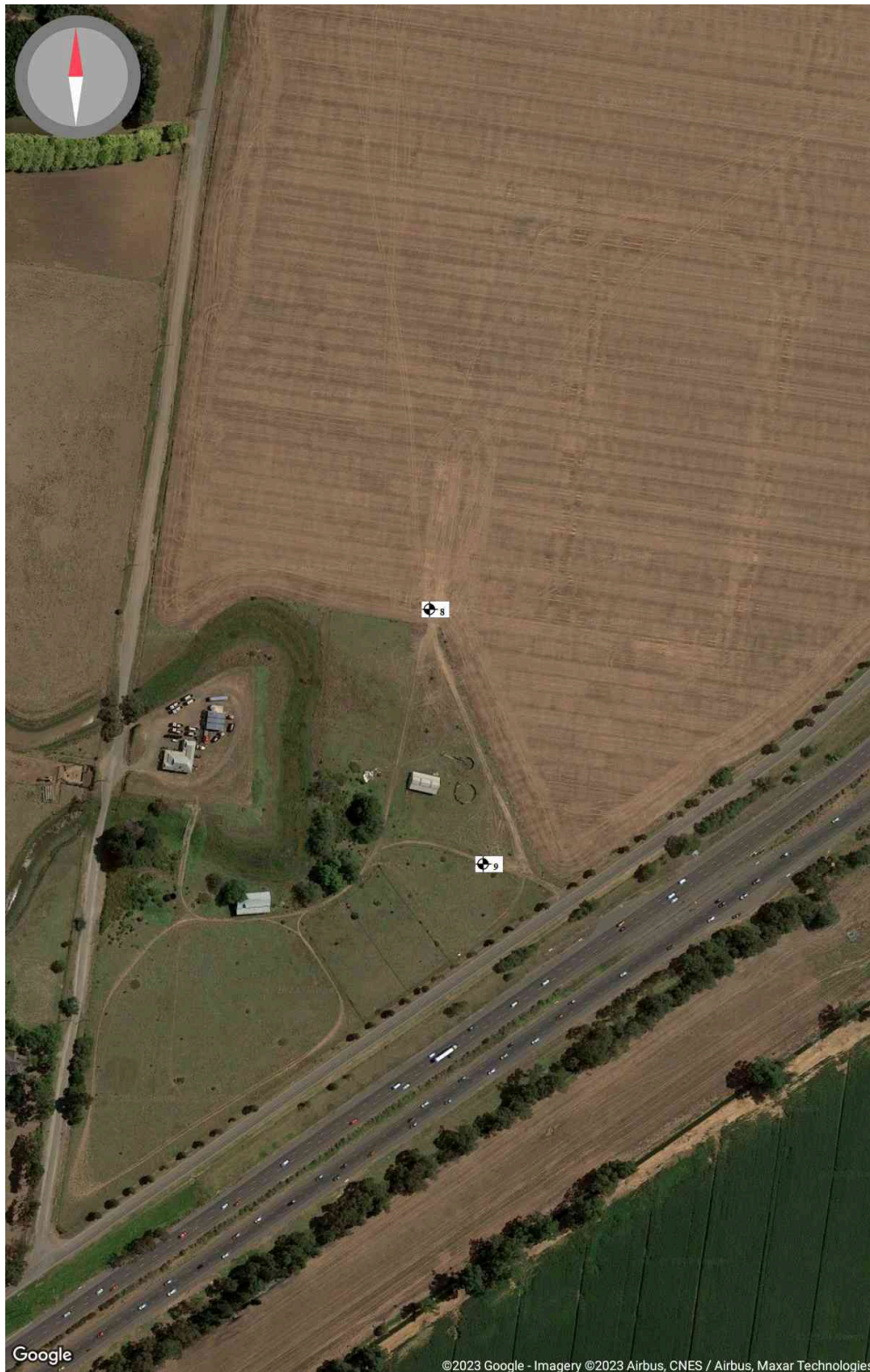
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TEST LOCATION PLAN

WESTERN TREATMENT PLANT BULBAN ROAD WERRIBEE



NOT TO SCALE

⊕ Denotes Borehole Location

THIS STETCH IS NOT INTENDED TO BE AN
ACCURATE DEPICTION OF THE NUMBER, SIZE OR
LOCATION OF TREES AND/OR SHRUBS

CIVIL *TEST* PTY. LTD.

ENGINEERING LOG

REPORT NO. 1220039-2

BOREHOLE NO. 1

DATE: 11-AUG-2022

FIELD TECHNICIAN: Am

DRILLING METHOD: HiLux Mounted Rig

PROJECT LOCATION: Western Treatment Plant Bulban Road WERRIBEE

DEPTH (m)	STRATA DESCRIPTION	NOTES	GRAPHIC LOG	TESTING					
				DEPTH (m)	RESULTS				
					DCP Blows/100mm	FIELD CBR (%)	SPT	MC (%)	PP (kg/cm²)
0	CH CLAY, silty Brown; Moist; Stiff Pales with depth								
2	CH CLAY, silty Pale grey; Moist; Stiff								
3	END OF BORE (11-Aug-2022)								
4									

ENGINEERING LOG

REPORT NO. 1220039-2

BOREHOLE NO. 4

DATE: 11-AUG-2022

FIELD TECHNICIAN: Am

DRILLING METHOD: HiLux Mounted Rig

PROJECT LOCATION: Western Treatment Plant Bulban Road WERRIBEE

DEPTH (m)	STRATA DESCRIPTION	NOTES	GRAPHIC LOG	TESTING					
				DEPTH (m)	RESULTS				
					DCP Blows/100mm	FIELD CBR (%)	SPT	MC (%)	PP (kg/cm²)
0	CH CLAY, silty Brown; Dry; Very stiff Pales with depth								
2	CH CLAY, silty Brown; Moist; Stiff								
3	END OF BORE (11-Aug-2022)								
4									

ENGINEERING LOG

REPORT NO. 1220039-2

BOREHOLE NO. 7

DATE: 11-AUG-2022

FIELD TECHNICIAN: Am

DRILLING METHOD: HiLux Mounted Rig

PROJECT LOCATION: Western Treatment Plant Bulban Road WERRIBEE

[illegible]

ENGINEERING LOG

REPORT NO. 1220039-2

BOREHOLE NO. 8

DATE: 11-AUG-2022

FIELD TECHNICIAN: Am

DRILLING METHOD: HiLux Mounted Rig

PROJECT LOCATION: Western Treatment Plant Bulban Road WERRIBEE

[illegible]

APPENDIX C
LABORATORY CERTIFICATES OF ANALYSIS



#AU_CAU001_EnviroSampleVic

From: Wendy Tsivoulidis <Wendy.Tsivoulidis@fyfe.com.au>
Sent: Sunday, 30 January 2022 4:21 PM
To: #AU_CAU001_EnviroSampleVic; Savini Suduweli Kondage
Cc: Brent Davey
Subject: RE: Sample pick up
Attachments: COC-WERRIBEE.pdf; COC-WERRIBEE.xlsx

EXTERNAL EMAIL*

Hi Canh, Savini,

Please see the COCs attached for the samples picked up Friday.

Thanks



Wendy Tsivoulidis | Project Manager
T +61 3 9249 5505 M +61 423 628 974

Follow Fyfe on [LinkedIn](#) and [sign up](#) to our quarterly e-newsletter
Please consider the environment before printing this email and any attachments.

From: #AU_CAU001_EnviroSampleVic <EnviroSampleVic@eurofins.com>
Sent: Friday, 28 January 2022 11:31 AM
To: Wendy Tsivoulidis <Wendy.Tsivoulidis@fyfe.com.au>; Savini Suduweli Kondage <SaviniSuduweli@eurofins.com>
Cc: Brent Davey <Brent.Davey@fyfe.com.au>
Subject: RE: Sample pick up

Hi Wendy,

Any chance we could get the excel version of the COC when you do send it through with analysis please?

Thanks,
Canh

Sample Receipt

Eurofins Environment Testing
6 Monterey Rd
Dandenong South 3175
AUSTRALIA
Phone : +61 3 8564 5000

Email : EnviroSampleVic@eurofins.com
Website : <http://environment.eurofins.com.au>

858 967
Mullaly EF
3/1

From: Wendy Tsivoulidis <Wendy.Tsivoulidis@fyfe.com.au>
Sent: Friday, 28 January 2022 11:22 AM
To: Savini Suduweli Kondage <SaviniSuduweli@eurofins.com>
Cc: #AU_CAU001_EnviroSampleVic <EnviroSampleVic@eurofins.com>; Brent Davey <Brent.Davey@fyfe.com.au>

858967
31/1

CLIENT: MONARC/FYFE		LABORATORY: EUROFINS		LABORATORY BATCH NO.:		TURNAROUND TIME:	
PROJECT: 81196-1 WERRIBEE		COC Reference:		Wendy T		Standard	
SEND REPORT TO: Wendy Tsioulidis		SEND INVOICE TO: WENDY TSILOULIDIS		PHONE: 0423 628 974		24 Hour	
DATA/ REPORT NEEDED BY:		QUOTE #:		REPORT FORMAT: HARD/NO FAX: NO E-MAIL: YES		48 Hour	
RELINQUISHED BY:		DATE: 28/01/2022		RECEIVED BY:		METHOD OF SHIPMENT: Courier	
NAME: Wendy T		TIME:		NAME:		TRANSPORT CO. NAME:	
OF: Monarc				OF:		TIME:	
P.O. NO.: 81196		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		ANALYSIS REQUIRED			
FOR LAB USE ONLY		Please forward results and invoice to:		Suite B20 (CEC/ESP/cations)			
COOLER SEAL		wendy.t@monarcoenviro.com.au		Chromium suite ASS			
Yes No				SPOCAS			
Broken Intact				HOLD			
COOLER TEMP: deg. °C							
SAMPLE DATA			*CONTAINER DATA				
SAMPLE ID	Depth	DATE	TIME	TYPE & PRESERVATIVE	NO.		
8A	0.1	27/01/2022		Jar + Ice	1		
8B	0.5	27/01/2022		Jar + Ice	1		
8C	1	27/01/2022		Jar + Ice	1		
9A	0.1	27/01/2022		Jar + Ice	1		
9B	0.5	27/01/2022		Jar + Ice	1		
9C	1	27/01/2022		Jar + Ice	1		
10A	0.1	27/01/2022		Jar + Ice	1		
10B	0.5	27/01/2022		Jar + Ice	1		
10C	1	27/01/2022		Jar + Ice	1		
11A	0.1	27/01/2022		Jar + Ice	1		
11B	0.5	27/01/2022		Jar + Ice	1		
11C	1	27/01/2022		Jar + Ice	1		
11D	1.5	27/01/2022		Jar + Ice	1		
11E	2	27/01/2022		Jar + Ice	1		
11F	2.5	27/01/2022		Jar + Ice	1		
11G	3	27/01/2022		Jar + Ice	1		
12A	0.1	27/01/2022		Jar + Ice	1		
12B	0.5	27/01/2022		Jar + Ice	1		
12C	1	27/01/2022		Jar + Ice	1		
13A	0.1	27/01/2022		Jar + Ice	1		
13B	0.5	27/01/2022		Jar + Ice	1		
13C	1	27/01/2022		Jar + Ice	1		
13D	1.5	27/01/2022		Jar + Ice	1		
13E	2	27/01/2022		Jar + Ice	1		
13F	2.5	27/01/2022		Jar + Ice	1		
13G	3	27/01/2022		Jar + Ice	1		
14A	0.1	27/01/2022		Jar + Ice	1		
14B	0.5	27/01/2022		Jar + Ice	1		
14C	1	27/01/2022		Jar + Ice	1		
15A	0.1	27/01/2022		Jar + Ice	1		
15B	0.5	27/01/2022		Jar + Ice	1		
15C	1	27/01/2022		Jar + Ice	1		
15D	1.5	27/01/2022		Jar + Ice	1		
15E	2	27/01/2022		Jar + Ice	1		
15F	2.5	27/01/2022		Jar + Ice	1		



CLIENT: MONARC/FYFE		LABORATORY: EUROPHINS		LABORATORY BATCH NO.:		TURNAROUND TIME:	
PROJECT: 81196-1 WEIRIBEE		COC Reference:		SAMPLES:		Standard	
SEND REPORT TO: Wendy Tsioullidis		SEND INVOICE TO: WENDY TSIUULLIDIS		PHONE: 0423 628 974		24 Hour	
DATA/REPORT NEEDED BY:		QUOTE #:		REPORT FORMAT: HARDNO FAX: NO E-MAIL: YES		48 Hour	
RELINQUISHED BY:		NAME:		RECEIVED BY:		METHOD OF SHIPMENT: Courier	
OF: Monarc		DATE: 28/01/2022		DATE:		TRANSPORT CO. NAME:	
P.O. NO: 81196		TIME:		NAME:		DATE:	
FOR LAB USE ONLY		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		OF:		TIME:	
COOLER SEAL		Please forward results and Invoice to:		ANALYSIS REQUIRED			
Yes No Wendy@monarc.gov.au				ASLP Metals			
Broken Intact				ASLP P&Hs and Metals			
COOLER TEMP: deg. °C				B Metals			
				Soil Aggregativity			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP P&Hs and Metals			
				ASLP Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
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				Soil Aggregativity			
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				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
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				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
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				IWRG 621 RL (p.p.b 1828.2 TC)			
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				ASLP Metals			
				ASLP P&Hs and Metals			
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				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			
				HOLD			
				ASLP Metals			
				ASLP P&Hs and Metals			
				Soil Aggregativity			
				B Metals			
				B7: THH/PAH/BTEXN/8 Metals			
				IWRG 621 RL (p.p.b 1828.2 TC)			

CLIENT: MONARC/FYFE						LABORATORY: EUROFINS						LABORATORY BATCH NO.:						TURNAROUND TIME:																	
PROJECT: 81196-1 WERRIBEE						COC Reference:						Wendy T						Standard																	
SEND REPORT TO: Wendy Takwailidis						SEND INVOICE TO: WENDY TSINOULIDIS						PHONE: 0432 628 974						24 Hour																	
DATA/REPORT NEEDED BY:												REPORT FORMAT: HARD:NO FAX: NO E-MAIL: YES						48 Hour																	
RELINQUISHED BY:												RECEIVED BY:												METHOD OF SHIPMENT: Courier											
NAME : Wendy T												NAME :												TRANSPORT CO. NAME:											
OF: Monarc												DATE: 26/01/2022												TIME:											
P.O. NO. 81196												COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:												ANALYSIS REQUIRED											
FOR LAB USE ONLY												Please forward results and invoice to:												*Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydronide Preserved; J = Solvent Washed Add Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Add Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Add Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; O = Other.											
COOLER SEAL																																			
Yes ---- No ----																																			
Broken ---- Intact ----																																			
COOLER TEMP: deg. °C																																			
SAMPLE ID			DEPTH			DATE			TYPE & PRESERVATIVE			NO.																							
8A			0.1			27/01/2022			Jar + Ice			1																							
8B			0.5			27/01/2022			Jar + Ice			1																							
8C			1			27/01/2022			Jar + Ice			1																							
9A			0.1			27/01/2022			Jar + Ice			1																							
9B			0.5			27/01/2022			Jar + Ice			1																							
9C			1			27/01/2022			Jar + Ice			1																							
10A			0.1			27/01/2022			Jar + Ice			1																							
10B			0.5			27/01/2022			Jar + Ice			1																							
10C			1			27/01/2022			Jar + Ice			1																							
11A			0.1			27/01/2022			Jar + Ice			1																							
11B			0.5			27/01/2022			Jar + Ice			1																							
11C			1			27/01/2022			Jar + Ice			1																							
11D			1.5			27/01/2022			Jar + Ice			1																							
11E			2			27/01/2022			Jar + Ice			1																							
11F			2.5			27/01/2022			Jar + Ice			1																							
11G			3			27/01/2022			Jar + Ice			1																							
12A			0.1			27/01/2022			Jar + Ice			1																							
12B			0.5			27/01/2022			Jar + Ice			1																							
12C			1			27/01/2022			Jar + Ice			1																							
13A			0.1			27/01/2022			Jar + Ice			1																							
13B			0.5			27/01/2022			Jar + Ice			1																							
13C			1			27/01/2022			Jar + Ice			1																							
13D			1.5			27/01/2022			Jar + Ice			1																							
13E			2			27/01/2022			Jar + Ice			1																							
13F			2.5			27/01/2022			Jar + Ice			1																							
13G			3			27/01/2022			Jar + Ice			1																							
14A			0.1			27/01/2022			Jar + Ice			1																							
14B			0.5			27/01/2022			Jar + Ice			1																							
14C			1			27/01/2022			Jar + Ice			1																							
15A			0.1			27/01/2022			Jar + Ice			1																							
15B			0.5			27/01/2022			Jar + Ice			1																							
15C			1			27/01/2022			Jar + Ice			1																							
15D			1.5			27/01/2022			Jar + Ice			1																							
15E			2			27/01/2022			Jar + Ice			1																							
15F			2.5			27/01/2022			Jar + Ice			1																							
TOTAL																																			



CLIENT: MONARC/FYFE		LABORATORY: EUROFINIS		LABORATORY BATCH NO.:		TURNAROUND TIME:	
PROJECT: 81196-1 WERRIBEE		COC Reference:		Wendy T		Standard	
SEND REPORT TO: Wendy Tsioulidis		SEND INVOICE TO: WENDY TSIYOULIDIS		PHONE: 0423 628 974		24 Hour	
DATA/ REPORT NEEDED BY:		QUOTE #:		REPORT FORMAT: HARD:NO FAX: NO E-MAIL: YES		48 Hour	
RELINQUISHED BY:		DATE: 28/01/2022		RECEIVED BY:		METHOD OF SHIPMENT: Courier	
NAME : Wendy T		TIME:		NAME :		TRANSPORT CO. NAME.	
OF: Monarc		TIME:		OF:			
P.O. NO.: 81196		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		ANALYSIS REQUIRED			
FOR LAB USE ONLY		Please forward results and invoice to:		B7: TRH/PAH/BTEXN/8 Metals			
COOLER SEAL		wendyt@monarcenviro.com.au		8 Metals			
Yes No				soil aggressivity			
Broken Intact				ASLP PAHs and Metals			
COOLER TEMP: deg. °C				ASLP metals			
				HOLD			
				WVG 621 R1 (Pub 1828.2 TC0)			
				*CONTAINER DATA			
				SAMPLE DATA			
SAMPLE ID	Depth	DATE	TIME	TYPE & PRESERVATIVE	NO.		
16A	0.1	27/01/2022		Jar + Ice	1		
16B	0.5	27/01/2022		Jar + Ice	1		
16C	1	27/01/2022		Jar + Ice	1		
16D	1.5	27/01/2022		Jar + Ice	1		
16E	2	27/01/2022		Jar + Ice	1		
16F	2.5	27/01/2022		Jar + Ice	1		
16G	3	27/01/2022		Jar + Ice	1		
17A	0.1	27/01/2022		Jar + Ice	1		
17B	0.5	27/01/2022		Jar + Ice	1		
17C	1	27/01/2022		Jar + Ice	1		
18A	0.1	27/01/2022		Jar + Ice	1		
18B	0.5	27/01/2022		Jar + Ice	1		
18C	1	27/01/2022		Jar + Ice	1		
18D	1.5	27/01/2022		Jar + Ice	1		
18E	2	27/01/2022		Jar + Ice	1		
18F	2.5	27/01/2022		Jar + Ice	1		
					TOTAL		

*Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; O = Other.

#AU_CAU001_EnviroSampleVic

From: Wendy Tsivoulidis <Wendy.Tsivoulidis@fyfe.com.au>
Sent: Monday, 7 February 2022 3:47 PM
To: Savini Suduweli Kondage
Cc: #AU_CAU001_EnviroSampleVic
Subject: 858967 and 859847 - changes to analyses

Importance: High

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins.

Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

Hi Savini,

We need to make some slight changes to the analyses for this Werribee job.

Can you please cancel the B20 suites on the following samples:

- 33D
- 11F
- 24D
- 27D
- 29D
- 44D

858967
g/b EF
7/2/22.

... and add a B20 analysis for the following samples:

- 12A
- 15B
- 6A
- 7B
- 8A
- 10B

Feel free to give me a call if there are any issues.

Thanks and regards



Wendy Tsivoulidis | Project Manager
Ground Floor, Suite 4, 668 Burwood Road, Hawthorn East VIC 3123
T +61 3 9249 5505 **E** Wendy.Tsivoulidis@fyfe.com.au
M +61 423 628 974 **W** fyfe.com.au

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Environment Testing

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NATA # 1261 Site # 1254

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Unit F3, Building F
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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

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4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448
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35 O'Rourke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Company Name: MONARC Env a FYFE Division
Address: Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123

Project Name: WERRIBEE
Project ID: 81196-1

Order No.:
Report #: 858967
Phone: 03 9205 6000
Fax: 9836 0801

Received: Jan 30, 2022 4:21 PM
Due: Feb 7, 2022
Priority: 5 Day
Contact Name: Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	1B	Jan 27, 2022		Soil	M22-Ja36781		X			X
2	1C	Jan 27, 2022		Soil	M22-Ja36782				X	X
3	2B	Jan 27, 2022		Soil	M22-Ja36783		X			X
4	2C	Jan 27, 2022		Soil	M22-Ja36784				X	X
5	3C	Jan 27, 2022		Soil	M22-Ja36785		X			X
6	3F	Jan 27, 2022		Soil	M22-Ja36786		X			X
7	3G	Jan 27, 2022		Soil	M22-Ja36787			X		X
8	4B	Jan 27, 2022		Soil	M22-Ja36788		X			X
9	4C	Jan 27, 2022		Soil	M22-Ja36789				X	X



Environment Testing

Eurofins Environment Testing Australia Pty Ltd

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NATA # 1261 Site # 1254

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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Eurofins ARL Pty Ltd

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Company Name: MONARC Env a FYFE Division
Address: Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123

Project Name: WERRIBEE
Project ID: 81196-1

Order No.:
Report #: 858967
Phone: 03 9205 6000
Fax: 9836 0801

Received: Jan 30, 2022 4:21 PM
Due: Feb 7, 2022
Priority: 5 Day
Contact Name: Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
10	5E	Jan 27, 2022		Soil	M22-Ja36790		X			X
11	5F	Jan 27, 2022		Soil	M22-Ja36791		X			X
12	5G	Jan 27, 2022		Soil	M22-Ja36792			X		X
13	6B	Jan 27, 2022		Soil	M22-Ja36793		X			X
14	6C	Jan 27, 2022		Soil	M22-Ja36794				X	X
15	7E	Jan 27, 2022		Soil	M22-Ja36795		X			X
16	7H	Jan 27, 2022		Soil	M22-Ja36796		X			X
17	7I	Jan 27, 2022		Soil	M22-Ja36797			X		X
18	8B	Jan 27, 2022		Soil	M22-Ja36798		X			X
19	8C	Jan 27, 2022		Soil	M22-Ja36799				X	X
20	9B	Jan 27, 2022		Soil	M22-Ja36800		X			X



Environment Testing

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Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
21	9C	Jan 27, 2022		Soil	M22-Ja36801				X	X
22	10B	Jan 27, 2022		Soil	M22-Ja36802		X			X
23	10C	Jan 27, 2022		Soil	M22-Ja36803				X	X
24	11E	Jan 27, 2022		Soil	M22-Ja36804		X			X
25	11F	Jan 27, 2022		Soil	M22-Ja36805		X			X
26	11G	Jan 27, 2022		Soil	M22-Ja36806			X		X
27	12B	Jan 27, 2022		Soil	M22-Ja36807		X			X
28	12C	Jan 27, 2022		Soil	M22-Ja36808				X	X
29	13B	Jan 27, 2022		Soil	M22-Ja36809		X			X
30	13D	Jan 27, 2022		Soil	M22-Ja36810		X			X
31	13G	Jan 27, 2022		Soil	M22-Ja36811			X		X



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Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
32	14B	Jan 27, 2022		Soil	M22-Ja36812		X			X
33	14C	Jan 27, 2022		Soil	M22-Ja36813				X	X
34	15D	Jan 27, 2022		Soil	M22-Ja36814		X			X
35	15E	Jan 27, 2022		Soil	M22-Ja36815		X			X
36	15F	Jan 27, 2022		Soil	M22-Ja36816			X		X
37	16B	Jan 27, 2022		Soil	M22-Ja36817		X			X
38	16F	Jan 27, 2022		Soil	M22-Ja36818		X			X
39	16G	Jan 27, 2022		Soil	M22-Ja36819			X		X
40	17B	Jan 27, 2022		Soil	M22-Ja36820		X			X
41	17C	Jan 27, 2022		Soil	M22-Ja36821				X	X
42	18A	Jan 27, 2022		Soil	M22-Ja36822		X			X



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Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
43	18D	Jan 27, 2022		Soil	M22-Ja36823		X			X
44	18F	Jan 27, 2022		Soil	M22-Ja36824			X		X
45	1A	Jan 27, 2022		Soil	M22-Ja36825	X				
46	2A	Jan 27, 2022		Soil	M22-Ja36826	X				
47	3A	Jan 27, 2022		Soil	M22-Ja36827	X				
48	3B	Jan 27, 2022		Soil	M22-Ja36828	X				
49	3D	Jan 27, 2022		Soil	M22-Ja36829	X				
50	3E	Jan 27, 2022		Soil	M22-Ja36830	X				
51	4A	Jan 27, 2022		Soil	M22-Ja36831	X				
52	5A	Jan 27, 2022		Soil	M22-Ja36832	X				
53	5B	Jan 27, 2022		Soil	M22-Ja36833	X				



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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
54	5C	Jan 27, 2022		Soil	M22-Ja36834	X				
55	5D	Jan 27, 2022		Soil	M22-Ja36835	X				
56	6A	Jan 27, 2022		Soil	M22-Ja36836	X				
57	7A	Jan 27, 2022		Soil	M22-Ja36837	X				
58	7B	Jan 27, 2022		Soil	M22-Ja36838	X				
59	7C	Jan 27, 2022		Soil	M22-Ja36839	X				
60	7D	Jan 27, 2022		Soil	M22-Ja36840	X				
61	7F	Jan 27, 2022		Soil	M22-Ja36841	X				
62	7G	Jan 27, 2022		Soil	M22-Ja36842	X				
63	8A	Jan 27, 2022		Soil	M22-Ja36843	X				
64	9A	Jan 27, 2022		Soil	M22-Ja36844	X				



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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
65	10A	Jan 27, 2022		Soil	M22-Ja36845	X				
66	11A	Jan 27, 2022		Soil	M22-Ja36846	X				
67	11B	Jan 27, 2022		Soil	M22-Ja36847	X				
68	11C	Jan 27, 2022		Soil	M22-Ja36848	X				
69	11D	Jan 27, 2022		Soil	M22-Ja36849	X				
70	12A	Jan 27, 2022		Soil	M22-Ja36850	X				
71	13A	Jan 27, 2022		Soil	M22-Ja36851	X				
72	13C	Jan 27, 2022		Soil	M22-Ja36852	X				
73	13E	Jan 27, 2022		Soil	M22-Ja36853	X				
74	13F	Jan 27, 2022		Soil	M22-Ja36854	X				
75	14A	Jan 27, 2022		Soil	M22-Ja36855	X				



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Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
76	15A	Jan 27, 2022		Soil	M22-Ja36856	X				
77	15B	Jan 27, 2022		Soil	M22-Ja36857	X				
78	15C	Jan 27, 2022		Soil	M22-Ja36858	X				
79	16A	Jan 27, 2022		Soil	M22-Ja36859	X				
80	16C	Jan 27, 2022		Soil	M22-Ja36860	X				
81	16D	Jan 27, 2022		Soil	M22-Ja36861	X				
82	16E	Jan 27, 2022		Soil	M22-Ja36862	X				
83	17A	Jan 27, 2022		Soil	M22-Ja36863	X				
84	18B	Jan 27, 2022		Soil	M22-Ja36864	X				
85	18C	Jan 27, 2022		Soil	M22-Ja36865	X				
86	18E	Jan 27, 2022		Soil	M22-Ja36866	X				



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Sample Detail	HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254	X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217					
Brisbane Laboratory - NATA # 1261 Site # 20794			X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079					
Perth Laboratory - NATA # 2377 Site # 2370					
External Laboratory					
Test Counts	42	26	8	10	44

MONARC Env a FYFE Division
Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123



NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Wendy Tsivoulidis

Report **858967-S**
Project name **WERRIBEE**
Project ID **81196-1**
Received Date Feb 07, 2022

Client Sample ID			1B	1C	2B	2C
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Ja36781	M22-Ja36782	M22-Ja36783	M22-Ja36784
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	680	-	810	-
Exchangeable Sodium Percentage (ESP)	0.1	%	16	-	34	-
Magnesium (exchangeable)	0.1	meq/100g	14	-	11	-
Potassium (exchangeable)	0.1	meq/100g	1.0	-	1.0	-
Sodium (exchangeable)	0.1	meq/100g	8.0	-	9.0	-
% Moisture	1	%	22	27	25	27
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	27	-	5.0	-
Cation Exchange Capacity	0.05	meq/100g	50	-	26	-
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	8.6	-	8.4
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	-	< 2	-	< 2
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	< 0.003	-	< 0.003
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	< 0.005	-	< 0.005
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	< 3	-	< 3
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	N/A	-	N/A
HCl Extractable Sulfur	0.005	% S	-	N/A	-	N/A
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	N/A	-	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	N/A	-	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	N/A	-	N/A
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	2.0	-	1.9
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	0.65	-	0.60
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	410	-	370
ANC Fineness Factor		factor	-	1.5	-	1.5
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	< 0.02	-	< 0.02
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	< 10	-	< 10
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	< 1	-	< 1

Client Sample ID			1B	1C	2B	2C
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Ja36781	M22-Ja36782	M22-Ja36783	M22-Ja36784
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	-	42	-	39
>2mm Fraction	0.005	g	-	< 0.005	-	< 0.005
Analysed Material	0.1	%	-	100	-	100
Extraneous Material	0.1	%	-	< 0.1	-	< 0.1

Client Sample ID			3C	3F	3G	4B
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Ja36785	M22-Ja36786	M22-Ja36787	M22-Ja36788
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	1600	820	-	660
Exchangeable Sodium Percentage (ESP)	0.1	%	38	42	-	34
Magnesium (exchangeable)	0.1	meq/100g	16	16	-	8.9
Potassium (exchangeable)	0.1	meq/100g	1.0	1.0	-	0.7
Sodium (exchangeable)	0.1	meq/100g	13	15	-	6.7
% Moisture	1	%	29	29	29	26
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	3.6	3.3	-	3.6
Cation Exchange Capacity	0.05	meq/100g	34	35	-	20
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	-	6.9	-
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	-	-	< 2	-
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	-	< 0.003	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	-	0.030	-
Peroxide Extractable Sulfur	0.005	% S	-	-	0.030	-
HCl Extractable Sulfur	0.005	% S	-	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	-	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
ANC Fineness Factor		factor	-	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	-	-	< 10	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	-	< 0.02	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	-	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	-	-	38	-
>2mm Fraction	0.005	g	-	-	< 0.005	-
Analysed Material	0.1	%	-	-	100	-
Extraneous Material	0.1	%	-	-	< 0.1	-

Client Sample ID			3C	3F	3G	4B
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Ja36785	M22-Ja36786	M22-Ja36787	M22-Ja36788
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	-	7.4	-
Titrateable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	-	< 0.02	-
Titrateable Peroxide Acidity (a-TPA)	2	mol H+/t	-	-	< 2	-
Titrateable Sulfidic Acidity (a-TSA)	2	mol H+/t	-	-	< 2	-
Titrateable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	-	< 0.02	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	-	< 0.02	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	-	-	< 10	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	-	0.13	-
Calcium - Peroxide	0.005	% Ca	-	-	0.14	-
Calcium - Acid Reacted	0.005	% Ca	-	-	0.009	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.007	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	4.3	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	-	0.32	-
Magnesium - Peroxide	0.005	% Mg	-	-	0.37	-
Magnesium - Acid Reacted	0.005	% Mg	-	-	0.050	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.066	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	41	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	-	0.38	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	-	0.12	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	-	-	77	-

Client Sample ID			4C	5E	5F	5G
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Ja36789	M22-Ja36790	M22-Ja36791	M22-Ja36792
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	880	1100	-
Exchangeable Sodium Percentage (ESP)	0.1	%	-	33	33	-
Magnesium (exchangeable)	0.1	meq/100g	-	17	14	-
Potassium (exchangeable)	0.1	meq/100g	-	0.9	0.7	-
Sodium (exchangeable)	0.1	meq/100g	-	12	9.8	-
% Moisture	1	%	27	27	27	31
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	7.1	5.0	-
Cation Exchange Capacity	0.05	meq/100g	-	38	30	-
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	8.6	-	-	8.1
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	-	< 2
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	-	< 0.003
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	< 0.005	-	-	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	< 3	-	-	-

Client Sample ID			4C Soil M22-Ja36789 Jan 27, 2022	5E Soil M22-Ja36790 Jan 27, 2022	5F Soil M22-Ja36791 Jan 27, 2022	5G Soil M22-Ja36792 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	N/A	-	-	0.030
Peroxide Extractable Sulfur	0.005	% S	-	-	-	0.030
HCl Extractable Sulfur	0.005	% S	N/A	-	-	N/A
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	N/A	-	-	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	-	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	-	N/A
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	-	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO ₃	7.0	-	-	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	2.2	-	-	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	1400	-	-	-
ANC Fineness Factor		factor	1.5	-	-	1.5
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	-	-	-	< 10
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	-	-	< 0.02
SPOCAS - Liming rate - ASSMAC	1	kg CaCO ₃ /t	-	-	-	< 1
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	< 0.02	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	< 10	-	-	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO ₃ /t	< 1	-	-	-
Extraneous Material						
<2mm Fraction	0.005	g	31	-	-	27
>2mm Fraction	0.005	g	< 0.005	-	-	< 0.005
Analysed Material	0.1	%	100	-	-	100
Extraneous Material	0.1	%	< 0.1	-	-	< 0.1
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	-	-	8.1
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	-	-	< 0.02
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	-	-	-	< 2
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	-	-	-	< 2
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	-	-	< 0.02
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	-	-	< 0.02
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	-	-	-	< 10
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	-	-	0.18
Calcium - Peroxide	0.005	% Ca	-	-	-	0.31
Calcium - Acid Reacted	0.005	% Ca	-	-	-	0.14
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	-	-	0.11
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	-	67
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	-	-	0.40
Magnesium - Peroxide	0.005	% Mg	-	-	-	0.53
Magnesium - Acid Reacted	0.005	% Mg	-	-	-	0.13
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	-	-	0.17
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	-	110
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	-	-	1.2
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	-	-	0.40
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	-	-	-	250

Client Sample ID			6B	6C	7E	7H
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Ja36793	M22-Ja36794	M22-Ja36795	M22-Ja36796
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	250	-	1100	1100
Exchangeable Sodium Percentage (ESP)	0.1	%	30	-	18	22
Magnesium (exchangeable)	0.1	meq/100g	15	-	13	10
Potassium (exchangeable)	0.1	meq/100g	1.6	-	1.0	0.8
Sodium (exchangeable)	0.1	meq/100g	9.8	-	8.1	6.8
% Moisture	1	%	21	26	20	24
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	6.4	-	24	14
Cation Exchange Capacity	0.05	meq/100g	33	-	46	31
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	8.8	-	-
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	-	< 2	-	-
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	< 0.003	-	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	< 0.005	-	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	< 3	-	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	N/A	-	-
HCl Extractable Sulfur	0.005	% S	-	N/A	-	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	N/A	-	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	N/A	-	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	N/A	-	-
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	15	-	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	4.8	-	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	3000	-	-
ANC Fineness Factor		factor	-	1.5	-	-
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	< 0.02	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	< 10	-	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	< 1	-	-
Extraneous Material						
<2mm Fraction	0.005	g	-	37	-	-
>2mm Fraction	0.005	g	-	< 0.005	-	-
Analysed Material	0.1	%	-	100	-	-
Extraneous Material	0.1	%	-	< 0.1	-	-

Client Sample ID			7I Soil M22-Ja36797 Jan 27, 2022	8B Soil M22-Ja36798 Jan 27, 2022	8C Soil M22-Ja36799 Jan 27, 2022	9B Soil M22-Ja36800 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	130	-	410
Exchangeable Sodium Percentage (ESP)	0.1	%	-	13	-	24
Magnesium (exchangeable)	0.1	meq/100g	-	12	-	10
Potassium (exchangeable)	0.1	meq/100g	-	0.7	-	0.6
Sodium (exchangeable)	0.1	meq/100g	-	3.2	-	4.4
% Moisture	1	%	23	16	17	13
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	8.3	-	3.5
Cation Exchange Capacity	0.05	meq/100g	-	24	-	18
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	8.6	-	8.6	-
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	< 2	-
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	< 0.003	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	-	< 0.005	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	-	< 3	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	0.020	-	N/A	-
Peroxide Extractable Sulfur	0.005	% S	0.030	-	-	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	-	N/A	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	-	1.9	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	-	0.59	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	-	370	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	< 10	-	-	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	< 0.02	-	-	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	< 1	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	-	< 0.02	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	-	< 10	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	45	-	49	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	9.9	-	-	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	< 0.02	-	-	-
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	< 0.02	-	-	-

Client Sample ID			7I Soil M22-Ja36797 Jan 27, 2022	8B Soil M22-Ja36798 Jan 27, 2022	8C Soil M22-Ja36799 Jan 27, 2022	9B Soil M22-Ja36800 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	< 0.02	-	-	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	< 10	-	-	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	0.25	-	-	-
Calcium - Peroxide	0.005	% Ca	1.1	-	-	-
Calcium - Acid Reacted	0.005	% Ca	0.87	-	-	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	0.70	-	-	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	430	-	-	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	0.21	-	-	-
Magnesium - Peroxide	0.005	% Mg	0.26	-	-	-
Magnesium - Acid Reacted	0.005	% Mg	0.056	-	-	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	0.074	-	-	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	46	-	-	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	2.9	-	-	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	0.92	-	-	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	580	-	-	-

Client Sample ID			9C Soil M22-Ja36801 Jan 27, 2022	10B Soil M22-Ja36802 Jan 27, 2022	10C Soil M22-Ja36803 Jan 27, 2022	11E Soil M22-Ja36804 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	37	-	740
Exchangeable Sodium Percentage (ESP)	0.1	%	-	3.1	-	13
Magnesium (exchangeable)	0.1	meq/100g	-	7.3	-	7.4
Potassium (exchangeable)	0.1	meq/100g	-	0.8	-	0.2
Sodium (exchangeable)	0.1	meq/100g	-	0.5	-	2.0
% Moisture	1	%	15	15	13	18
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	7.5	-	5.9
Cation Exchange Capacity	0.05	meq/100g	-	16	-	16
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	7.4	-	5.9	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	8.0	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	0.010	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	< 0.005	-	< 0.005	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	< 3	-	< 3	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	N/A	-	N/A	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-

Client Sample ID			9C Soil M22-Ja36801 Jan 27, 2022	10B Soil M22-Ja36802 Jan 27, 2022	10C Soil M22-Ja36803 Jan 27, 2022	11E Soil M22-Ja36804 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO ₃	1.1	-	N/A	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	0.34	-	N/A	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	210	-	N/A	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	< 0.02	-	< 0.02	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	< 10	-	< 10	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO ₃ /t	< 1	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	50	-	56	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-

Client Sample ID			11G Soil M22-Ja36806 Jan 27, 2022	12B Soil M22-Ja36807 Jan 27, 2022	12C Soil M22-Ja36808 Jan 27, 2022	13B Soil M22-Ja36809 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	54	-	440
Exchangeable Sodium Percentage (ESP)	0.1	%	-	10	-	12
Magnesium (exchangeable)	0.1	meq/100g	-	4.9	-	6.5
Potassium (exchangeable)	0.1	meq/100g	-	0.4	-	0.6
Sodium (exchangeable)	0.1	meq/100g	-	1.2	-	1.5
% Moisture	1	%	21	11	19	14
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	5.0	-	3.8
Cation Exchange Capacity	0.05	meq/100g	-	11	-	12
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	6.3	-	8.6	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	2.0	-	< 2	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	< 0.003	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	-	< 0.005	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	-	< 3	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	< 0.005	-	N/A	-
Peroxide Extractable Sulfur	0.005	% S	< 0.005	-	-	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-

Client Sample ID			11G Soil M22-Ja36806 Jan 27, 2022	12B Soil M22-Ja36807 Jan 27, 2022	12C Soil M22-Ja36808 Jan 27, 2022	13B Soil M22-Ja36809 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	-	N/A	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO ₃	-	-	1.2	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	-	0.40	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	-	250	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	< 10	-	-	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	< 0.02	-	-	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO ₃ /t	< 1	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	-	< 0.02	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	-	< 10	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO ₃ /t	-	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	58	-	60	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	7.2	-	-	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	< 0.02	-	-	-
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	< 0.02	-	-	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	< 0.02	-	-	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	< 10	-	-	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	0.14	-	-	-
Calcium - Peroxide	0.005	% Ca	0.16	-	-	-
Calcium - Acid Reacted	0.005	% Ca	0.023	-	-	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	0.018	-	-	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	11	-	-	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	0.10	-	-	-
Magnesium - Peroxide	0.005	% Mg	0.12	-	-	-
Magnesium - Acid Reacted	0.005	% Mg	0.019	-	-	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	0.026	-	-	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	16	-	-	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	0.23	-	-	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	0.07	-	-	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	47	-	-	-

Client Sample ID			13D Soil M22-Ja36810 Jan 27, 2022	13G Soil M22-Ja36811 Jan 27, 2022	14B Soil M22-Ja36812 Jan 27, 2022	14C Soil M22-Ja36813 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	460	-	1400	-
Exchangeable Sodium Percentage (ESP)	0.1	%	20	-	26	-
Magnesium (exchangeable)	0.1	meq/100g	3.5	-	7.4	-
Potassium (exchangeable)	0.1	meq/100g	0.2	-	0.7	-
Sodium (exchangeable)	0.1	meq/100g	1.4	-	3.5	-
% Moisture	1	%	10	18	20	23
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	1.9	-	1.8	-
Cation Exchange Capacity	0.05	meq/100g	6.9	-	13	-
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	7.7	-	8.6
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	-	< 2	-	< 2
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	< 0.003	-	< 0.003
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	-	-	< 0.005
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	-	-	< 3
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	< 0.005	-	N/A
Peroxide Extractable Sulfur	0.005	% S	-	< 0.005	-	-
HCl Extractable Sulfur	0.005	% S	-	N/A	-	N/A
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	-	-	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	N/A	-	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	N/A	-	N/A
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	-	-	1.2
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	-	-	0.38
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	-	-	230
ANC Fineness Factor		factor	-	1.5	-	1.5
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	-	< 10	-	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	< 0.02	-	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	-	< 1	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	-	-	< 0.02
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	-	-	< 10
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	-	-	< 1
Extraneous Material						
<2mm Fraction	0.005	g	-	36	-	64
>2mm Fraction	0.005	g	-	< 0.005	-	< 0.005
Analysed Material	0.1	%	-	100	-	100
Extraneous Material	0.1	%	-	< 0.1	-	< 0.1
Potential Acidity - Titrateable Peroxide						
pH-OX	0.1	pH Units	-	7.8	-	-
Titrateable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	< 0.02	-	-
Titrateable Peroxide Acidity (a-TPA)	2	mol H+/t	-	< 2	-	-
Titrateable Sulfidic Acidity (a-TSA)	2	mol H+/t	-	< 2	-	-
Titrateable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	< 0.02	-	-

Client Sample ID			13D Soil M22-Ja36810 Jan 27, 2022	13G Soil M22-Ja36811 Jan 27, 2022	14B Soil M22-Ja36812 Jan 27, 2022	14C Soil M22-Ja36813 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	< 0.02	-	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	-	< 10	-	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	0.090	-	-
Calcium - Peroxide	0.005	% Ca	-	0.11	-	-
Calcium - Acid Reacted	0.005	% Ca	-	0.020	-	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	0.016	-	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	10	-	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	0.060	-	-
Magnesium - Peroxide	0.005	% Mg	-	0.090	-	-
Magnesium - Acid Reacted	0.005	% Mg	-	0.023	-	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	0.031	-	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	19	-	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	0.40	-	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	0.13	-	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	-	81	-	-

Client Sample ID			15D Soil M22-Ja36814 Jan 27, 2022	15E Soil M22-Ja36815 Jan 27, 2022	15F Soil M22-Ja36816 Jan 27, 2022	16B Soil M22-Ja36817 Jan 27, 2022
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	130	110	-	75
Exchangeable Sodium Percentage (ESP)	0.1	%	13	13	-	3.5
Magnesium (exchangeable)	0.1	meq/100g	13	9.8	-	6.5
Potassium (exchangeable)	0.1	meq/100g	0.6	0.4	-	0.7
Sodium (exchangeable)	0.1	meq/100g	2.7	2.2	-	0.5
% Moisture	1	%	22	20	21	9.1
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	4.4	3.8	-	6.3
Cation Exchange Capacity	0.05	meq/100g	21	16	-	14
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	-	6.9	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	-	-	< 2	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	-	< 0.003	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	-	< 0.005	-
Peroxide Extractable Sulfur	0.005	% S	-	-	< 0.005	-
HCl Extractable Sulfur	0.005	% S	-	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	-	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
ANC Fineness Factor		factor	-	-	1.5	-

Client Sample ID			15D Soil	15E Soil	15F Soil	16B Soil
Sample Matrix			M22-Ja36814	M22-Ja36815	M22-Ja36816	M22-Ja36817
Eurofins Sample No.			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Date Sampled						
Test/Reference	LOR	Unit				
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H ⁺ /t	-	-	< 10	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	-	< 0.02	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO ₃ /t	-	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	-	-	52	-
>2mm Fraction	0.005	g	-	-	< 0.005	-
Analysed Material	0.1	%	-	-	100	-
Extraneous Material	0.1	%	-	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	-	7.5	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	-	< 0.02	-
Titratable Peroxide Acidity (a-TPA)	2	mol H ⁺ /t	-	-	< 2	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H ⁺ /t	-	-	< 2	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	-	< 0.02	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	-	< 0.02	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H ⁺ /t	-	-	< 10	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	-	0.070	-
Calcium - Peroxide	0.005	% Ca	-	-	0.080	-
Calcium - Acid Reacted	0.005	% Ca	-	-	0.015	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.012	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	-	-	7.4	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	-	0.090	-
Magnesium - Peroxide	0.005	% Mg	-	-	0.12	-
Magnesium - Acid Reacted	0.005	% Mg	-	-	0.024	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.031	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	-	-	20	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	-	0.27	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	-	0.09	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H ⁺ /t	-	-	55	-

Client Sample ID			16F Soil	16G Soil	17B Soil	17C Soil
Sample Matrix			M22-Ja36818	M22-Ja36819	M22-Ja36820	M22-Ja36821
Eurofins Sample No.			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Date Sampled						
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	44	-	94	-
Exchangeable Sodium Percentage (ESP)	0.1	%	3.2	-	8.3	-
Magnesium (exchangeable)	0.1	meq/100g	7.0	-	8.9	-
Potassium (exchangeable)	0.1	meq/100g	0.7	-	0.7	-
Sodium (exchangeable)	0.1	meq/100g	0.5	-	1.5	-
% Moisture	1	%	16	17	20	21

Client Sample ID			16F Soil	16G Soil	17B Soil	17C Soil
Sample Matrix						
Eurofins Sample No.			M22-Ja36818	M22-Ja36819	M22-Ja36820	M22-Ja36821
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	8.2	-	7.5	-
Cation Exchange Capacity	0.05	meq/100g	16	-	19	-
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	6.1	-	5.9
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	-	4.0	-	6.0
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	0.010	-	0.010
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	-	-	< 0.005
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	-	-	< 3
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	< 0.005	-	N/A
Peroxide Extractable Sulfur	0.005	% S	-	< 0.005	-	-
HCl Extractable Sulfur	0.005	% S	-	N/A	-	N/A
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	-	-	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	N/A	-	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	N/A	-	N/A
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	-	-	N/A
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	-	-	N/A
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	-	-	N/A
ANC Fineness Factor		factor	-	1.5	-	1.5
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	-	< 10	-	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	< 0.02	-	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	-	< 1	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	-	-	< 0.02
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	-	-	< 10
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	-	-	< 1
Extraneous Material						
<2mm Fraction	0.005	g	-	51	-	37
>2mm Fraction	0.005	g	-	< 0.005	-	< 0.005
Analysed Material	0.1	%	-	100	-	100
Extraneous Material	0.1	%	-	< 0.1	-	< 0.1
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	7.3	-	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	< 0.02	-	-
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	-	< 2	-	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	-	< 2	-	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	< 0.02	-	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	< 0.02	-	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	-	< 10	-	-

Client Sample ID			16F Soil	16G Soil	17B Soil	17C Soil
Sample Matrix			M22-Ja36818	M22-Ja36819	M22-Ja36820	M22-Ja36821
Eurofins Sample No.			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Date Sampled						
Test/Reference	LOR	Unit				
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	0.14	-	-
Calcium - Peroxide	0.005	% Ca	-	0.16	-	-
Calcium - Acid Reacted	0.005	% Ca	-	0.017	-	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	0.014	-	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	8.6	-	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	0.070	-	-
Magnesium - Peroxide	0.005	% Mg	-	0.080	-	-
Magnesium - Acid Reacted	0.005	% Mg	-	0.011	-	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	0.015	-	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	9.1	-	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	0.28	-	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	0.09	-	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	-	56	-	-

Client Sample ID			18A Soil	18D Soil	18F Soil	6A Soil
Sample Matrix			M22-Ja36822	M22-Ja36823	M22-Ja36824	M22-Ja36836
Eurofins Sample No.			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Date Sampled						
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	130	220	-	110
Exchangeable Sodium Percentage (ESP)	0.1	%	8.9	22	-	9.0
Magnesium (exchangeable)	0.1	meq/100g	6.8	8.6	-	9.1
Potassium (exchangeable)	0.1	meq/100g	0.6	0.4	-	0.9
Sodium (exchangeable)	0.1	meq/100g	1.5	4.5	-	1.6
% Moisture	1	%	7.3	9.0	10	11
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	8.0	6.7	-	5.9
Cation Exchange Capacity	0.05	meq/100g	17	20	-	17
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	-	6.6	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	-	-	< 2	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	-	< 0.003	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	-	< 0.005	-
Peroxide Extractable Sulfur	0.005	% S	-	-	< 0.005	-
HCl Extractable Sulfur	0.005	% S	-	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	-	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
ANC Fineness Factor		factor	-	-	1.5	-

Client Sample ID			18A	18D	18F	6A
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Ja36822	M22-Ja36823	M22-Ja36824	M22-Ja36836
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H ⁺ /t	-	-	< 10	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	-	< 0.02	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO ₃ /t	-	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	-	-	62	-
>2mm Fraction	0.005	g	-	-	< 0.005	-
Analysed Material	0.1	%	-	-	100	-
Extraneous Material	0.1	%	-	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	-	7.6	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	-	< 0.02	-
Titratable Peroxide Acidity (a-TPA)	2	mol H ⁺ /t	-	-	< 2	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H ⁺ /t	-	-	< 2	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	-	< 0.02	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	-	< 0.02	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H ⁺ /t	-	-	< 10	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	-	0.14	-
Calcium - Peroxide	0.005	% Ca	-	-	0.17	-
Calcium - Acid Reacted	0.005	% Ca	-	-	0.022	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.018	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	-	-	11	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	-	0.090	-
Magnesium - Peroxide	0.005	% Mg	-	-	0.12	-
Magnesium - Acid Reacted	0.005	% Mg	-	-	0.023	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.030	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	-	-	19	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	-	0.33	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	-	0.10	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H ⁺ /t	-	-	65	-

Client Sample ID			7B	8A	12A	15B
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Ja36838	M22-Ja36843	M22-Ja36850	M22-Ja36857
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	670	90	140	190
Exchangeable Sodium Percentage (ESP)	0.1	%	6.3	3.3	7.2	5.1
Magnesium (exchangeable)	0.1	meq/100g	8.7	3.7	2.1	14
Potassium (exchangeable)	0.1	meq/100g	0.7	0.6	0.3	0.8
Sodium (exchangeable)	0.1	meq/100g	1.4	0.4	0.5	1.2
% Moisture	1	%	6.3	6.9	6.8	18

Client Sample ID			7B	8A	12A	15B
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Ja36838	M22-Ja36843	M22-Ja36850	M22-Ja36857
Date Sampled			Jan 27, 2022	Jan 27, 2022	Jan 27, 2022	Jan 27, 2022
Test/Reference	LOR	Unit				
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	11	6.4	3.9	7.6
Cation Exchange Capacity	0.05	meq/100g	22	11	6.8	23

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Conductivity (1:5 aqueous extract at 25°C as rec.) - Method: LTM-INO-4030 Conductivity	Melbourne	Feb 08, 2022	7 Days
Magnesium (exchangeable) - Method: LTM-MET-3060 Cation Exchange Capacity and ESP	Melbourne	Feb 09, 2022	180 Days
Potassium (exchangeable) - Method: LTM-MET-3060 Cation Exchange Capacity and ESP	Melbourne	Feb 09, 2022	180 Days
Sodium (exchangeable) - Method: LTM-MET-3060 Cation Exchange Capacity and ESP	Melbourne	Feb 09, 2022	180 Days
Cation Exchange Capacity - Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage	Melbourne	Feb 09, 2022	28 Days
Exchangeable Sodium Percentage (ESP) - Method: LTM-MET-3060 - Cation Exchange Capacity (CEC) & Exchangeable Sodium Percentage (ESP)	Melbourne	Feb 09, 2022	28 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Feb 07, 2022	14 Days
Chromium Reducible Sulfur Suite			
Chromium Suite - Method: LTM-GEN-7070 Chromium Reducible Sulfur Suite	Brisbane	Feb 03, 2022	6 Week
Extraneous Material - Method: LTM-GEN-7050/7070	Brisbane	Feb 03, 2022	6 Week
SPOCAS Suite			
SPOCAS Suite - Method: LTM-GEN-7050	Brisbane	Feb 03, 2022	6 Week

Company Name:	MONARC Env a FYFE Division	Order No.:		Received:	Jan 30, 2022 4:21 PM
Address:	Suite 4, 668 Burwood Road Hawthorn East VIC 3123	Report #:	858967	Due:	Feb 7, 2022
Project Name:	WERRIBEE	Phone:	03 9205 6000	Priority:	5 Day
Project ID:	81196-1	Fax:	9836 0801	Contact Name:	Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	1B	Jan 27, 2022		Soil	M22-Ja36781		X			X
2	1C	Jan 27, 2022		Soil	M22-Ja36782				X	X
3	2B	Jan 27, 2022		Soil	M22-Ja36783		X			X
4	2C	Jan 27, 2022		Soil	M22-Ja36784				X	X
5	3C	Jan 27, 2022		Soil	M22-Ja36785		X			X
6	3F	Jan 27, 2022		Soil	M22-Ja36786		X			X
7	3G	Jan 27, 2022		Soil	M22-Ja36787			X		X
8	4B	Jan 27, 2022		Soil	M22-Ja36788		X			X
9	4C	Jan 27, 2022		Soil	M22-Ja36789				X	X

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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
10	5E	Jan 27, 2022		Soil	M22-Ja36790		X			X
11	5F	Jan 27, 2022		Soil	M22-Ja36791		X			X
12	5G	Jan 27, 2022		Soil	M22-Ja36792			X		X
13	6B	Jan 27, 2022		Soil	M22-Ja36793		X			X
14	6C	Jan 27, 2022		Soil	M22-Ja36794				X	X
15	7E	Jan 27, 2022		Soil	M22-Ja36795		X			X
16	7H	Jan 27, 2022		Soil	M22-Ja36796		X			X
17	7I	Jan 27, 2022		Soil	M22-Ja36797			X		X
18	8B	Jan 27, 2022		Soil	M22-Ja36798		X			X
19	8C	Jan 27, 2022		Soil	M22-Ja36799				X	X
20	9B	Jan 27, 2022		Soil	M22-Ja36800		X			X

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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
21	9C	Jan 27, 2022		Soil	M22-Ja36801				X	X
22	10B	Jan 27, 2022		Soil	M22-Ja36802		X			X
23	10C	Jan 27, 2022		Soil	M22-Ja36803				X	X
24	11E	Jan 27, 2022		Soil	M22-Ja36804		X			X
25	11F	Jan 27, 2022		Soil	M22-Ja36805		X			X
26	11G	Jan 27, 2022		Soil	M22-Ja36806			X		X
27	12B	Jan 27, 2022		Soil	M22-Ja36807		X			X
28	12C	Jan 27, 2022		Soil	M22-Ja36808				X	X
29	13B	Jan 27, 2022		Soil	M22-Ja36809		X			X
30	13D	Jan 27, 2022		Soil	M22-Ja36810		X			X
31	13G	Jan 27, 2022		Soil	M22-Ja36811			X		X

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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
32	14B	Jan 27, 2022		Soil	M22-Ja36812		X			X
33	14C	Jan 27, 2022		Soil	M22-Ja36813				X	X
34	15D	Jan 27, 2022		Soil	M22-Ja36814		X			X
35	15E	Jan 27, 2022		Soil	M22-Ja36815		X			X
36	15F	Jan 27, 2022		Soil	M22-Ja36816			X		X
37	16B	Jan 27, 2022		Soil	M22-Ja36817		X			X
38	16F	Jan 27, 2022		Soil	M22-Ja36818		X			X
39	16G	Jan 27, 2022		Soil	M22-Ja36819			X		X
40	17B	Jan 27, 2022		Soil	M22-Ja36820		X			X
41	17C	Jan 27, 2022		Soil	M22-Ja36821				X	X
42	18A	Jan 27, 2022		Soil	M22-Ja36822		X			X

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Project Name:	WERRIBEE	Phone:	03 9205 6000	Priority:	5 Day
Project ID:	81196-1	Fax:	9836 0801	Contact Name:	Wendy Tsvoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
43	18D	Jan 27, 2022		Soil	M22-Ja36823		X			X
44	18F	Jan 27, 2022		Soil	M22-Ja36824			X		X
45	1A	Jan 27, 2022		Soil	M22-Ja36825	X				
46	2A	Jan 27, 2022		Soil	M22-Ja36826	X				
47	3A	Jan 27, 2022		Soil	M22-Ja36827	X				
48	3B	Jan 27, 2022		Soil	M22-Ja36828	X				
49	3D	Jan 27, 2022		Soil	M22-Ja36829	X				
50	3E	Jan 27, 2022		Soil	M22-Ja36830	X				
51	4A	Jan 27, 2022		Soil	M22-Ja36831	X				
52	5A	Jan 27, 2022		Soil	M22-Ja36832	X				
53	5B	Jan 27, 2022		Soil	M22-Ja36833	X				

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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
54	5C	Jan 27, 2022		Soil	M22-Ja36834	X				
55	5D	Jan 27, 2022		Soil	M22-Ja36835	X				
56	6A	Jan 27, 2022		Soil	M22-Ja36836	X				
57	7A	Jan 27, 2022		Soil	M22-Ja36837	X				
58	7B	Jan 27, 2022		Soil	M22-Ja36838	X				
59	7C	Jan 27, 2022		Soil	M22-Ja36839	X				
60	7D	Jan 27, 2022		Soil	M22-Ja36840	X				
61	7F	Jan 27, 2022		Soil	M22-Ja36841	X				
62	7G	Jan 27, 2022		Soil	M22-Ja36842	X				
63	8A	Jan 27, 2022		Soil	M22-Ja36843	X				
64	9A	Jan 27, 2022		Soil	M22-Ja36844	X				

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Project Name:	WERRIBEE	Phone:	03 9205 6000	Priority:	5 Day
Project ID:	81196-1	Fax:	9836 0801	Contact Name:	Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
65	10A	Jan 27, 2022		Soil	M22-Ja36845	X				
66	11A	Jan 27, 2022		Soil	M22-Ja36846	X				
67	11B	Jan 27, 2022		Soil	M22-Ja36847	X				
68	11C	Jan 27, 2022		Soil	M22-Ja36848	X				
69	11D	Jan 27, 2022		Soil	M22-Ja36849	X				
70	12A	Jan 27, 2022		Soil	M22-Ja36850	X				
71	13A	Jan 27, 2022		Soil	M22-Ja36851	X				
72	13C	Jan 27, 2022		Soil	M22-Ja36852	X				
73	13E	Jan 27, 2022		Soil	M22-Ja36853	X				
74	13F	Jan 27, 2022		Soil	M22-Ja36854	X				
75	14A	Jan 27, 2022		Soil	M22-Ja36855	X				

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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217										
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079										
Perth Laboratory - NATA # 2377 Site # 2370										
External Laboratory										
76	15A	Jan 27, 2022		Soil	M22-Ja36856	X				
77	15B	Jan 27, 2022		Soil	M22-Ja36857	X				
78	15C	Jan 27, 2022		Soil	M22-Ja36858	X				
79	16A	Jan 27, 2022		Soil	M22-Ja36859	X				
80	16C	Jan 27, 2022		Soil	M22-Ja36860	X				
81	16D	Jan 27, 2022		Soil	M22-Ja36861	X				
82	16E	Jan 27, 2022		Soil	M22-Ja36862	X				
83	17A	Jan 27, 2022		Soil	M22-Ja36863	X				
84	18B	Jan 27, 2022		Soil	M22-Ja36864	X				
85	18C	Jan 27, 2022		Soil	M22-Ja36865	X				
86	18E	Jan 27, 2022		Soil	M22-Ja36866	X				

Company Name:	MONARC Env a FYFE Division	Order No.:		Received:	Jan 30, 2022 4:21 PM
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Project Name:	WERRIBEE	Phone:	03 9205 6000	Priority:	5 Day
Project ID:	81196-1	Fax:	9836 0801	Contact Name:	Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail	HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254	X	X			X
Sydney Laboratory - NATA # 1261 Site # 18217					
Brisbane Laboratory - NATA # 1261 Site # 20794			X	X	
Mayfield Laboratory - NATA # 1261 Site # 25079					
Perth Laboratory - NATA # 2377 Site # 2370					
External Laboratory					
Test Counts	42	26	8	10	44

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank										
Conductivity (1:5 aqueous extract at 25°C as rec.)				uS/cm	< 10			10	Pass	
Exchangeable Sodium Percentage (ESP)				%	< 0.1			0.1	Pass	
Magnesium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Potassium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Sodium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Method Blank										
Cation Exchange Capacity										
Calcium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Cation Exchange Capacity				meq/100g	< 0.05			0.05	Pass	
LCS - % Recovery										
Actual Acidity (NLM-3.2)										
pH-KCL (NLM-3.1)				%	92			80-120	Pass	
pH-KCL (NLM-3.1)				%	92			80-120	Pass	
Titratable Actual Acidity (NLM-3.2)				%	103			80-120	Pass	
Titratable Actual Acidity (NLM-3.2)				%	102			80-120	Pass	
LCS - % Recovery										
Potential Acidity - Chromium Reducible Sulfur										
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)				%	98			80-120	Pass	
LCS - % Recovery										
Extractable Sulfur										
HCl Extractable Sulfur				%	103			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
Actual Acidity (NLM-3.2)				Result 1	Result 2	RPD				
pH-KCL (NLM-3.1)	M22-Ja36787	CP	pH Units	6.9	7.0	1.0	30%	Pass		
Titratable Actual Acidity (NLM-3.2)	M22-Ja36787	CP	mol H+/t	< 2	< 2	<1	30%	Pass		
Titratable Actual Acidity (NLM-3.2)	M22-Ja36787	CP	% pyrite S	< 0.003	< 0.003	<1	30%	Pass		
Duplicate										
Potential Acidity - Chromium Reducible Sulfur				Result 1	Result 2	RPD				
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	M22-Ja36787	CP	% S	N/A	N/A	N/A	30%	Pass		
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	M22-Ja36787	CP	mol H+/t	N/A	N/A	N/A	30%	Pass		
Duplicate										
Extractable Sulfur				Result 1	Result 2	RPD				
Sulfur - KCl Extractable	M22-Ja36787	CP	% S	0.030	0.020	5.0	30%	Pass		
Peroxide Extractable Sulfur	M22-Ja36787	CP	% S	0.030	0.030	3.0	30%	Pass		
HCl Extractable Sulfur	M22-Ja36787	CP	% S	N/A	N/A	N/A	30%	Pass		
Duplicate										
Retained Acidity (S-NAS)				Result 1	Result 2	RPD				
Net Acid soluble sulfur (SNAS) NLM-4.1	M22-Ja36787	CP	% S	N/A	N/A	N/A	30%	Pass		
Net Acid soluble sulfur (s-SNAS) NLM-4.1	M22-Ja36787	CP	% S	N/A	N/A	N/A	30%	Pass		
Net Acid soluble sulfur (a-SNAS) NLM-4.1	M22-Ja36787	CP	mol H+/t	N/A	N/A	N/A	30%	Pass		
Duplicate										
Acid Neutralising Capacity (ANCbt)				Result 1	Result 2	RPD				
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	M22-Ja36787	CP	% CaCO3	N/A	N/A	N/A	30%	Pass		
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	M22-Ja36787	CP	% S	N/A	N/A	N/A	30%	Pass		
ANC Fineness Factor	M22-Ja36787	CP	factor	1.5	1.5	<1	30%	Pass		

Duplicate								
Net Acidity (Including ANC)				Result 1	Result 2	RPD		
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	M22-Ja36787	CP	mol H+/t	< 10	< 10	<1	30%	Pass
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	M22-Ja36787	CP	% S	< 0.02	< 0.02	<1	30%	Pass
SPOCAS - Liming rate - ASSMAC	M22-Ja36787	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Ja36787	CP	% S	N/A	N/A	N/A	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Ja36787	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
CRS Suite - Liming Rate - NASSG (Including ANC)	M22-Ja36787	CP	kg CaCO3/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Potential Acidity - Titratable Peroxide				Result 1	Result 2	RPD		
pH-OX	M22-Ja36787	CP	pH Units	7.4	7.4	<1	30%	Pass
Titratable Peroxide Acidity (s-TPA)	M22-Ja36787	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass
Titratable Peroxide Acidity (a-TPA)	M22-Ja36787	CP	mol H+/t	< 2	< 2	<1	30%	Pass
Titratable Sulfidic Acidity (a-TSA)	M22-Ja36787	CP	mol H+/t	< 2	< 2	<1	30%	Pass
Titratable Sulfidic Acidity (s-TSA)	M22-Ja36787	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Potential Acidity (SPOS)				Result 1	Result 2	RPD		
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	M22-Ja36787	CP	% S	< 0.02	< 0.02	<1	30%	Pass
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	M22-Ja36787	CP	mol H+/t	< 10	< 10	<1	30%	Pass
Duplicate								
Extractable Calcium				Result 1	Result 2	RPD		
Calcium - KCl Extractable	M22-Ja36787	CP	% Ca	0.13	0.13	3.0	30%	Pass
Calcium - Peroxide	M22-Ja36787	CP	% Ca	0.14	0.13	3.0	30%	Pass
Calcium - Acid Reacted	M22-Ja36787	CP	% Ca	0.009	0.008	7.0	30%	Pass
Calcium - Acid Reacted (s-aCa)	M22-Ja36787	CP	% S	0.007	0.006	7.0	30%	Pass
Calcium - Acid Reacted (a-aCa)	M22-Ja36787	CP	mol H+/t	4.3	4.0	7.0	30%	Pass
Duplicate								
Extractable Magnesium				Result 1	Result 2	RPD		
Magnesium - KCl Extractable	M22-Ja36787	CP	% Mg	0.32	0.31	3.0	30%	Pass
Magnesium - Peroxide	M22-Ja36787	CP	% Mg	0.37	0.36	3.0	30%	Pass
Magnesium - Acid Reacted	M22-Ja36787	CP	% Mg	0.050	0.048	4.0	30%	Pass
Magnesium - Acid Reacted (s-aCa)	M22-Ja36787	CP	% S	0.066	0.063	4.0	30%	Pass
Magnesium - Acid Reacted (a-aCa)	M22-Ja36787	CP	mol H+/t	41	39	4.0	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCE)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCE)	M22-Ja36787	CP	% CaCO3	0.38	0.39	1.0	30%	Pass
Acid Neutralising Capacity - (a-ANCE)	M22-Ja36787	CP	mol H+/t	77	77	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M22-Ja36792	CP	%	31	31	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	M22-Ja36793	CP	uS/cm	250	250	3.0	30%	Pass
Exchangeable Sodium Percentage (ESP)	M22-Ja36793	CP	%	30	30	<1	30%	Pass
Magnesium (exchangeable)	M22-Ja36793	CP	meq/100g	15	15	3.0	30%	Pass
Potassium (exchangeable)	M22-Ja36793	CP	meq/100g	1.6	1.6	2.0	30%	Pass
Sodium (exchangeable)	M22-Ja36793	CP	meq/100g	9.8	9.7	1.0	30%	Pass

Duplicate								
Cation Exchange Capacity				Result 1	Result 2	RPD		
Calcium (exchangeable)	M22-Ja36793	CP	meq/100g	6.4	6.5	1.0	30%	Pass
Cation Exchange Capacity	M22-Ja36793	CP	meq/100g	33	33	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Exchangeable Sodium Percentage (ESP)	M22-Ja36796	CP	%	22	22	2.0	30%	Pass
Magnesium (exchangeable)	M22-Ja36796	CP	meq/100g	10	11	8.0	30%	Pass
Potassium (exchangeable)	M22-Ja36796	CP	meq/100g	0.8	0.8	6.0	30%	Pass
Sodium (exchangeable)	M22-Ja36796	CP	meq/100g	6.8	7.3	7.0	30%	Pass
Duplicate								
Cation Exchange Capacity				Result 1	Result 2	RPD		
Calcium (exchangeable)	M22-Ja36796	CP	meq/100g	14	14	3.0	30%	Pass
Cation Exchange Capacity	M22-Ja36796	CP	meq/100g	31	33	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	M22-Ja36800	CP	uS/cm	410	430	2.7	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M22-Ja36802	CP	%	15	15	3.0	30%	Pass
Duplicate								
Actual Acidity (NLM-3.2)				Result 1	Result 2	RPD		
pH-KCL (NLM-3.1)	M22-Ja36808	CP	pH Units	8.6	8.6	<1	30%	Pass
Titrateable Actual Acidity (NLM-3.2)	M22-Ja36808	CP	mol H+/t	< 2	< 2	<1	30%	Pass
Titrateable Actual Acidity (NLM-3.2)	M22-Ja36808	CP	% pyrite S	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Potential Acidity - Chromium Reducible Sulfur				Result 1	Result 2	RPD		
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	M22-Ja36808	CP	% S	< 0.005	< 0.005	<1	30%	Pass
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	M22-Ja36808	CP	mol H+/t	< 3	< 3	<1	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCbt)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	M22-Ja36808	CP	% CaCO3	1.2	1.3	1.0	30%	Pass
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	M22-Ja36808	CP	% S	0.40	0.40	1.0	30%	Pass
ANC Fineness Factor	M22-Ja36808	CP	factor	1.5	1.5	<1	30%	Pass
Duplicate								
Net Acidity (Including ANC)				Result 1	Result 2	RPD		
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Ja36808	CP	% S	< 0.02	< 0.02	<1	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Ja36808	CP	mol H+/t	< 10	< 10	<1	30%	Pass
CRS Suite - Liming Rate - NASSG (Including ANC)	M22-Ja36808	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	M22-Ja36812	CP	uS/cm	1400	1400	<1	30%	Pass
% Moisture	M22-Ja36812	CP	%	20	20	1.0	30%	Pass
Duplicate								
Actual Acidity (NLM-3.2)				Result 1	Result 2	RPD		
pH-KCL (NLM-3.1)	M22-Ja36813	CP	pH Units	8.6	8.6	<1	30%	Pass
Titrateable Actual Acidity (NLM-3.2)	M22-Ja36813	CP	mol H+/t	< 2	< 2	<1	30%	Pass
Titrateable Actual Acidity (NLM-3.2)	M22-Ja36813	CP	% pyrite S	< 0.003	< 0.003	<1	30%	Pass

Duplicate								
Potential Acidity - Chromium Reducible Sulfur				Result 1	Result 2	RPD		
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	M22-Ja36813	CP	% S	< 0.005	< 0.005	<1	30%	Pass
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	M22-Ja36813	CP	mol H+/t	< 3	< 3	<1	30%	Pass
Duplicate								
Extractable Sulfur				Result 1	Result 2	RPD		
Sulfur - KCl Extractable	M22-Ja36813	CP	% S	N/A	N/A	N/A	30%	Pass
Peroxide Extractable Sulfur	M22-Ja36813	CP	% S	N/A	N/A	N/A	30%	Pass
HCl Extractable Sulfur	M22-Ja36813	CP	% S	N/A	N/A	N/A	30%	Pass
Duplicate								
Retained Acidity (S-NAS)				Result 1	Result 2	RPD		
Net Acid soluble sulfur (SNAS) NLM-4.1	M22-Ja36813	CP	% S	N/A	N/A	N/A	30%	Pass
Net Acid soluble sulfur (s-SNAS) NLM-4.1	M22-Ja36813	CP	% S	N/A	N/A	N/A	30%	Pass
Net Acid soluble sulfur (a-SNAS) NLM-4.1	M22-Ja36813	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCbt)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	M22-Ja36813	CP	% CaCO ₃	1.2	1.3	7.0	30%	Pass
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	M22-Ja36813	CP	% S	0.38	0.40	7.0	30%	Pass
ANC Fineness Factor	M22-Ja36813	CP	factor	1.5	1.5	<1	30%	Pass
Duplicate								
Net Acidity (Including ANC)				Result 1	Result 2	RPD		
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	M22-Ja36813	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	M22-Ja36813	CP	% S	N/A	N/A	N/A	30%	Pass
SPOCAS - Liming rate - ASSMAC	M22-Ja36813	CP	kg CaCO ₃ /t	N/A	N/A	N/A	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Ja36813	CP	% S	< 0.02	< 0.02	<1	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Ja36813	CP	mol H+/t	< 10	< 10	<1	30%	Pass
CRS Suite - Liming Rate - NASSG (Including ANC)	M22-Ja36813	CP	kg CaCO ₃ /t	< 1	< 1	<1	30%	Pass
Duplicate								
Potential Acidity - Titratable Peroxide				Result 1	Result 2	RPD		
Titratable Peroxide Acidity (s-TPA)	M22-Ja36813	CP	% pyrite S	N/A	N/A	N/A	30%	Pass
Titratable Sulfidic Acidity (a-TSA)	M22-Ja36813	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Titratable Sulfidic Acidity (s-TSA)	M22-Ja36813	CP	% pyrite S	N/A	N/A	N/A	30%	Pass
Duplicate								
Potential Acidity (SPOS)				Result 1	Result 2	RPD		
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	M22-Ja36813	CP	% S	N/A	N/A	N/A	30%	Pass
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	M22-Ja36813	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Extractable Calcium				Result 1	Result 2	RPD		
Calcium - KCl Extractable	M22-Ja36813	CP	% Ca	N/A	N/A	N/A	30%	Pass
Calcium - Peroxide	M22-Ja36813	CP	% Ca	N/A	N/A	N/A	30%	Pass
Calcium - Acid Reacted	M22-Ja36813	CP	% Ca	N/A	N/A	N/A	30%	Pass
Calcium - Acid Reacted (s-aCa)	M22-Ja36813	CP	% S	N/A	N/A	N/A	30%	Pass
Calcium - Acid Reacted (a-aCa)	M22-Ja36813	CP	mol H+/t	N/A	N/A	N/A	30%	Pass

Duplicate								
Extractable Magnesium				Result 1	Result 2	RPD		
Magnesium - KCl Extractable	M22-Ja36813	CP	% Mg	N/A	N/A	N/A	30%	Pass
Magnesium - Peroxide	M22-Ja36813	CP	% Mg	N/A	N/A	N/A	30%	Pass
Magnesium - Acid Reacted	M22-Ja36813	CP	% Mg	N/A	N/A	N/A	30%	Pass
Magnesium - Acid Reacted (s-aCa)	M22-Ja36813	CP	% S	N/A	N/A	N/A	30%	Pass
Magnesium - Acid Reacted (a-aCa)	M22-Ja36813	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCE)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCE)	M22-Ja36813	CP	% CaCO ₃	N/A	N/A	N/A	30%	Pass
Acid Neutralising Capacity - (a-ANCE)	M22-Ja36813	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	M22-Ja36814	CP	uS/cm	130	130	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	M22-Ja36820	CP	uS/cm	94	110	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M22-Ja36822	CP	%	7.3	7.9	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Exchangeable Sodium Percentage (ESP)	M22-Ja36823	CP	%	22	23	2.0	30%	Pass
Magnesium (exchangeable)	M22-Ja36823	CP	meq/100g	8.6	8.5	2.0	30%	Pass
Potassium (exchangeable)	M22-Ja36823	CP	meq/100g	0.4	0.4	6.0	30%	Pass
Sodium (exchangeable)	M22-Ja36823	CP	meq/100g	4.5	4.5	1.0	30%	Pass
Duplicate								
Cation Exchange Capacity				Result 1	Result 2	RPD		
Calcium (exchangeable)	M22-Ja36823	CP	meq/100g	6.7	6.4	5.0	30%	Pass
Cation Exchange Capacity	M22-Ja36823	CP	meq/100g	20	20	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	M22-Ja36857	CP	uS/cm	190	200	5.7	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
S01	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/m ³ in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m ³ '
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl is greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised by:

Catherine Wilson	Analytical Services Manager
Scott Beddoes	Senior Analyst-Inorganic (VIC)
Myles Clark	Senior Analyst-SPOCAS (QLD)
Emily Rosenberg	Senior Analyst-Metal (VIC)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CLIENT: MONARC/FYFE		LABORATORY: EUROFINS		LABORATORY BATCH NO.:		TURNAROUND TIME:	
PROJECT: 81196-1 WERRIBEE		COC Reference:		Wendy T		Standard	
SEND REPORT TO: Wendy Tsioulidis		SEND INVOICE TO: WENDY TSILOULIDIS		PHONE:		24 Hour	
DATA/ REPORT NEEDED BY:		QUOTE #:		REPORT FORMAT: HARD: NO FAX: NO E-MAIL: YES		48 Hour	
RELINQUISHED BY:		DATE: 2/2/2022		RECEIVED BY:		METHOD OF SHIPMENT: Courier	
NAME: Wendy T		TIME:		NAME:		TRANSPORT CO. NAME:	
OF: Monarc				OF:			
P.O. NO.: 81196		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		ANALYSIS REQUIRED		*Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; O = Other.	
FOR LAB USE ONLY		Please forward results and invoice to:					
COOLER SEAL		wendy.tsioulidis@monarcenviro.com.au					
Yes No							
Broken							
COOLER TEMP: deg. °C							
SAMPLE DATA			*CONTAINER DATA			HOLD	
SAMPLE ID	DEPTH (mbgl)	DATE	TIME	TYPE & PRESERVATIVE	NO.	Suite B20 (CEC/ESP/cations)	NOTES
19A	0.1	31/01/2022		Jar + Ice	1		
19B	0.5	31/01/2022		Jar + Ice	1		
19C	1	31/01/2022		Jar + Ice	1		
20A	0.1	31/01/2022		Jar + Ice	1		
20B	0.5	31/01/2022		Jar + Ice	1		
20C	1	31/01/2022		Jar + Ice	1		
21A	0.1	31/01/2022		Jar + Ice	1		
21B	0.5	31/01/2022		Jar + Ice	1		
21C	1	31/01/2022		Jar + Ice	1		
22A	0.1	31/01/2022		Jar + Ice	1		
22B	0.5	31/01/2022		Jar + Ice	1		
22C	1	31/01/2022		Jar + Ice	1		
23A	0.1	31/01/2022		Jar + Ice	1		
23B	0.5	31/01/2022		Jar + Ice	1		
23C	1	31/01/2022		Jar + Ice	1		
23D	1.8	31/01/2022		Jar + Ice	1		
23E	3	31/01/2022		Jar + Ice	1		
24A	0.1	31/01/2022		Jar + Ice	1		
24B	0.5	31/01/2022		Jar + Ice	1		
24C	1	31/01/2022		Jar + Ice	1		
24D	2	31/01/2022		Jar + Ice	1		
24E	3	31/01/2022		Jar + Ice	1		
25A	0.1	31/01/2022		Jar + Ice	1		
25B	0.5	31/01/2022		Jar + Ice	1		
25C	1	31/01/2022		Jar + Ice	1		
26A	0.1	31/01/2022		Jar + Ice	1		
26B	0.5	31/01/2022		Jar + Ice	1		
26C	1	31/01/2022		Jar + Ice	1		
27A	0.1	31/01/2022		Jar + Ice	1		
27B	0.5	31/01/2022		Jar + Ice	1		
27C	1	31/01/2022		Jar + Ice	1		
27D	2	31/01/2022		Jar + Ice	1		
27E	3	31/01/2022		Jar + Ice	1		

859847
L. Dwyer

30 days

2/2/22 5:05 pm

Ye / No



12-9-0-4

12-5

courier
Emily P



FM_SAMP_03 CHAIN OF CUSTODY DOCUMENTATION

CLIENT: MONARC/FYFE		LABORATORY: EUROFINS		LABORATORY BATCH NO.:		TURNAROUND TIME:	
PROJECT: 81196-1 WERRIBEE		COC Reference:		SAMPLERS:		Standard	
SEND REPORT TO: Wendy Tsvoulidis		SEND INVOICE TO: WENDY TSVOULIDIS		PHONE: 0423 628 974		24 Hour	
DATA/ REPORT NEEDED BY:		QUOTE #:		REPORT FORMAT: HARD: NO FAX: NO E-MAIL: YES		48 Hour	
RELINQUISHED BY:		DATE: 2/2/2022		RECEIVED BY:		METHOD OF SHIPMENT: Courier	
NAME : Wendy T		TIME:		NAME :		TRANSPORT CO. NAME:	
OF: Monarc				OF:			
P.O. NO.: 81196		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		ANALYSIS REQUIRED		*Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; O = Other.	
FOR LAB USE ONLY		Please forward results and invoice to:		SPOC AS		HOLD	
COOLER SEAL		wendyt@monarcenviro.com.au		Chromium suite ASS			
Yes No				Suite B20 (CEC/ESP/cations)			
Broken Intact							
COOLER TEMP: deg. °C							
SAMPLE DATA		*CONTAINER DATA					
SAMPLE ID	DEPTH (mbgl)	DATE	TIME	TYPE & PRESERVATIVE	NO.		
28A	0.1	31/01/2022		Jar + Ice	1		
28B	0.5	31/01/2022		Jar + Ice	1		
28C	1	31/01/2022		Jar + Ice	1		
28D	2	31/01/2022		Jar + Ice	1		
28E	3	31/01/2022		Jar + Ice	1		
29A	0.1	31/01/2022		Jar + Ice	1		
29B	0.5	31/01/2022		Jar + Ice	1		
29C	1	31/01/2022		Jar + Ice	1		
29D	2	31/01/2022		Jar + Ice	1		
29E	3	31/01/2022		Jar + Ice	1		
30A	0.1	31/01/2022		Jar + Ice	1		
30B	0.5	31/01/2022		Jar + Ice	1		
30C	1	31/01/2022		Jar + Ice	1		
30D	2	31/01/2022		Jar + Ice	1		
30E	3	31/01/2022		Jar + Ice	1		
31A	0.1	31/01/2022		Jar + Ice	1		
31B	0.5	31/01/2022		Jar + Ice	1		
31C	1	31/01/2022		Jar + Ice	1		
32A	0.1	31/01/2022		Jar + Ice	1		
32B	0.5	31/01/2022		Jar + Ice	1		
32C	1	31/01/2022		Jar + Ice	1		
32D	2	31/01/2022		Jar + Ice	1		
32E	3	31/01/2022		Jar + Ice	1		
33A	0.1	31/01/2022		Jar + Ice	1		
33B	0.5	31/01/2022		Jar + Ice	1		
33C	1	31/01/2022		Jar + Ice	1		
33D	2	31/01/2022		Jar + Ice	1		
33E	3	31/01/2022		Jar + Ice	1		
34A	0.1	31/01/2022		Jar + Ice	1		
34B	0.5	31/01/2022		Jar + Ice	1		
34C	1	31/01/2022		Jar + Ice	1		

859847
Wendy



CLIENT: MONARC/FYFE		LABORATORY: EUROFINS		LABORATORY BATCH NO.:		TURNAROUND TIME:	
PROJECT: 81196-1 WERRIBEE		COC Reference:		SAMPLERS: Wendy T		Standard	
SEND REPORT TO: Wendy Tsioulidis		SEND INVOICE TO: WENDY TSILOULIDIS		PHONE: 0423 628 974		24 Hour	
DATA/ REPORT NEEDED BY:		QUOTE #:		REPORT FORMAT: HARD:NO FAX: NO E-MAIL: YES		48 Hour	
RELINQUISHED BY:		DATE: 2/2/2022		RECEIVED BY:		METHOD OF SHIPMENT: Courier	
NAME: Wendy T		TIME:		NAME:		TRANSPORT CO. NAME:	
OF: Monarc				OF:			
P.O. NO.: 81196		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		ANALYSIS REQUIRED		*Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; O = Other.	
FOR LAB USE ONLY		Please forward results and invoice to:					
COOLER SEAL		wendyt@monarcenviro.com.au					
Yes		No					
Broken		Intact					
COOLER TEMP: deg. °C							
SAMPLE DATA			*CONTAINER DATA			HOLD	
SAMPLE ID	DEPTH (mbl)	DATE	TIME	TYPE & PRESERVATIVE	NO.	Suite B20 (CEC/ESP/cations)	Chromium suite A55
35A	0.1	1/02/2022		Jar + Ice	1		
35B	0.5	1/02/2022		Jar + Ice	1	x	
35C	1	1/02/2022		Jar + Ice	1		x
36A	0.1	1/02/2022		Jar + Ice	1		
36B	0.5	1/02/2022		Jar + Ice	1		
36C	1	1/02/2022		Jar + Ice	1	x	
37A	0.1	1/02/2022		Jar + Ice	1		
37B	0.5	1/02/2022		Jar + Ice	1	x	
37C	1	1/02/2022		Jar + Ice	1		
38A	0.1	1/02/2022		Jar + Ice	1		
38B	0.5	1/02/2022		Jar + Ice	1	x	
38C	1	1/02/2022		Jar + Ice	1		
39A	0.1	1/02/2022		Jar + Ice	1		
39B	0.5	1/02/2022		Jar + Ice	1	x	
39C	1	1/02/2022		Jar + Ice	1		
40A	0.1	1/02/2022		Jar + Ice	1	x	
40B	0.5	1/02/2022		Jar + Ice	1		
40C	1	1/02/2022		Jar + Ice	1	x	
41A	0.1	1/02/2022		Jar + Ice	1		
41B	0.5	1/02/2022		Jar + Ice	1	x	
41C	1	1/02/2022		Jar + Ice	1		
42A	0.1	1/02/2022		Jar + Ice	1	x	
42B	0.5	1/02/2022		Jar + Ice	1		
42C	1	1/02/2022		Jar + Ice	1	x	
43A	0.1	1/02/2022		Jar + Ice	1		
43B	0.5	1/02/2022		Jar + Ice	1	x	
43C	1	1/02/2022		Jar + Ice	1		
44A	0.1	1/02/2022		Jar + Ice	1	x	
44B	0.5	1/02/2022		Jar + Ice	1		
44C	1	1/02/2022		Jar + Ice	1	x	
44D	2	1/02/2022		Jar + Ice	1		
44E	3	1/02/2022		Jar + Ice	1	x	

#AU_CAU001_EnviroSampleVic

From: Wendy Tsivoulidis <Wendy.Tsivoulidis@fyfe.com.au>
Sent: Monday, 7 February 2022 3:47 PM
To: Savini Suduweli Kondage
Cc: #AU_CAU001_EnviroSampleVic
Subject: 858967 and 859847 - changes to analyses

Importance: High

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins.

Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

Hi Savini,

We need to make some slight changes to the analyses for this Werribee job.

Can you please cancel the B20 suites on the following samples:

- 33D
- 11F
- 24D
- 27D
- 29D
- 44D

859847
a/b EF
7/2/22.

... and add a B20 analysis for the following samples:

- 12A
- 15B
- 6A
- 7B
- 8A
- 10B

Feel free to give me a call if there are any issues.

Thanks and regards



Wendy Tsivoulidis | Project Manager
Ground Floor, Suite 4, 668 Burwood Road, Hawthorn East VIC 3123
T +61 3 9249 5505 **E** Wendy.Tsivoulidis@fyfe.com.au
M +61 423 628 974 **W** fyfe.com.au

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

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Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

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Welshpool WA 6106
Phone : +61 8 6253 4444
NATA # 2377 Site # 2370

Eurofins Environment Testing NZ Limited

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35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

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43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: MONARC Env a FYFE Division
Address: Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123

Order No.: 81196
Report #: 859847
Phone: 03 9205 6000
Fax: 9836 0801

Received: Feb 2, 2022 5:05 PM
Due: Feb 9, 2022
Priority: 5 Day
Contact Name: Wendy Tsivoulidis

Project Name:
Project ID: 81196-1 WERRIBEE

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	19B_0.5	Jan 31, 2022		Soil	M22-Fe02095		X			X	
2	19C_1.0	Jan 31, 2022		Soil	M22-Fe02096				X		X
3	20B_0.5	Jan 31, 2022		Soil	M22-Fe02097		X			X	
4	20C_1.0	Jan 31, 2022		Soil	M22-Fe02098				X		X
5	21B_0.5	Jan 31, 2022		Soil	M22-Fe02099		X			X	
6	21C_1.0	Jan 31, 2022		Soil	M22-Fe02100				X		X
7	22B_0.5	Jan 31, 2022		Soil	M22-Fe02101		X			X	
8	22C_1.0	Jan 31, 2022		Soil	M22-Fe02102				X		X
9	23C_1.0	Jan 31, 2022		Soil	M22-Fe02103		X			X	



Environment Testing

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NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

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Phone : +61 8 6253 4444
NATA # 2377 Site # 2370

Eurofins Environment Testing NZ Limited

NZBN: 9429046024954

Auckland
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Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

web: www.eurofins.com.au

email: EnviroSales@eurofins.com

Company Name: MONARC Env a FYFE Division
Address: Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123

Project Name:
Project ID: 81196-1 WERRIBEE

Order No.: 81196
Report #: 859847
Phone: 03 9205 6000
Fax: 9836 0801

Received: Feb 2, 2022 5:05 PM
Due: Feb 9, 2022
Priority: 5 Day
Contact Name: Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
10	23D_1.8	Jan 31, 2022		Soil	M22-Fe02104		X			X	
11	23E_3.0	Jan 31, 2022		Soil	M22-Fe02105			X			X
12	24C_1.0	Jan 31, 2022		Soil	M22-Fe02106		X			X	
13	24D_2.0	Jan 31, 2022		Soil	M22-Fe02107	X					
14	24E_3.0	Jan 31, 2022		Soil	M22-Fe02108			X			X
15	25B_0.5	Jan 31, 2022		Soil	M22-Fe02109		X			X	
16	25C_1.0	Jan 31, 2022		Soil	M22-Fe02110				X		X
17	26B_0.5	Jan 31, 2022		Soil	M22-Fe02111		X			X	
18	26C_1.0	Jan 31, 2022		Soil	M22-Fe02112				X		X
19	27C_1.0	Jan 31, 2022		Soil	M22-Fe02113		X			X	
20	27D_2.0	Jan 31, 2022		Soil	M22-Fe02114	X					



Environment Testing

Eurofins Environment Testing Australia Pty Ltd

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6 Monterey Road
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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

Eurofins ARL Pty Ltd

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NATA # 2377 Site # 2370

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Phone : 0800 856 450
IANZ # 1290

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Company Name: MONARC Env a FYFE Division
Address: Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123

Project Name:
Project ID: 81196-1 WERRIBEE

Order No.: 81196
Report #: 859847
Phone: 03 9205 6000
Fax: 9836 0801

Received: Feb 2, 2022 5:05 PM
Due: Feb 9, 2022
Priority: 5 Day
Contact Name: Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
21	27E_3.0	Jan 31, 2022		Soil	M22-Fe02115			X			X
22	28D_2.0	Jan 31, 2022		Soil	M22-Fe02116		X			X	
23	28E_3.0	Jan 31, 2022		Soil	M22-Fe02117			X			X
24	29C_1.0	Jan 31, 2022		Soil	M22-Fe02118		X			X	
25	29D_2.0	Jan 31, 2022		Soil	M22-Fe02119	X					
26	29E_3.0	Jan 31, 2022		Soil	M22-Fe02120			X			X
27	30D_2.0	Jan 31, 2022		Soil	M22-Fe02121		X			X	
28	30E_3.0	Jan 31, 2022		Soil	M22-Fe02122		X	X			X
29	31B_0.5	Jan 31, 2022		Soil	M22-Fe02123		X			X	
30	31C_1.0	Jan 31, 2022		Soil	M22-Fe02124				X		X
31	32D_2.0	Jan 31, 2022		Soil	M22-Fe02125		X			X	



Environment Testing

Eurofins Environment Testing Australia Pty Ltd

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Melbourne
6 Monterey Road
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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

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PO Box 60 Wickham 2293
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

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Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 6253 4444
NATA # 2377 Site # 2370

Eurofins Environment Testing NZ Limited

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Auckland
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Company Name: MONARC Env a FYFE Division
Address: Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123

Project Name:
Project ID: 81196-1 WERRIBEE

Order No.: 81196
Report #: 859847
Phone: 03 9205 6000
Fax: 9836 0801

Received: Feb 2, 2022 5:05 PM
Due: Feb 9, 2022
Priority: 5 Day
Contact Name: Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
32	32E_3.0	Jan 31, 2022		Soil	M22-Fe02126		X	X			X
33	33C_1.0	Jan 31, 2022		Soil	M22-Fe02127		X			X	
34	33D_2.0.	Jan 31, 2022		Soil	M22-Fe02128	X					
35	33E_3.0	Jan 31, 2022		Soil	M22-Fe02129			X			X
36	34B_0.5	Jan 31, 2022		Soil	M22-Fe02130		X			X	
37	34C_1.0	Jan 31, 2022		Soil	M22-Fe02131				X		X
38	35B_0.5	Jan 31, 2022		Soil	M22-Fe02132		X			X	
39	35C_1.0	Jan 31, 2022		Soil	M22-Fe02133			X			X
40	36B_0.5	Jan 31, 2022		Soil	M22-Fe02134		X			X	
41	36C_1.0	Jan 31, 2022		Soil	M22-Fe02135				X		X
42	37B_0.5	Jan 31, 2022		Soil	M22-Fe02136		X			X	



Environment Testing

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Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
43	37C_1.0	Jan 31, 2022		Soil	M22-Fe02137				X		X
44	38B_0.5	Jan 31, 2022		Soil	M22-Fe02138		X			X	
45	38C_1.0	Jan 31, 2022		Soil	M22-Fe02139				X		X
46	39B_0.5	Jan 31, 2022		Soil	M22-Fe02140		X			X	
47	39C_1.0	Jan 31, 2022		Soil	M22-Fe02141		X	X			X
48	40B_0.5	Jan 31, 2022		Soil	M22-Fe02142		X			X	
49	40C_1.0	Jan 31, 2022		Soil	M22-Fe02143				X		X
50	41B_0.5	Jan 31, 2022		Soil	M22-Fe02144		X			X	
51	41C_1.0	Jan 31, 2022		Soil	M22-Fe02145				X		X
52	42B_0.5	Jan 31, 2022		Soil	M22-Fe02146		X			X	
53	42C_1.0	Jan 31, 2022		Soil	M22-Fe02147			X			X



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Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
54	43B_0.5	Jan 31, 2022		Soil	M22-Fe02148		X			X	
55	43C_1.0	Jan 31, 2022		Soil	M22-Fe02149				X		X
56	44C_1.0	Jan 31, 2022		Soil	M22-Fe02150		X			X	
57	44D_2.0	Jan 31, 2022		Soil	M22-Fe02151	X					
58	44E_3.0	Jan 31, 2022		Soil	M22-Fe02152			X		X	
59	19A_0.1	Jan 31, 2022		Soil	M22-Fe02153	X					
60	20A_0.1	Jan 31, 2022		Soil	M22-Fe02154	X					
61	21A_0.1	Jan 31, 2022		Soil	M22-Fe02155	X					
62	22A_0.1	Jan 31, 2022		Soil	M22-Fe02156	X					
63	23A_0.1	Jan 31, 2022		Soil	M22-Fe02157	X					
64	23B_0.5	Jan 31, 2022		Soil	M22-Fe02158	X					



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Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
65	24A_0.1	Jan 31, 2022		Soil	M22-Fe02159	X					
66	24B_0.5	Jan 31, 2022		Soil	M22-Fe02160	X					
67	25A_0.1	Jan 31, 2022		Soil	M22-Fe02161	X					
68	26A_0.1	Jan 31, 2022		Soil	M22-Fe02162	X					
69	27A_0.1	Jan 31, 2022		Soil	M22-Fe02163	X					
70	27B_0.5	Jan 31, 2022		Soil	M22-Fe02164	X					
71	28A_0.1	Jan 31, 2022		Soil	M22-Fe02165	X					
72	28B_0.5	Jan 31, 2022		Soil	M22-Fe02166	X					
73	28C_1.0	Jan 31, 2022		Soil	M22-Fe02167	X					
74	29A_0.1	Jan 31, 2022		Soil	M22-Fe02168	X					
75	29B_0.5	Jan 31, 2022		Soil	M22-Fe02169	X					



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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
76	30A_0.1	Jan 31, 2022		Soil	M22-Fe02170	X					
77	30B_0.5	Jan 31, 2022		Soil	M22-Fe02171	X					
78	30C_1.0	Jan 31, 2022		Soil	M22-Fe02172	X					
79	31A_0.1	Jan 31, 2022		Soil	M22-Fe02173	X					
80	32A_0.1	Jan 31, 2022		Soil	M22-Fe02174	X					
81	32B_0.5	Jan 31, 2022		Soil	M22-Fe02175	X					
82	32C_1.0	Jan 31, 2022		Soil	M22-Fe02176	X					
83	33A_0.1	Jan 31, 2022		Soil	M22-Fe02177	X					
84	33B_0.5	Jan 31, 2022		Soil	M22-Fe02178	X					
85	34A_0.1	Jan 31, 2022		Soil	M22-Fe02179	X					
86	35A_0.1	Jan 31, 2022		Soil	M22-Fe02180	X					



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Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
87	36A_0.1	Jan 31, 2022		Soil	M22-Fe02181	X					
88	37A_0.1	Jan 31, 2022		Soil	M22-Fe02182	X					
89	38A_0.1	Jan 31, 2022		Soil	M22-Fe02183	X					
90	39A_0.1	Jan 31, 2022		Soil	M22-Fe02184	X					
91	40A_0.1	Jan 31, 2022		Soil	M22-Fe02185	X					
92	41A_0.1	Jan 31, 2022		Soil	M22-Fe02186	X					
93	42A_0.1	Jan 31, 2022		Soil	M22-Fe02187	X					
94	43A_0.1	Jan 31, 2022		Soil	M22-Fe02188	X					
95	44A_0.1	Jan 31, 2022		Soil	M22-Fe02189	X					
96	44B_0.5	Jan 31, 2022		Soil	M22-Fe02190	X					
Test Counts						43	30	12	14	53	53

MONARC Env a FYFE Division
Suite 4, 668 Burwood Road
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VIC 3123



NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Wendy Tsivoulidis

Report 859847-S
Project name
Project ID 81196-1 WERRIBEE
Received Date Feb 02, 2022

Client Sample ID			19B_0.5	19C_1.0	20B_0.5	20C_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02095	M22-Fe02096	M22-Fe02097	M22-Fe02098
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	150	-	540	-
Exchangeable Sodium Percentage (ESP)	0.1	%	2.4	-	18	-
Magnesium (exchangeable)	0.1	meq/100g	19	-	20	-
Potassium (exchangeable)	0.1	meq/100g	1.5	-	2.1	-
Sodium (exchangeable)	0.1	meq/100g	1.0	-	10	-
% Moisture	1	%	29	19	27	18
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	22	-	24	-
Cation Exchange Capacity	0.05	meq/100g	43	-	56	-
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	8.9	-	9.0
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	-	< 2	-	< 2
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	< 0.003	-	< 0.003
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	< 0.005	-	< 0.005
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	< 3	-	< 3
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	N/A	-	N/A
HCl Extractable Sulfur	0.005	% S	-	N/A	-	N/A
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	N/A	-	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	N/A	-	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	N/A	-	N/A
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	23	-	29
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	7.4	-	9.3
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	4600	-	5800
ANC Fineness Factor		factor	-	1.5	-	1.5
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	< 0.02	-	< 0.02
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	< 10	-	< 10
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	< 1	-	< 1

Client Sample ID			19B_0.5	19C_1.0	20B_0.5	20C_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02095	M22-Fe02096	M22-Fe02097	M22-Fe02098
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	-	19	-	30
>2mm Fraction	0.005	g	-	6.8	-	< 0.005
Analysed Material	0.1	%	-	73	-	100
Extraneous Material	0.1	%	-	27	-	< 0.1

Client Sample ID			21B_0.5	21C_1.0	22B_0.5	22C_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02099	M22-Fe02100	M22-Fe02101	M22-Fe02102
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	700	-	760	-
Exchangeable Sodium Percentage (ESP)	0.1	%	34	-	19	-
Magnesium (exchangeable)	0.1	meq/100g	11	-	20	-
Potassium (exchangeable)	0.1	meq/100g	1.0	-	1.5	-
Sodium (exchangeable)	0.1	meq/100g	8.5	-	11	-
% Moisture	1	%	33	23	33	20
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	3.9	-	24	-
Cation Exchange Capacity	0.05	meq/100g	25	-	56	-
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	8.4	-	9.1
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	-	< 2	-	< 2
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	< 0.003	-	< 0.003
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	< 0.005	-	< 0.005
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	< 3	-	< 3
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	N/A	-	N/A
HCl Extractable Sulfur	0.005	% S	-	N/A	-	N/A
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	N/A	-	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	N/A	-	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	N/A	-	N/A
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	1.5	-	56
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	0.48	-	18
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	300	-	11000
ANC Fineness Factor		factor	-	1.5	-	1.5
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	< 0.02	-	< 0.02
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	< 10	-	< 10
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	< 1	-	< 1

Client Sample ID			21B_0.5	21C_1.0	22B_0.5	22C_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02099	M22-Fe02100	M22-Fe02101	M22-Fe02102
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	-	26	-	28
>2mm Fraction	0.005	g	-	< 0.005	-	8.8
Analysed Material	0.1	%	-	100	-	76
Extraneous Material	0.1	%	-	< 0.1	-	24

Client Sample ID			23C_1.0	23D_1.8	23E_3.0	24C_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02103	M22-Fe02104	M22-Fe02105	M22-Fe02106
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	1200	700	-	900
Exchangeable Sodium Percentage (ESP)	0.1	%	28	25	-	31
Magnesium (exchangeable)	0.1	meq/100g	18	7.7	-	9.7
Potassium (exchangeable)	0.1	meq/100g	1.1	0.3	-	0.9
Sodium (exchangeable)	0.1	meq/100g	11	4.6	-	7.5
% Moisture	1	%	27	12	24	23
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	9.5	6.0	-	5.9
Cation Exchange Capacity	0.05	meq/100g	40	19	-	24
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	-	7.7	-
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	-	-	< 2	-
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	-	< 0.003	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	-	0.030	-
Peroxide Extractable Sulfur	0.005	% S	-	-	0.030	-
HCl Extractable Sulfur	0.005	% S	-	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	-	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	-	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	-	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
ANC Fineness Factor		factor	-	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	-	-	< 10	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	-	< 0.02	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	-	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	-	-	26	-
>2mm Fraction	0.005	g	-	-	< 0.005	-
Analysed Material	0.1	%	-	-	100	-
Extraneous Material	0.1	%	-	-	< 0.1	-

Client Sample ID			23C_1.0	23D_1.8	23E_3.0	24C_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02103	M22-Fe02104	M22-Fe02105	M22-Fe02106
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	-	8.1	-
Titrateable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	-	< 0.02	-
Titrateable Peroxide Acidity (a-TPA)	2	mol H+/t	-	-	< 2	-
Titrateable Sulfidic Acidity (a-TSA)	2	mol H+/t	-	-	< 2	-
Titrateable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	-	< 0.02	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	-	< 0.02	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	-	-	< 10	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	-	0.27	-
Calcium - Peroxide	0.005	% Ca	-	-	0.31	-
Calcium - Acid Reacted	0.005	% Ca	-	-	0.036	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.029	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	18	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	-	0.24	-
Magnesium - Peroxide	0.005	% Mg	-	-	0.29	-
Magnesium - Acid Reacted	0.005	% Mg	-	-	0.047	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.062	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	38	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	-	0.74	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	-	0.24	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	-	-	150	-

Client Sample ID			24E_3.0	25B_0.5	25C_1.0	26B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02108	M22-Fe02109	M22-Fe02110	M22-Fe02111
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	320	-	410
Exchangeable Sodium Percentage (ESP)	0.1	%	-	26	-	28
Magnesium (exchangeable)	0.1	meq/100g	-	14	-	19
Potassium (exchangeable)	0.1	meq/100g	-	1.6	-	1.4
Sodium (exchangeable)	0.1	meq/100g	-	10	-	10
% Moisture	1	%	22	30	30	25
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	13	-	6.6
Cation Exchange Capacity	0.05	meq/100g	-	39	-	37
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	8.5	-	6.7	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	< 2	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	< 0.003	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	-	< 0.005	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	-	< 3	-

Client Sample ID			24E_3.0	25B_0.5	25C_1.0	26B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02108	M22-Fe02109	M22-Fe02110	M22-Fe02111
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	0.020	-	N/A	-
Peroxide Extractable Sulfur	0.005	% S	0.020	-	-	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	-	N/A	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO ₃	-	-	0.88	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	-	0.28	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	-	180	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	< 10	-	-	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	< 0.02	-	-	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO ₃ /t	< 1	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	-	< 0.02	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	-	< 10	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO ₃ /t	-	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	28	-	26	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	9.0	-	-	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	< 0.02	-	-	-
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	< 0.02	-	-	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	< 0.02	-	-	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	< 10	-	-	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	0.36	-	-	-
Calcium - Peroxide	0.005	% Ca	1.7	-	-	-
Calcium - Acid Reacted	0.005	% Ca	1.4	-	-	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	1.1	-	-	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	680	-	-	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	0.17	-	-	-
Magnesium - Peroxide	0.005	% Mg	0.23	-	-	-
Magnesium - Acid Reacted	0.005	% Mg	0.057	-	-	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	0.075	-	-	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	47	-	-	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	4.1	-	-	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	1.3	-	-	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	820	-	-	-

Client Sample ID			26C_1.0	27C_1.0	27E_3.0	28D_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02112	M22-Fe02113	M22-Fe02115	M22-Fe02116
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	1500	-	50
Exchangeable Sodium Percentage (ESP)	0.1	%	-	31	-	2.3
Magnesium (exchangeable)	0.1	meq/100g	-	17	-	4.7
Potassium (exchangeable)	0.1	meq/100g	-	1.5	-	0.2
Sodium (exchangeable)	0.1	meq/100g	-	13	-	0.2
% Moisture	1	%	15	25	24	7.0
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	10	-	5.4
Cation Exchange Capacity	0.05	meq/100g	-	41	-	11
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	8.9	-	8.5	-
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	< 2	-
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	< 0.003	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	< 0.005	-	-	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	< 3	-	-	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	N/A	-	0.030	-
Peroxide Extractable Sulfur	0.005	% S	-	-	0.030	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	N/A	-	-	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	8.1	-	-	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	2.6	-	-	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	1600	-	-	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	-	-	< 10	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	-	< 0.02	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	-	-	< 1	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	< 0.02	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	< 10	-	-	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	< 1	-	-	-
Extraneous Material						
<2mm Fraction	0.005	g	29	-	45	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	-	9.2	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	-	< 0.02	-
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	-	-	< 2	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	-	-	< 2	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	-	< 0.02	-

Client Sample ID			26C_1.0	27C_1.0	27E_3.0	28D_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02112	M22-Fe02113	M22-Fe02115	M22-Fe02116
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	-	< 0.02	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	-	-	< 10	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	-	0.30	-
Calcium - Peroxide	0.005	% Ca	-	-	1.3	-
Calcium - Acid Reacted	0.005	% Ca	-	-	1.0	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.81	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	500	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	-	0.21	-
Magnesium - Peroxide	0.005	% Mg	-	-	0.28	-
Magnesium - Acid Reacted	0.005	% Mg	-	-	0.066	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.087	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	54	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	-	3.3	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	-	1.1	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	-	-	670	-

Client Sample ID			28E_3.0	29C_1.0	29E_3.0	30D_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02117	M22-Fe02118	M22-Fe02120	M22-Fe02121
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	810	-	790
Exchangeable Sodium Percentage (ESP)	0.1	%	-	19	-	31
Magnesium (exchangeable)	0.1	meq/100g	-	10	-	13
Potassium (exchangeable)	0.1	meq/100g	-	0.3	-	0.8
Sodium (exchangeable)	0.1	meq/100g	-	4.8	-	8.2
% Moisture	1	%	12	19	16	20
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	11	-	4.0
Cation Exchange Capacity	0.05	meq/100g	-	26	-	26
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	6.1	-	7.4	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	2.0	-	< 2	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	< 0.003	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	< 0.005	-	0.020	-
Peroxide Extractable Sulfur	0.005	% S	< 0.005	-	0.020	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
ANC Fineness Factor		factor	1.5	-	1.5	-

Client Sample ID			28E_3.0	29C_1.0	29E_3.0	30D_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02117	M22-Fe02118	M22-Fe02120	M22-Fe02121
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H ⁺ /t	< 10	-	< 10	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	< 0.02	-	< 0.02	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO ₃ /t	< 1	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	32	-	37	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	6.3	-	7.8	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	< 0.02	-	< 0.02	-
Titratable Peroxide Acidity (a-TPA)	2	mol H ⁺ /t	< 2	-	< 2	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H ⁺ /t	< 2	-	< 2	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	< 0.02	-	< 0.02	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	< 0.02	-	< 0.02	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H ⁺ /t	< 10	-	< 10	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	0.15	-	0.15	-
Calcium - Peroxide	0.005	% Ca	0.15	-	0.17	-
Calcium - Acid Reacted	0.005	% Ca	0.006	-	0.023	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	0.005	-	0.019	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	3.2	-	12	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	0.090	-	0.13	-
Magnesium - Peroxide	0.005	% Mg	0.090	-	0.16	-
Magnesium - Acid Reacted	0.005	% Mg	< 0.005	-	0.032	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	< 0.005	-	0.042	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	< 0.005	-	26	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	N/A	-	0.57	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	N/A	-	0.18	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H ⁺ /t	n/a	-	110	-

Client Sample ID			30E_3.0	31B_0.5	31C_1.0	32D_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02122	M22-Fe02123	M22-Fe02124	M22-Fe02125
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	1200	40	-	1700
Exchangeable Sodium Percentage (ESP)	0.1	%	21	< 0.1	-	36
Magnesium (exchangeable)	0.1	meq/100g	21	2.5	-	7.4
Potassium (exchangeable)	0.1	meq/100g	0.9	0.2	-	0.2
Sodium (exchangeable)	0.1	meq/100g	12	< 0.1	-	5.7
% Moisture	1	%	23	14	13	15

Client Sample ID			30E_3.0	31B_0.5	31C_1.0	32D_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02122	M22-Fe02123	M22-Fe02124	M22-Fe02125
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	25	3.2	-	2.6
Cation Exchange Capacity	0.05	meq/100g	59	5.9	-	16
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	8.6	-	6.3	-
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	3.0	-
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	< 0.003	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	-	< 0.005	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	-	< 3	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	0.030	-	N/A	-
Peroxide Extractable Sulfur	0.005	% S	0.11	-	-	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	-	N/A	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	-	N/A	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	-	N/A	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	-	N/A	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	< 10	-	-	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	< 0.02	-	-	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	< 1	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	-	< 0.02	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	-	< 10	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	31	-	37	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	9.2	-	-	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	< 0.02	-	-	-
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	< 0.02	-	-	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	0.08	-	-	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	52	-	-	-

Client Sample ID			30E_3.0	31B_0.5	31C_1.0	32D_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02122	M22-Fe02123	M22-Fe02124	M22-Fe02125
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	0.33	-	-	-
Calcium - Peroxide	0.005	% Ca	4.4	-	-	-
Calcium - Acid Reacted	0.005	% Ca	4.1	-	-	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	3.3	-	-	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	2000	-	-	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	0.25	-	-	-
Magnesium - Peroxide	0.005	% Mg	0.41	-	-	-
Magnesium - Acid Reacted	0.005	% Mg	0.16	-	-	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	0.21	-	-	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	130	-	-	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	11	-	-	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	3.5	-	-	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	2200	-	-	-

Client Sample ID			32E_3.0	33C_1.0	33E_3.0	34B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02126	M22-Fe02127	M22-Fe02129	M22-Fe02130
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	1800	100	-	140
Exchangeable Sodium Percentage (ESP)	0.1	%	31	3.6	-	13
Magnesium (exchangeable)	0.1	meq/100g	7.3	7.3	-	8.1
Potassium (exchangeable)	0.1	meq/100g	0.5	0.3	-	0.5
Sodium (exchangeable)	0.1	meq/100g	4.7	0.6	-	2.0
% Moisture	1	%	14	9.0	7.9	15
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	2.8	7.5	-	5.3
Cation Exchange Capacity	0.05	meq/100g	15	16	-	16
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	6.9	-	8.4	-
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	< 2	-
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	< 0.003	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	0.010	-	< 0.005	-
Peroxide Extractable Sulfur	0.005	% S	0.020	-	< 0.005	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
ANC Fineness Factor		factor	1.5	-	1.5	-

Client Sample ID			32E_3.0	33C_1.0	33E_3.0	34B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02126	M22-Fe02127	M22-Fe02129	M22-Fe02130
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H ⁺ /t	< 10	-	< 10	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	< 0.02	-	< 0.02	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO ₃ /t	< 1	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	40	-	41	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	7.5	-	8.1	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	< 0.02	-	< 0.02	-
Titratable Peroxide Acidity (a-TPA)	2	mol H ⁺ /t	< 2	-	< 2	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H ⁺ /t	< 2	-	< 2	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	< 0.02	-	< 0.02	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	< 0.02	-	< 0.02	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H ⁺ /t	< 10	-	< 10	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	0.10	-	0.16	-
Calcium - Peroxide	0.005	% Ca	0.11	-	0.17	-
Calcium - Acid Reacted	0.005	% Ca	0.016	-	0.014	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	0.013	-	0.011	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	8.1	-	7.1	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	0.15	-	0.080	-
Magnesium - Peroxide	0.005	% Mg	0.18	-	0.090	-
Magnesium - Acid Reacted	0.005	% Mg	0.031	-	0.016	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	0.040	-	0.021	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	25	-	13	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	0.37	-	0.56	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	0.12	-	0.18	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H ⁺ /t	73	-	110	-

Client Sample ID			34C_1.0	35B_0.5	35C_1.0	36B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02131	M22-Fe02132	M22-Fe02133	M22-Fe02134
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	950	-	23
Exchangeable Sodium Percentage (ESP)	0.1	%	-	9.8	-	3.3
Magnesium (exchangeable)	0.1	meq/100g	-	6.5	-	5.5
Potassium (exchangeable)	0.1	meq/100g	-	0.3	-	0.5
Sodium (exchangeable)	0.1	meq/100g	-	1.3	-	0.5
% Moisture	1	%	17	14	16	19

Client Sample ID			34C_1.0	35B_0.5	35C_1.0	36B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02131	M22-Fe02132	M22-Fe02133	M22-Fe02134
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	5.6	-	9.1
Cation Exchange Capacity	0.05	meq/100g	-	14	-	16
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	8.2	-	8.7	-
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	< 2	-
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	< 0.003	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	< 0.005	-	-	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	< 3	-	-	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	N/A	-	0.030	-
Peroxide Extractable Sulfur	0.005	% S	-	-	0.030	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	N/A	-	-	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	1.2	-	-	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	0.38	-	-	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	230	-	-	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	-	-	< 10	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	-	< 0.02	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	-	-	< 1	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	< 0.02	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	< 10	-	-	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	< 1	-	-	-
Extraneous Material						
<2mm Fraction	0.005	g	35	-	36	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	-	8.3	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	-	< 0.02	-
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	-	-	< 2	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	-	-	< 2	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	-	< 0.02	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	-	< 0.02	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	-	-	< 10	-

Client Sample ID			34C_1.0	35B_0.5	35C_1.0	36B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02131	M22-Fe02132	M22-Fe02133	M22-Fe02134
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	-	0.23	-
Calcium - Peroxide	0.005	% Ca	-	-	0.30	-
Calcium - Acid Reacted	0.005	% Ca	-	-	0.063	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.050	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	31	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	-	0.10	-
Magnesium - Peroxide	0.005	% Mg	-	-	0.13	-
Magnesium - Acid Reacted	0.005	% Mg	-	-	0.032	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.042	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	-	26	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	-	0.66	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	-	0.21	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	-	-	130	-

Client Sample ID			36C_1.0	37B_0.5	37C_1.0	38B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02135	M22-Fe02136	M22-Fe02137	M22-Fe02138
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	76	-	140
Exchangeable Sodium Percentage (ESP)	0.1	%	-	4.0	-	3.8
Magnesium (exchangeable)	0.1	meq/100g	-	4.5	-	7.4
Potassium (exchangeable)	0.1	meq/100g	-	0.3	-	1.6
Sodium (exchangeable)	0.1	meq/100g	-	0.4	-	0.7
% Moisture	1	%	17	15	8.7	16
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	4.4	-	7.7
Cation Exchange Capacity	0.05	meq/100g	-	9.6	-	17
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	6.1	-	5.8	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	3.0	-	4.0	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	0.010	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	< 0.005	-	< 0.005	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	< 3	-	< 3	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	N/A	-	N/A	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-

Client Sample ID			36C_1.0	37B_0.5	37C_1.0	38B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02135	M22-Fe02136	M22-Fe02137	M22-Fe02138
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO ₃	N/A	-	N/A	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	N/A	-	N/A	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H ⁺ /t	N/A	-	N/A	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	< 0.02	-	< 0.02	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H ⁺ /t	< 10	-	< 10	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO ₃ /t	< 1	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	29	-	40	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-

Client Sample ID			38C_1.0	39B_0.5	39C_1.0	40B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02139	M22-Fe02140	M22-Fe02141	M22-Fe02142
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	22	28	31
Exchangeable Sodium Percentage (ESP)	0.1	%	-	< 0.1	1.5	13
Magnesium (exchangeable)	0.1	meq/100g	-	3.2	5.3	3.9
Potassium (exchangeable)	0.1	meq/100g	-	0.5	0.5	0.8
Sodium (exchangeable)	0.1	meq/100g	-	< 0.1	0.2	1.5
% Moisture	1	%	5.9	7.9	7.7	23
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	6.1	6.1	5.4
Cation Exchange Capacity	0.05	meq/100g	-	9.8	12	12
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	6.9	-	5.8	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H ⁺ /t	< 2	-	6.0	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	0.010	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	< 0.005	-	-	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H ⁺ /t	< 3	-	-	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	N/A	-	< 0.005	-
Peroxide Extractable Sulfur	0.005	% S	-	-	0.010	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	N/A	-	-	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H ⁺ /t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-

Client Sample ID			38C_1.0	39B_0.5	39C_1.0	40B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02139	M22-Fe02140	M22-Fe02141	M22-Fe02142
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO ₃	0.73	-	-	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	0.23	-	-	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H ⁺ /t	150	-	-	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H ⁺ /t	-	-	12	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	-	0.02	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO ₃ /t	-	-	1.0	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	< 0.02	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H ⁺ /t	< 10	-	-	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO ₃ /t	< 1	-	-	-
Extraneous Material						
<2mm Fraction	0.005	g	27	-	41	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	-	6.1	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	-	< 0.02	-
Titratable Peroxide Acidity (a-TPA)	2	mol H ⁺ /t	-	-	< 2	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H ⁺ /t	-	-	< 2	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	-	< 0.02	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	-	-	< 0.02	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H ⁺ /t	-	-	< 10	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	-	0.14	-
Calcium - Peroxide	0.005	% Ca	-	-	0.15	-
Calcium - Acid Reacted	0.005	% Ca	-	-	0.009	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	-	0.007	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	-	-	4.6	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	-	0.070	-
Magnesium - Peroxide	0.005	% Mg	-	-	0.070	-
Magnesium - Acid Reacted	0.005	% Mg	-	-	< 0.005	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	-	< 0.005	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H ⁺ /t	-	-	< 0.005	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	-	-	N/A	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	-	N/A	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H ⁺ /t	-	-	n/a	-

Client Sample ID			40C_1.0	41B_0.5	41C_1.0	42B_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02143	M22-Fe02144	M22-Fe02145	M22-Fe02146
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	230	-	170
Exchangeable Sodium Percentage (ESP)	0.1	%	-	27	-	20
Magnesium (exchangeable)	0.1	meq/100g	-	11	-	7.1
Potassium (exchangeable)	0.1	meq/100g	-	0.4	-	0.3
Sodium (exchangeable)	0.1	meq/100g	-	5.9	-	3.0
% Moisture	1	%	18	20	13	14
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	4.5	-	4.8
Cation Exchange Capacity	0.05	meq/100g	-	22	-	15
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	5.4	-	8.7	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	14	-	< 2	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	0.020	-	< 0.003	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	< 0.005	-	< 0.005	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	< 3	-	< 3	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	N/A	-	N/A	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	N/A	-	1.6	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	N/A	-	0.50	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	N/A	-	310	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	0.02	-	< 0.02	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	14	-	< 10	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	1.1	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	37	-	41	-
>2mm Fraction	0.005	g	< 0.005	-	0.62	-
Analysed Material	0.1	%	100	-	99	-
Extraneous Material	0.1	%	< 0.1	-	1.5	-

Client Sample ID			42C_1.0	43B_0.5	43C_1.0	44C_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02147	M22-Fe02148	M22-Fe02149	M22-Fe02150
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	56	-	370
Exchangeable Sodium Percentage (ESP)	0.1	%	-	12	-	6.4
Magnesium (exchangeable)	0.1	meq/100g	-	4.0	-	23
Potassium (exchangeable)	0.1	meq/100g	-	0.3	-	1.3
Sodium (exchangeable)	0.1	meq/100g	-	1.3	-	3.1
% Moisture	1	%	12	21	19	31
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	5.4	-	21
Cation Exchange Capacity	0.05	meq/100g	-	11	-	49
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	6.9	-	7.0	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	< 2	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	< 0.003	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	-	< 0.005	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	-	< 3	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	0.010	-	N/A	-
Peroxide Extractable Sulfur	0.005	% S	0.020	-	-	-
HCl Extractable Sulfur	0.005	% S	N/A	-	N/A	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	-	-	N/A	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A	-	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	-	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	2.0	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	-	0.71	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	-	0.23	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	-	140	-
ANC Fineness Factor		factor	1.5	-	1.5	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	< 10	-	-	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	< 0.02	-	-	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	< 1	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	-	< 0.02	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	-	< 10	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	-	< 1	-
Extraneous Material						
<2mm Fraction	0.005	g	41	-	36	-
>2mm Fraction	0.005	g	< 0.005	-	< 0.005	-
Analysed Material	0.1	%	100	-	100	-
Extraneous Material	0.1	%	< 0.1	-	< 0.1	-
Potential Acidity - Titrateable Peroxide						
pH-OX	0.1	pH Units	7.3	-	-	-
Titrateable Peroxide Acidity (s-TPA)	0.02	% pyrite S	< 0.02	-	-	-
Titrateable Peroxide Acidity (a-TPA)	2	mol H+/t	< 2	-	-	-
Titrateable Sulfidic Acidity (a-TSA)	2	mol H+/t	< 2	-	-	-
Titrateable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	< 0.02	-	-	-

Client Sample ID			42C_1.0	43B_0.5	43C_1.0	44C_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Fe02147	M22-Fe02148	M22-Fe02149	M22-Fe02150
Date Sampled			Jan 31, 2022	Jan 31, 2022	Jan 31, 2022	Jan 31, 2022
Test/Reference	LOR	Unit				
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	< 0.02	-	-	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	< 10	-	-	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	0.13	-	-	-
Calcium - Peroxide	0.005	% Ca	0.16	-	-	-
Calcium - Acid Reacted	0.005	% Ca	0.029	-	-	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	0.023	-	-	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	14	-	-	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	0.15	-	-	-
Magnesium - Peroxide	0.005	% Mg	0.19	-	-	-
Magnesium - Acid Reacted	0.005	% Mg	0.035	-	-	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	0.046	-	-	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	29	-	-	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	0.50	-	-	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	0.16	-	-	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	100	-	-	-

Client Sample ID			44E_3.0
Sample Matrix			Soil
Eurofins Sample No.			M22-Fe02152
Date Sampled			Jan 31, 2022
Test/Reference	LOR	Unit	
% Moisture	1	%	17
Actual Acidity (NLM-3.2)			
pH-KCL (NLM-3.1)	0.1	pH Units	9.0
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003
Extractable Sulfur			
Sulfur - KCl Extractable	0.005	% S	0.010
Peroxide Extractable Sulfur	0.005	% S	0.12
HCl Extractable Sulfur	0.005	% S	N/A
Retained Acidity (S-NAS)			
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.02	% S	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A
HCl Extractable Sulfur Correction Factor	1	factor	2.0
Acid Neutralising Capacity (ANCbt)			
ANC Fineness Factor		factor	1.5
Net Acidity (Including ANC)			
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	< 10
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	< 0.02
SPOCAS - Liming rate - ASSMAC	1	kg CaCO ₃ /t	< 1

Client Sample ID			44E_3.0
Sample Matrix			Soil
Eurofins Sample No.			M22-Fe02152
Date Sampled			Jan 31, 2022
Test/Reference	LOR	Unit	
Extraneous Material			
<2mm Fraction	0.005	g	34
>2mm Fraction	0.005	g	0.52
Analysed Material	0.1	%	98
Extraneous Material	0.1	%	1.5
Potential Acidity - Titratable Peroxide			
pH-OX	0.1	pH Units	9.6
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	< 0.02
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	< 2
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	< 2
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	< 0.02
Potential Acidity (SPOS)			
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.02	% S	0.11
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	10	mol H+/t	68
Extractable Calcium			
Calcium - KCl Extractable	0.005	% Ca	0.27
Calcium - Peroxide	0.005	% Ca	16
Calcium - Acid Reacted	0.005	% Ca	15
Calcium - Acid Reacted (s-aCa)	0.005	% S	12
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	7700
Extractable Magnesium			
Magnesium - KCl Extractable	0.005	% Mg	0.20
Magnesium - Peroxide	0.005	% Mg	5.9
Magnesium - Acid Reacted	0.005	% Mg	5.6
Magnesium - Acid Reacted (s-aCa)	0.005	% S	7.4
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	4600
Acid Neutralising Capacity (ANCE)			
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO3	59
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	19
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	12000

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Conductivity (1:5 aqueous extract at 25°C as rec.) - Method: LTM-INO-4030 Conductivity	Melbourne	Feb 04, 2022	7 Days
Magnesium (exchangeable) - Method: LTM-MET-3060 Cation Exchange Capacity and ESP	Melbourne	Feb 04, 2022	180 Days
Potassium (exchangeable) - Method: LTM-MET-3060 Cation Exchange Capacity and ESP	Melbourne	Feb 04, 2022	180 Days
Sodium (exchangeable) - Method: LTM-MET-3060 Cation Exchange Capacity and ESP	Melbourne	Feb 04, 2022	180 Days
Cation Exchange Capacity - Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage	Melbourne	Feb 04, 2022	28 Days
Exchangeable Sodium Percentage (ESP) - Method: LTM-MET-3060 - Cation Exchange Capacity (CEC) & Exchangeable Sodium Percentage (ESP)	Melbourne	Feb 04, 2022	28 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Feb 02, 2022	14 Days
Chromium Reducible Sulfur Suite			
Chromium Suite - Method: LTM-GEN-7070 Chromium Reducible Sulfur Suite	Brisbane	Feb 09, 2022	6 Week
Extraneous Material - Method: LTM-GEN-7050/7070	Brisbane	Feb 09, 2022	6 Week
SPOCAS Suite			
SPOCAS Suite - Method: LTM-GEN-7050	Brisbane	Feb 09, 2022	6 Week

Company Name:	MONARC Env a FYFE Division	Order No.:	81196	Received:	Feb 2, 2022 5:05 PM
Address:	Suite 4, 668 Burwood Road Hawthorn East VIC 3123	Report #:	859847	Due:	Feb 9, 2022
Project Name:		Phone:	03 9205 6000	Priority:	5 Day
Project ID:	81196-1 WERRIBEE	Fax:	9836 0801	Contact Name:	Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	19B_0.5	Jan 31, 2022		Soil	M22-Fe02095		X			X	
2	19C_1.0	Jan 31, 2022		Soil	M22-Fe02096				X		X
3	20B_0.5	Jan 31, 2022		Soil	M22-Fe02097		X			X	
4	20C_1.0	Jan 31, 2022		Soil	M22-Fe02098				X		X
5	21B_0.5	Jan 31, 2022		Soil	M22-Fe02099		X			X	
6	21C_1.0	Jan 31, 2022		Soil	M22-Fe02100				X		X
7	22B_0.5	Jan 31, 2022		Soil	M22-Fe02101		X			X	
8	22C_1.0	Jan 31, 2022		Soil	M22-Fe02102				X		X
9	23C_1.0	Jan 31, 2022		Soil	M22-Fe02103		X			X	

Company Name: MONARC Env a FYFE Division
Address: Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123

Project Name:
Project ID: 81196-1 WERRIBEE

Order No.: 81196
Report #: 859847
Phone: 03 9205 6000
Fax: 9836 0801

Received: Feb 2, 2022 5:05 PM
Due: Feb 9, 2022
Priority: 5 Day
Contact Name: Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
10	23D_1.8	Jan 31, 2022		Soil	M22-Fe02104		X			X	
11	23E_3.0	Jan 31, 2022		Soil	M22-Fe02105			X			X
12	24C_1.0	Jan 31, 2022		Soil	M22-Fe02106		X			X	
13	24D_2.0	Jan 31, 2022		Soil	M22-Fe02107	X					
14	24E_3.0	Jan 31, 2022		Soil	M22-Fe02108			X			X
15	25B_0.5	Jan 31, 2022		Soil	M22-Fe02109		X			X	
16	25C_1.0	Jan 31, 2022		Soil	M22-Fe02110				X		X
17	26B_0.5	Jan 31, 2022		Soil	M22-Fe02111		X			X	
18	26C_1.0	Jan 31, 2022		Soil	M22-Fe02112				X		X
19	27C_1.0	Jan 31, 2022		Soil	M22-Fe02113		X			X	
20	27D_2.0	Jan 31, 2022		Soil	M22-Fe02114	X					

Company Name: MONARC Env a FYFE Division
Address: Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123

Project Name:
Project ID: 81196-1 WERRIBEE

Order No.: 81196
Report #: 859847
Phone: 03 9205 6000
Fax: 9836 0801

Received: Feb 2, 2022 5:05 PM
Due: Feb 9, 2022
Priority: 5 Day
Contact Name: Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
21	27E_3.0	Jan 31, 2022		Soil	M22-Fe02115			X			X
22	28D_2.0	Jan 31, 2022		Soil	M22-Fe02116		X			X	
23	28E_3.0	Jan 31, 2022		Soil	M22-Fe02117			X			X
24	29C_1.0	Jan 31, 2022		Soil	M22-Fe02118		X			X	
25	29D_2.0	Jan 31, 2022		Soil	M22-Fe02119	X					
26	29E_3.0	Jan 31, 2022		Soil	M22-Fe02120			X			X
27	30D_2.0	Jan 31, 2022		Soil	M22-Fe02121		X			X	
28	30E_3.0	Jan 31, 2022		Soil	M22-Fe02122		X	X			X
29	31B_0.5	Jan 31, 2022		Soil	M22-Fe02123		X			X	
30	31C_1.0	Jan 31, 2022		Soil	M22-Fe02124				X		X
31	32D_2.0	Jan 31, 2022		Soil	M22-Fe02125		X			X	

Company Name: MONARC Env a FYFE Division
Address: Suite 4, 668 Burwood Road
Hawthorn East
VIC 3123

Project Name:
Project ID: 81196-1 WERRIBEE

Order No.: 81196
Report #: 859847
Phone: 03 9205 6000
Fax: 9836 0801

Received: Feb 2, 2022 5:05 PM
Due: Feb 9, 2022
Priority: 5 Day
Contact Name: Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
32	32E_3.0	Jan 31, 2022		Soil	M22-Fe02126		X	X			X
33	33C_1.0	Jan 31, 2022		Soil	M22-Fe02127		X			X	
34	33D_2.0.	Jan 31, 2022		Soil	M22-Fe02128	X					
35	33E_3.0	Jan 31, 2022		Soil	M22-Fe02129			X			X
36	34B_0.5	Jan 31, 2022		Soil	M22-Fe02130		X			X	
37	34C_1.0	Jan 31, 2022		Soil	M22-Fe02131				X		X
38	35B_0.5	Jan 31, 2022		Soil	M22-Fe02132		X			X	
39	35C_1.0	Jan 31, 2022		Soil	M22-Fe02133			X			X
40	36B_0.5	Jan 31, 2022		Soil	M22-Fe02134		X			X	
41	36C_1.0	Jan 31, 2022		Soil	M22-Fe02135				X		X
42	37B_0.5	Jan 31, 2022		Soil	M22-Fe02136		X			X	

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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
43	37C_1.0	Jan 31, 2022		Soil	M22-Fe02137				X		X
44	38B_0.5	Jan 31, 2022		Soil	M22-Fe02138		X			X	
45	38C_1.0	Jan 31, 2022		Soil	M22-Fe02139				X		X
46	39B_0.5	Jan 31, 2022		Soil	M22-Fe02140		X			X	
47	39C_1.0	Jan 31, 2022		Soil	M22-Fe02141		X	X			X
48	40B_0.5	Jan 31, 2022		Soil	M22-Fe02142		X			X	
49	40C_1.0	Jan 31, 2022		Soil	M22-Fe02143				X		X
50	41B_0.5	Jan 31, 2022		Soil	M22-Fe02144		X			X	
51	41C_1.0	Jan 31, 2022		Soil	M22-Fe02145				X		X
52	42B_0.5	Jan 31, 2022		Soil	M22-Fe02146		X			X	
53	42C_1.0	Jan 31, 2022		Soil	M22-Fe02147			X			X

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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
54	43B_0.5	Jan 31, 2022		Soil	M22-Fe02148		X			X	
55	43C_1.0	Jan 31, 2022		Soil	M22-Fe02149				X		X
56	44C_1.0	Jan 31, 2022		Soil	M22-Fe02150		X			X	
57	44D_2.0	Jan 31, 2022		Soil	M22-Fe02151	X					
58	44E_3.0	Jan 31, 2022		Soil	M22-Fe02152			X		X	
59	19A_0.1	Jan 31, 2022		Soil	M22-Fe02153	X					
60	20A_0.1	Jan 31, 2022		Soil	M22-Fe02154	X					
61	21A_0.1	Jan 31, 2022		Soil	M22-Fe02155	X					
62	22A_0.1	Jan 31, 2022		Soil	M22-Fe02156	X					
63	23A_0.1	Jan 31, 2022		Soil	M22-Fe02157	X					
64	23B_0.5	Jan 31, 2022		Soil	M22-Fe02158	X					

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Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
65	24A_0.1	Jan 31, 2022		Soil	M22-Fe02159	X					
66	24B_0.5	Jan 31, 2022		Soil	M22-Fe02160	X					
67	25A_0.1	Jan 31, 2022		Soil	M22-Fe02161	X					
68	26A_0.1	Jan 31, 2022		Soil	M22-Fe02162	X					
69	27A_0.1	Jan 31, 2022		Soil	M22-Fe02163	X					
70	27B_0.5	Jan 31, 2022		Soil	M22-Fe02164	X					
71	28A_0.1	Jan 31, 2022		Soil	M22-Fe02165	X					
72	28B_0.5	Jan 31, 2022		Soil	M22-Fe02166	X					
73	28C_1.0	Jan 31, 2022		Soil	M22-Fe02167	X					
74	29A_0.1	Jan 31, 2022		Soil	M22-Fe02168	X					
75	29B_0.5	Jan 31, 2022		Soil	M22-Fe02169	X					

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Received: Feb 2, 2022 5:05 PM
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Contact Name: Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
76	30A_0.1	Jan 31, 2022		Soil	M22-Fe02170	X					
77	30B_0.5	Jan 31, 2022		Soil	M22-Fe02171	X					
78	30C_1.0	Jan 31, 2022		Soil	M22-Fe02172	X					
79	31A_0.1	Jan 31, 2022		Soil	M22-Fe02173	X					
80	32A_0.1	Jan 31, 2022		Soil	M22-Fe02174	X					
81	32B_0.5	Jan 31, 2022		Soil	M22-Fe02175	X					
82	32C_1.0	Jan 31, 2022		Soil	M22-Fe02176	X					
83	33A_0.1	Jan 31, 2022		Soil	M22-Fe02177	X					
84	33B_0.5	Jan 31, 2022		Soil	M22-Fe02178	X					
85	34A_0.1	Jan 31, 2022		Soil	M22-Fe02179	X					
86	35A_0.1	Jan 31, 2022		Soil	M22-Fe02180	X					

Company Name:	MONARC Env a FYFE Division	Order No.:	81196	Received:	Feb 2, 2022 5:05 PM
Address:	Suite 4, 668 Burwood Road Hawthorn East VIC 3123	Report #:	859847	Due:	Feb 9, 2022
Project Name:		Phone:	03 9205 6000	Priority:	5 Day
Project ID:	81196-1 WERRIBEE	Fax:	9836 0801	Contact Name:	Wendy Tsivoulidis

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X	X
Sydney Laboratory - NATA # 1261 Site # 18217											
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	X	X
Mayfield Laboratory - NATA # 1261 Site # 25079											
Perth Laboratory - NATA # 2377 Site # 2370											
External Laboratory											
87	36A_0.1	Jan 31, 2022		Soil	M22-Fe02181	X					
88	37A_0.1	Jan 31, 2022		Soil	M22-Fe02182	X					
89	38A_0.1	Jan 31, 2022		Soil	M22-Fe02183	X					
90	39A_0.1	Jan 31, 2022		Soil	M22-Fe02184	X					
91	40A_0.1	Jan 31, 2022		Soil	M22-Fe02185	X					
92	41A_0.1	Jan 31, 2022		Soil	M22-Fe02186	X					
93	42A_0.1	Jan 31, 2022		Soil	M22-Fe02187	X					
94	43A_0.1	Jan 31, 2022		Soil	M22-Fe02188	X					
95	44A_0.1	Jan 31, 2022		Soil	M22-Fe02189	X					
96	44B_0.5	Jan 31, 2022		Soil	M22-Fe02190	X					
Test Counts						43	30	12	14	53	53

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank										
Conductivity (1:5 aqueous extract at 25°C as rec.)				uS/cm	< 10			10	Pass	
Exchangeable Sodium Percentage (ESP)				%	< 0.1			0.1	Pass	
Magnesium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Potassium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Sodium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Method Blank										
Cation Exchange Capacity										
Calcium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Cation Exchange Capacity				meq/100g	< 0.05			0.05	Pass	
LCS - % Recovery										
Actual Acidity (NLM-3.2)										
pH-KCL (NLM-3.1)				%	100			80-120	Pass	
Titratable Actual Acidity (NLM-3.2)				%	89			80-120	Pass	
LCS - % Recovery										
Potential Acidity - Chromium Reducible Sulfur										
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)				%	100			80-120	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
					Result 1	Result 2	RPD			
Exchangeable Sodium Percentage (ESP)	M22-Fe02097	CP		%	18	18	<1	30%	Pass	
Magnesium (exchangeable)	M22-Fe02097	CP		meq/100g	20	20	1.0	30%	Pass	
Potassium (exchangeable)	M22-Fe02097	CP		meq/100g	2.1	2.1	2.0	30%	Pass	
Sodium (exchangeable)	M22-Fe02097	CP		meq/100g	10	10	<1	30%	Pass	
Duplicate										
Cation Exchange Capacity					Result 1	Result 2	RPD			
Calcium (exchangeable)	M22-Fe02097	CP		meq/100g	24	24	<1	30%	Pass	
Cation Exchange Capacity	M22-Fe02097	CP		meq/100g	56	56	<1	30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	M22-Fe02101	CP		uS/cm	760	750	1.1	30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
% Moisture	M22-Fe02104	CP		%	12	11	8.0	30%	Pass	
Duplicate										
					Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	M22-Fe02121	CP		uS/cm	790	780	1.6	30%	Pass	
% Moisture	M22-Fe02121	CP		%	20	20	<1	30%	Pass	
Duplicate										
Actual Acidity (NLM-3.2)					Result 1	Result 2	RPD			
pH-KCL (NLM-3.1)	M22-Fe02126	CP		pH Units	6.9	6.9	1.0	30%	Pass	
Titratable Actual Acidity (NLM-3.2)	M22-Fe02126	CP		mol H+/t	< 2	< 2	<1	30%	Pass	
Titratable Actual Acidity (NLM-3.2)	M22-Fe02126	CP		% pyrite S	< 0.003	< 0.003	<1	30%	Pass	
Duplicate										
Potential Acidity - Chromium Reducible Sulfur					Result 1	Result 2	RPD			
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	M22-Fe02126	CP		% S	N/A	N/A	N/A	30%	Pass	
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	M22-Fe02126	CP		mol H+/t	N/A	N/A	N/A	30%	Pass	

Duplicate								
Extractable Sulfur				Result 1	Result 2	RPD		
Sulfur - KCl Extractable	M22-Fe02126	CP	% S	0.010	0.020	5.0	30%	Pass
Peroxide Extractable Sulfur	M22-Fe02126	CP	% S	0.020	0.020	<1	30%	Pass
HCl Extractable Sulfur	M22-Fe02126	CP	% S	N/A	N/A	N/A	30%	Pass
Duplicate								
Retained Acidity (S-NAS)				Result 1	Result 2	RPD		
Net Acid soluble sulfur (SNAS) NLM-4.1	M22-Fe02126	CP	% S	N/A	N/A	N/A	30%	Pass
Net Acid soluble sulfur (s-SNAS) NLM-4.1	M22-Fe02126	CP	% S	N/A	N/A	N/A	30%	Pass
Net Acid soluble sulfur (a-SNAS) NLM-4.1	M22-Fe02126	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCbt)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	M22-Fe02126	CP	% CaCO ₃	N/A	N/A	N/A	30%	Pass
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	M22-Fe02126	CP	% S	N/A	N/A	N/A	30%	Pass
ANC Fineness Factor	M22-Fe02126	CP	factor	1.5	1.5	<1	30%	Pass
Duplicate								
Net Acidity (Including ANC)				Result 1	Result 2	RPD		
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	M22-Fe02126	CP	mol H+/t	< 10	< 10	<1	30%	Pass
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	M22-Fe02126	CP	% S	< 0.02	< 0.02	<1	30%	Pass
SPOCAS - Liming rate - ASSMAC	M22-Fe02126	CP	kg CaCO ₃ /t	< 1	< 1	<1	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Fe02126	CP	% S	N/A	N/A	N/A	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Fe02126	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
CRS Suite - Liming Rate - NASSG (Including ANC)	M22-Fe02126	CP	kg CaCO ₃ /t	N/A	N/A	N/A	30%	Pass
Duplicate								
Potential Acidity - Titratable Peroxide				Result 1	Result 2	RPD		
pH-OX	M22-Fe02126	CP	pH Units	7.5	7.4	1.0	30%	Pass
Titratable Peroxide Acidity (s-TPA)	M22-Fe02126	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass
Titratable Peroxide Acidity (a-TPA)	M22-Fe02126	CP	mol H+/t	< 2	< 2	<1	30%	Pass
Titratable Sulfidic Acidity (a-TSA)	M22-Fe02126	CP	mol H+/t	< 2	< 2	<1	30%	Pass
Titratable Sulfidic Acidity (s-TSA)	M22-Fe02126	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Potential Acidity (SPOS)				Result 1	Result 2	RPD		
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	M22-Fe02126	CP	% S	< 0.02	< 0.02	<1	30%	Pass
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	M22-Fe02126	CP	mol H+/t	< 10	< 10	<1	30%	Pass
Duplicate								
Extractable Calcium				Result 1	Result 2	RPD		
Calcium - KCl Extractable	M22-Fe02126	CP	% Ca	0.10	0.10	<1	30%	Pass
Calcium - Peroxide	M22-Fe02126	CP	% Ca	0.11	0.11	1.0	30%	Pass
Calcium - Acid Reacted	M22-Fe02126	CP	% Ca	0.016	0.015	8.0	30%	Pass
Calcium - Acid Reacted (s-aCa)	M22-Fe02126	CP	% S	0.013	0.012	8.0	30%	Pass
Calcium - Acid Reacted (a-aCa)	M22-Fe02126	CP	mol H+/t	8.1	7.5	8.0	30%	Pass
Duplicate								
Extractable Magnesium				Result 1	Result 2	RPD		
Magnesium - KCl Extractable	M22-Fe02126	CP	% Mg	0.15	0.15	1.0	30%	Pass
Magnesium - Peroxide	M22-Fe02126	CP	% Mg	0.18	0.18	1.0	30%	Pass
Magnesium - Acid Reacted	M22-Fe02126	CP	% Mg	0.031	0.032	3.0	30%	Pass
Magnesium - Acid Reacted (s-aCa)	M22-Fe02126	CP	% S	0.040	0.042	3.0	30%	Pass
Magnesium - Acid Reacted (a-aCa)	M22-Fe02126	CP	mol H+/t	25	26	3.0	30%	Pass

Duplicate								
Acid Neutralising Capacity (ANCE)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCE)	M22-Fe02126	CP	% CaCO ₃	0.37	0.36	2.0	30%	Pass
Acid Neutralising Capacity - (a-ANCE)	M22-Fe02126	CP	mol H ⁺ /t	73	72	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C as rec.)	M22-Fe02128	CP	uS/cm	190	190	<1	30%	Pass
Duplicate								
Actual Acidity (NLM-3.2)				Result 1	Result 2	RPD		
pH-KCL (NLM-3.1)	M22-Fe02137	CP	pH Units	5.8	5.8	<1	30%	Pass
Titrateable Actual Acidity (NLM-3.2)	M22-Fe02137	CP	mol H ⁺ /t	4.0	4.0	4.0	30%	Pass
Titrateable Actual Acidity (NLM-3.2)	M22-Fe02137	CP	% pyrite S	0.010	0.010	4.0	30%	Pass
Duplicate								
Potential Acidity - Chromium Reducible Sulfur				Result 1	Result 2	RPD		
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	M22-Fe02137	CP	% S	< 0.005	< 0.005	<1	30%	Pass
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	M22-Fe02137	CP	mol H ⁺ /t	< 3	< 3	<1	30%	Pass
Duplicate								
Extractable Sulfur				Result 1	Result 2	RPD		
Sulfur - KCl Extractable	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
Peroxide Extractable Sulfur	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
HCl Extractable Sulfur	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
Duplicate								
Retained Acidity (S-NAS)				Result 1	Result 2	RPD		
Net Acid soluble sulfur (SNAS) NLM-4.1	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
Net Acid soluble sulfur (s-SNAS) NLM-4.1	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
Net Acid soluble sulfur (a-SNAS) NLM-4.1	M22-Fe02137	CP	mol H ⁺ /t	N/A	N/A	N/A	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCbt)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	M22-Fe02137	CP	% CaCO ₃	N/A	N/A	N/A	30%	Pass
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
ANC Fineness Factor	M22-Fe02137	CP	factor	1.5	1.5	<1	30%	Pass
Duplicate								
Net Acidity (Including ANC)				Result 1	Result 2	RPD		
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	M22-Fe02137	CP	mol H ⁺ /t	N/A	N/A	N/A	30%	Pass
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
SPOCAS - Liming rate - ASSMAC	M22-Fe02137	CP	kg CaCO ₃ /t	N/A	N/A	N/A	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Fe02137	CP	% S	< 0.02	< 0.02	<1	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Fe02137	CP	mol H ⁺ /t	< 10	< 10	<1	30%	Pass
CRS Suite - Liming Rate - NASSG (Including ANC)	M22-Fe02137	CP	kg CaCO ₃ /t	< 1	< 1	<1	30%	Pass
Duplicate								
Potential Acidity - Titrateable Peroxide				Result 1	Result 2	RPD		
Titrateable Peroxide Acidity (s-TPA)	M22-Fe02137	CP	% pyrite S	N/A	N/A	N/A	30%	Pass
Titrateable Sulfidic Acidity (a-TSA)	M22-Fe02137	CP	mol H ⁺ /t	N/A	N/A	N/A	30%	Pass
Titrateable Sulfidic Acidity (s-TSA)	M22-Fe02137	CP	% pyrite S	N/A	N/A	N/A	30%	Pass

Duplicate								
Potential Acidity (SPOS)				Result 1	Result 2	RPD		
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	M22-Fe02137	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Extractable Calcium				Result 1	Result 2	RPD		
Calcium - KCl Extractable	M22-Fe02137	CP	% Ca	N/A	N/A	N/A	30%	Pass
Calcium - Peroxide	M22-Fe02137	CP	% Ca	N/A	N/A	N/A	30%	Pass
Calcium - Acid Reacted	M22-Fe02137	CP	% Ca	N/A	N/A	N/A	30%	Pass
Calcium - Acid Reacted (s-aCa)	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
Calcium - Acid Reacted (a-aCa)	M22-Fe02137	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Extractable Magnesium				Result 1	Result 2	RPD		
Magnesium - KCl Extractable	M22-Fe02137	CP	% Mg	N/A	N/A	N/A	30%	Pass
Magnesium - Peroxide	M22-Fe02137	CP	% Mg	N/A	N/A	N/A	30%	Pass
Magnesium - Acid Reacted	M22-Fe02137	CP	% Mg	N/A	N/A	N/A	30%	Pass
Magnesium - Acid Reacted (s-aCa)	M22-Fe02137	CP	% S	N/A	N/A	N/A	30%	Pass
Magnesium - Acid Reacted (a-aCa)	M22-Fe02137	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCE)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCE)	M22-Fe02137	CP	% CaCO3	N/A	N/A	N/A	30%	Pass
Acid Neutralising Capacity - (a-ANCE)	M22-Fe02137	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Exchangeable Sodium Percentage (ESP)	M22-Fe02140	CP	%	< 0.1	< 0.1	<1	30%	Pass
Magnesium (exchangeable)	M22-Fe02140	CP	meq/100g	3.2	3.3	2.0	30%	Pass
Potassium (exchangeable)	M22-Fe02140	CP	meq/100g	0.5	0.5	4.0	30%	Pass
Sodium (exchangeable)	M22-Fe02140	CP	meq/100g	< 0.1	< 0.1	<1	30%	Pass
% Moisture	M22-Fe02140	CP	%	7.9	8.1	3.0	30%	Pass
Duplicate								
Cation Exchange Capacity				Result 1	Result 2	RPD		
Calcium (exchangeable)	M22-Fe02140	CP	meq/100g	6.1	6.2	3.0	30%	Pass
Cation Exchange Capacity	M22-Fe02140	CP	meq/100g	9.8	10	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Exchangeable Sodium Percentage (ESP)	M22-Fe02150	CP	%	6.4	6.2	2.0	30%	Pass
Magnesium (exchangeable)	M22-Fe02150	CP	meq/100g	23	23	2.0	30%	Pass
Potassium (exchangeable)	M22-Fe02150	CP	meq/100g	1.3	1.3	2.0	30%	Pass
Sodium (exchangeable)	M22-Fe02150	CP	meq/100g	3.1	3.0	3.0	30%	Pass
Duplicate								
Cation Exchange Capacity				Result 1	Result 2	RPD		
Calcium (exchangeable)	M22-Fe02150	CP	meq/100g	21	21	1.0	30%	Pass
Cation Exchange Capacity	M22-Fe02150	CP	meq/100g	49	48	1.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
S01	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/m ³ in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m ³ '
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl is greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised by:

Catherine Wilson	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Myles Clark	Senior Analyst-SPOCAS (QLD)
Scott Beddoes	Senior Analyst-Inorganic (VIC)



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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DATE: 12/8/22
TIME: 8:08pm
COURIER: ✓
TEMPERATURE 17 8+0-2 18°C
ATTEMPT TO CHILL: YES NO
Carrier
Emily D

CLIENT: FYFE Pty. Ltd.		LABORATORY: EUROFIN		LABORATORY BATCH NO.:		TURNAROUND TIME:	
PROJECT: 81196 Werribee Junction		COC Reference: 81196		SAMPLERS: Daniel Davis		Standard: YES	
SEND REPORT TO: Emails below		SEND INVOICE TO: Brent Davey		PHONE:		24 Hour Turnaround:	
DATA/ REPORT NEEDED BY:		QUOTE #:		REPORT FORMAT: HARD:NO FAX: NO E-MAIL: YES		48 Hour Turnaround:	
RELINQUISHED BY:				RECEIVED BY:			
NAME : Adam Triffett/Daniel Dav's		TIME:		NAME :		DATE:	
OF: Fyfe		DATE: 12/8/22		OF:		TIME:	
NAME :		TIME:		NAME :		DATE:	
OF:		TIME:		OF:		TIME:	
P.O. NO.:		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:		ANALYSIS REQUIRED			
FOR LAB USE ONLY		Please forward results and invoice to:		Suite B20 (CEC/ESP/cations) Chromium suite ASS SPOCAS			
COOLER SEAL		brent.davey@fyfe.com.au					
Yes No Broken Intact		Daniel.Davis@fyfe.com.au					
COOLER TEMP: deg.*C							
SAMPLE DATA				*CONTAINER DATA			
SAMPLE ID	MATRIX	DATE	TYPE & PRESERVATIVE	NO.	pH field	HOLD	
S81-0.15	SOIL	11/08/2022	Soil jar	1		1	
S81-0.5	SOIL	11/08/2022	Soil jar	1		1	
S81-3.0	SOIL	11/08/2022	Soil jar	1		1	
S82-0.15	SOIL	11/08/2022	Soil jar	1		1	
S82-1.1	SOIL	11/08/2022	Soil jar	1		1	
S83-0.15	SOIL	11/08/2022	Soil jar	1			1
S83-0.5	SOIL	11/08/2022	Soil jar	1		1	
S83-3.0	SOIL	11/08/2022	Soil jar	1		1	
S84-0.15	SOIL	11/08/2022	Soil jar	1			1
S84-0.5	SOIL	11/08/2022	Soil jar	1		1	
S84-3.0	SOIL	11/08/2022	Soil jar	1		1	
S85-0.15	SOIL	11/08/2022	Soil jar	1			1
S85-0.5	SOIL	11/08/2022	Soil jar	1		1	
S85-3.0	SOIL	11/08/2022	Soil jar	1		1	
S86-0.15	SOIL	11/08/2022	Soil jar	1		1	
S86-0.5	SOIL	11/08/2022	Soil jar	1		1	
S86-3.0	SOIL	11/08/2022	Soil jar	1		1	
S87-0.15	SOIL	11/08/2022	Soil jar	1			1
S87-0.5	SOIL	11/08/2022	Soil jar	1		1	
S87-3.0	SOIL	11/08/2022	Soil jar	1		1	
S88-0.15	SOIL	11/08/2022	Soil jar	1			1
S88-0.5	SOIL	11/08/2022	Soil jar	1		1	
S88-2.7	SOIL	11/08/2022	Soil jar	1		1	
S89-0.15	SOIL	11/08/2022	Soil jar	1		1	
S89-0.5	SOIL	11/08/2022	Soil jar	1		1	
S89-3.0	SOIL	11/08/2022	Soil jar	1		1	
TOTAL					14	4	6

914138



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Company Name: Fyfe Earth Partners Pty Ltd VIC
Address: Level 1, Suite 2, 17 Cotham Road
Kew
VIC 3101

Project Name: WERRIBEE JUNCTION
Project ID: 81196

Order No.:
Report #: 914138
Phone: 08 8201 9600
Fax: 08 8201 9650

Received: Aug 12, 2022 3:08 PM
Due: Aug 19, 2022
Priority: 5 Day
Contact Name: Brent Davey

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	SB1_1.5	Aug 11, 2022		Soil	M22-Au0030624		X			X
2	SB1_3.0	Aug 11, 2022		Soil	M22-Au0030625				X	X
3	SB2_0.15	Aug 11, 2022		Soil	M22-Au0030626		X			X
4	SB2_1.1	Aug 11, 2022		Soil	M22-Au0030627		X			X
5	SB3_1.5	Aug 11, 2022		Soil	M22-Au0030628		X			X
6	SB3_3.0	Aug 11, 2022		Soil	M22-Au0030629				X	X
7	SB4_1.5	Aug 11, 2022		Soil	M22-Au0030630		X			X
8	SB4_3.0	Aug 11, 2022		Soil	M22-Au0030631		X			X
9	SB5_1.5	Aug 11, 2022		Soil	M22-Au0030632		X			X
10	SB5_3.0	Aug 11, 2022		Soil	M22-Au0030633			X		X
11	SB6_0.15	Aug 11, 2022		Soil	M22-Au0030634		X			X
12	SB6_1.5	Aug 11, 2022		Soil	M22-Au0030635		X			X



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Company Name: Fyfe Earth Partners Pty Ltd VIC
Address: Level 1, Suite 2, 17 Cotham Road
Kew
VIC 3101

Project Name: WERRIBEE JUNCTION
Project ID: 81196

Order No.:
Report #: 914138
Phone: 08 8201 9600
Fax: 08 8201 9650

Received: Aug 12, 2022 3:08 PM
Due: Aug 19, 2022
Priority: 5 Day
Contact Name: Brent Davey

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
13	SB6_3.0	Aug 11, 2022		Soil	M22-Au0030636				X	X
14	SB7_1.5	Aug 11, 2022		Soil	M22-Au0030637		X			X
15	SB7_3.0	Aug 11, 2022		Soil	M22-Au0030638		X			X
16	SB8_1.5	Aug 11, 2022		Soil	M22-Au0030639		X			X
17	SB8_2.7	Aug 11, 2022		Soil	M22-Au0030640			X		X
18	SB9_0.15	Aug 11, 2022		Soil	M22-Au0030641		X			X
19	SB9_1.5	Aug 11, 2022		Soil	M22-Au0030642		X			X
20	SB9_3.0	Aug 11, 2022		Soil	M22-Au0030643				X	X
21	SB1_0.15	Aug 11, 2022		Soil	M22-Au0030644	X				
22	SB3_0.15	Aug 11, 2022		Soil	M22-Au0030645	X				
23	SB4_0.15	Aug 11, 2022		Soil	M22-Au0030646	X				
24	SB5_0.15	Aug 11, 2022		Soil	M22-Au0030647	X				
25	SB7_0.15	Aug 11, 2022		Soil	M22-Au0030648	X				
26	SB8_0.15	Aug 11, 2022		Soil	M22-Au0030649	X				
Test Counts						6	14	2	4	20

Fyfe Earth Partners
Level 1, Suite 2, 17 Cotham Road
Kew
VIC 3101



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: **Brent Davey**

Report **914138-S-V2**
Project name **WERRIBEE JUNCTION**
Project ID **81196**
Received Date **Aug 12, 2022**

Client Sample ID			SB1_1.5	SB1_3.0	SB2_0.15	SB2_1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22- Au0030624	M22- Au0030625	M22- Au0030626	M22- Au0030627
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	37	-	40	510
Exchangeable Sodium Percentage (ESP)	0.1	%	6.5	-	7.7	12
Magnesium (exchangeable)	0.1	meq/100g	7.5	-	12	20
Potassium (exchangeable)	0.1	meq/100g	1.6	-	1.1	0.7
Sodium (exchangeable)	0.1	meq/100g	1.2	-	2.2	7.3
% Moisture	1	%	22	28	21	22
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	-	-	7.9	7.4
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	8.8	-	13	34
Cation Exchange Capacity	0.05	meq/100g	19	-	29	62
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	6.5	-	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	-	< 2	-	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	< 0.003	-	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	< 0.005	-	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	< 3	-	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	N/A	-	-
HCl Extractable Sulfur	0.005	% S	-	N/A	-	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	-	N/A	-	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.005	% S	-	N/A	-	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	-	N/A	-	-
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	0.65	-	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	0.21	-	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	130	-	-
ANC Fineness Factor		factor	-	1.5	-	-
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	< 0.02	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	< 10	-	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	< 1	-	-

Client Sample ID			SB1_1.5	SB1_3.0	SB2_0.15	SB2_1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030624	M22-Au0030625	M22-Au0030626	M22-Au0030627
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	-	29	-	-
>2mm Fraction	0.005	g	-	< 0.005	-	-
Analysed Material	0.1	%	-	100	-	-
Extraneous Material	0.1	%	-	< 0.1	-	-

Client Sample ID			SB3_1.5	SB3_3.0	SB4_1.5	SB4_3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030628	M22-Au0030629	M22-Au0030630	M22-Au0030631
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	1200	-	870	680
Exchangeable Sodium Percentage (ESP)	0.1	%	21	-	11	15
Magnesium (exchangeable)	0.1	meq/100g	24	-	9.9	6.9
Potassium (exchangeable)	0.1	meq/100g	1.6	-	0.5	0.3
Sodium (exchangeable)	0.1	meq/100g	12	-	2.2	2.6
% Moisture	1	%	25	29	13	18
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	8.7	-	8.2	8.0
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	19	-	8.7	7.5
Cation Exchange Capacity	0.05	meq/100g	56	-	21	17
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	6.6	-	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	-	< 2	-	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	< 0.003	-	-
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	< 0.005	-	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	< 3	-	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	N/A	-	-
HCl Extractable Sulfur	0.005	% S	-	N/A	-	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	-	N/A	-	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.005	% S	-	N/A	-	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	-	N/A	-	-
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	0.84	-	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	0.27	-	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	170	-	-
ANC Fineness Factor		factor	-	1.5	-	-
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	< 0.02	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	< 10	-	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	< 1	-	-

Client Sample ID			SB3_1.5	SB3_3.0	SB4_1.5	SB4_3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030628	M22-Au0030629	M22-Au0030630	M22-Au0030631
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	-	33	-	-
>2mm Fraction	0.005	g	-	< 0.005	-	-
Analysed Material	0.1	%	-	100	-	-
Extraneous Material	0.1	%	-	< 0.1	-	-

Client Sample ID			SB5_1.5	SB5_3.0	SB6_0.15	SB6_1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030632	M22-Au0030633	M22-Au0030634	M22-Au0030635
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	850	-	64	880
Exchangeable Sodium Percentage (ESP)	0.1	%	11	-	11	25
Magnesium (exchangeable)	0.1	meq/100g	9.2	-	5.0	5.3
Potassium (exchangeable)	0.1	meq/100g	0.4	-	1.2	0.2
Sodium (exchangeable)	0.1	meq/100g	2.2	-	1.6	2.8
% Moisture	1	%	14	18	13	17
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	7.9	-	8.1	8.7
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	8.0	-	6.3	3.0
Cation Exchange Capacity	0.05	meq/100g	20	-	14	11
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	-	6.5	-	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	-	< 2	-	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	< 0.003	-	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	-	0.016	-	-
Peroxide Extractable Sulfur	0.005	% S	-	0.018	-	-
HCl Extractable Sulfur	0.005	% S	-	N/A	-	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.005	% S	-	N/A	-	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	-	N/A	-	-
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	-
Acid Neutralising Capacity (ANCbt)						
ANC Fineness Factor		factor	-	1.5	-	-
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	-	< 10	-	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	-	< 0.02	-	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	-	< 1	-	-
Extraneous Material						
<2mm Fraction	0.005	g	-	43	-	-
>2mm Fraction	0.005	g	-	< 0.005	-	-
Analysed Material	0.1	%	-	100	-	-
Extraneous Material	0.1	%	-	< 0.1	-	-

Client Sample ID			SB5_1.5	SB5_3.0	SB6_0.15	SB6_1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030632	M22-Au0030633	M22-Au0030634	M22-Au0030635
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	-	7.2	-	-
Titrateable Peroxide Acidity (s-TPA)	0.02	% pyrite S	-	< 0.02	-	-
Titrateable Peroxide Acidity (a-TPA)	2	mol H+/t	-	< 2	-	-
Titrateable Sulfidic Acidity (a-TSA)	2	mol H+/t	-	< 2	-	-
Titrateable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	-	< 0.02	-	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.005	% S	-	< 0.005	-	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	2	mol H+/t	-	< 2	-	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	-	0.18	-	-
Calcium - Peroxide	0.005	% Ca	-	0.19	-	-
Calcium - Acid Reacted	0.005	% Ca	-	0.017	-	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	-	0.014	-	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	8.6	-	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	-	0.11	-	-
Magnesium - Peroxide	0.005	% Mg	-	0.12	-	-
Magnesium - Acid Reacted	0.005	% Mg	-	0.014	-	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	-	0.018	-	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	-	11	-	-
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO3	-	0.22	-	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	-	0.07	-	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H+/t	-	44	-	-

Client Sample ID			SB6_3.0	SB7_1.5	SB7_3.0	SB8_1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030636	M22-Au0030637	M22-Au0030638	M22-Au0030639
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	-	120	76	440
Exchangeable Sodium Percentage (ESP)	0.1	%	-	17	26	7.6
Magnesium (exchangeable)	0.1	meq/100g	-	6.0	6.2	8.0
Potassium (exchangeable)	0.1	meq/100g	-	1.2	0.2	0.2
Sodium (exchangeable)	0.1	meq/100g	-	2.8	3.8	2.0
% Moisture	1	%	20	16	20	9.9
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	-	7.8	9.2	7.7
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	6.7	4.5	16
Cation Exchange Capacity	0.05	meq/100g	-	17	15	27
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	7.3	-	-	-
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	-	-
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	-	-

Client Sample ID			SB6_3.0	SB7_1.5	SB7_3.0	SB8_1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030636	M22-Au0030637	M22-Au0030638	M22-Au0030639
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	< 0.005	-	-	-
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	< 3	-	-	-
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	N/A	-	-	-
HCl Extractable Sulfur	0.005	% S	N/A	-	-	-
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	N/A	-	-	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.005	% S	N/A	-	-	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	N/A	-	-	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	-	-
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	0.74	-	-	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	0.24	-	-	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	150	-	-	-
ANC Fineness Factor		factor	1.5	-	-	-
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	< 0.02	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	< 10	-	-	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	< 1	-	-	-
Extraneous Material						
<2mm Fraction	0.005	g	50	-	-	-
>2mm Fraction	0.005	g	< 0.005	-	-	-
Analysed Material	0.1	%	100	-	-	-
Extraneous Material	0.1	%	< 0.1	-	-	-

Client Sample ID			SB8_2.7	SB9_0.15	SB9_1.5	SB9_3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030640	M22-Au0030641	M22-Au0030642	M22-Au0030643
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	-	590	47	-
Exchangeable Sodium Percentage (ESP)	0.1	%	-	13	9.1	-
Magnesium (exchangeable)	0.1	meq/100g	-	8.6	4.6	-
Potassium (exchangeable)	0.1	meq/100g	-	0.3	0.2	-
Sodium (exchangeable)	0.1	meq/100g	-	2.7	1.0	-
% Moisture	1	%	8.8	8.0	12	7.9
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	-	9.4	8.1	-
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	9.9	5.3	-
Cation Exchange Capacity	0.05	meq/100g	-	22	11	-
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	7.3	-	-	7.3
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	-	-	< 2
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	-	-	< 0.003

Client Sample ID			SB8_2.7	SB9_0.15	SB9_1.5	SB9_3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030640	M22-Au0030641	M22-Au0030642	M22-Au0030643
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) ^{S04}	0.005	% S	-	-	-	< 0.005
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	-	-	-	< 3
Extractable Sulfur						
Sulfur - KCl Extractable	0.005	% S	< 0.005	-	-	N/A
Peroxide Extractable Sulfur	0.005	% S	< 0.005	-	-	-
HCl Extractable Sulfur	0.005	% S	N/A	-	-	N/A
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	-	-	-	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.005	% S	N/A	-	-	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	N/A	-	-	N/A
HCl Extractable Sulfur Correction Factor	1	factor	2.0	-	-	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	-	-	0.76
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	-	-	0.24
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	-	-	150
ANC Fineness Factor		factor	1.5	-	-	1.5
Net Acidity (Including ANC)						
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	10	mol H+/t	< 10	-	-	-
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	0.02	% S	< 0.02	-	-	-
SPOCAS - Liming rate - ASSMAC	1	kg CaCO3/t	< 1	-	-	-
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	-	-	-	< 0.02
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	-	-	< 10
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	-	-	< 1
Extraneous Material						
<2mm Fraction	0.005	g	63	-	-	59
>2mm Fraction	0.005	g	< 0.005	-	-	< 0.005
Analysed Material	0.1	%	100	-	-	100
Extraneous Material	0.1	%	< 0.1	-	-	< 0.1
Potential Acidity - Titratable Peroxide						
pH-OX	0.1	pH Units	7.9	-	-	-
Titratable Peroxide Acidity (s-TPA)	0.02	% pyrite S	< 0.02	-	-	-
Titratable Peroxide Acidity (a-TPA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (a-TSA)	2	mol H+/t	< 2	-	-	-
Titratable Sulfidic Acidity (s-TSA)	0.02	% pyrite S	< 0.02	-	-	-
Potential Acidity (SPOS)						
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	0.005	% S	< 0.005	-	-	-
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	2	mol H+/t	< 2	-	-	-
Extractable Calcium						
Calcium - KCl Extractable	0.005	% Ca	0.15	-	-	-
Calcium - Peroxide	0.005	% Ca	0.14	-	-	-
Calcium - Acid Reacted	0.005	% Ca	< 0.005	-	-	-
Calcium - Acid Reacted (s-aCa)	0.005	% S	< 0.005	-	-	-
Calcium - Acid Reacted (a-aCa)	0.005	mol H+/t	< 0.005	-	-	-
Extractable Magnesium						
Magnesium - KCl Extractable	0.005	% Mg	0.094	-	-	-
Magnesium - Peroxide	0.005	% Mg	0.10	-	-	-
Magnesium - Acid Reacted	0.005	% Mg	0.010	-	-	-
Magnesium - Acid Reacted (s-aCa)	0.005	% S	0.013	-	-	-
Magnesium - Acid Reacted (a-aCa)	0.005	mol H+/t	7.8	-	-	-

Client Sample ID			SB8_2.7	SB9_0.15	SB9_1.5	SB9_3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M22-Au0030640	M22-Au0030641	M22-Au0030642	M22-Au0030643
Date Sampled			Aug 11, 2022	Aug 11, 2022	Aug 11, 2022	Aug 11, 2022
Test/Reference	LOR	Unit				
Acid Neutralising Capacity (ANCE)						
Acid Neutralising Capacity - (ANCE)	0.02	% CaCO ₃	0.28	-	-	-
Acid Neutralising Capacity - (s-ANCE)	0.02	% S	0.09	-	-	-
Acid Neutralising Capacity - (a-ANCE)	10	mol H ⁺ /t	56	-	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Conductivity (1:5 aqueous extract at 25 °C as rec.) - Method: LTM-INO-4030 Conductivity	Melbourne	Aug 15, 2022	7 Days
Magnesium (exchangeable) - Method: LTM-MET-3060 Cation Exchange Capacity and ESP	Melbourne	Aug 16, 2022	180 Days
Potassium (exchangeable) - Method: LTM-MET-3060 Cation Exchange Capacity and ESP	Melbourne	Aug 16, 2022	180 Days
Sodium (exchangeable) - Method: LTM-MET-3060 Cation Exchange Capacity and ESP	Melbourne	Aug 16, 2022	180 Days
Cation Exchange Capacity - Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage	Melbourne	Aug 16, 2022	28 Days
Exchangeable Sodium Percentage (ESP) - Method: LTM-MET-3060 - Cation Exchange Capacity (CEC) & Exchangeable Sodium Percentage (ESP)	Melbourne	Aug 16, 2022	28 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Aug 13, 2022	14 Days
pH (1:5 Aqueous extract at 25 °C as rec.) - Method: LTM-GEN-7090 pH in soil by ISE	Melbourne	Aug 15, 2022	7 Days
Chromium Reducible Sulfur Suite			
Chromium Suite - Method: LTM-GEN-7070 Chromium Reducible Sulfur Suite	Brisbane	Aug 22, 2022	6 Week
Extraneous Material - Method: LTM-GEN-7050/7070	Brisbane	Aug 22, 2022	6 Week
SPOCAS Suite			
SPOCAS Suite - Method: LTM-GEN-7050	Brisbane	Aug 22, 2022	6 Week

Company Name: Fyfe Earth Partners Pty Ltd VIC
Address: Level 1, Suite 2, 17 Cotham Road
Kew
VIC 3101

Project Name: WERRIBEE JUNCTION
Project ID: 81196

Order No.:
Report #: 914138
Phone: 08 8201 9600
Fax: 08 8201 9650

Received: Aug 12, 2022 3:08 PM
Due: Aug 19, 2022
Priority: 5 Day
Contact Name: Brent Davey

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
External Laboratory										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID					
1	SB1_1.5	Aug 11, 2022		Soil	M22-Au0030624		X			X
2	SB1_3.0	Aug 11, 2022		Soil	M22-Au0030625				X	X
3	SB2_0.15	Aug 11, 2022		Soil	M22-Au0030626		X			X
4	SB2_1.1	Aug 11, 2022		Soil	M22-Au0030627		X			X
5	SB3_1.5	Aug 11, 2022		Soil	M22-Au0030628		X			X
6	SB3_3.0	Aug 11, 2022		Soil	M22-Au0030629				X	X
7	SB4_1.5	Aug 11, 2022		Soil	M22-Au0030630		X			X
8	SB4_3.0	Aug 11, 2022		Soil	M22-Au0030631		X			X
9	SB5_1.5	Aug 11, 2022		Soil	M22-Au0030632		X			X
10	SB5_3.0	Aug 11, 2022		Soil	M22-Au0030633			X		X
11	SB6_0.15	Aug 11, 2022		Soil	M22-Au0030634		X			X
12	SB6_1.5	Aug 11, 2022		Soil	M22-Au0030635		X			X

Company Name: Fyfe Earth Partners Pty Ltd VIC
Address: Level 1, Suite 2, 17 Cotham Road
Kew
VIC 3101

Project Name: WERRIBEE JUNCTION
Project ID: 81196

Order No.:
Report #: 914138
Phone: 08 8201 9600
Fax: 08 8201 9650

Received: Aug 12, 2022 3:08 PM
Due: Aug 19, 2022
Priority: 5 Day
Contact Name: Brent Davey

Eurofins Analytical Services Manager : Savini Suduweli

Sample Detail						HOLD	Eurofins Suite B20	SPOCAS Suite	Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X			X
Brisbane Laboratory - NATA # 1261 Site # 20794								X	X	
13	SB6_3.0	Aug 11, 2022		Soil	M22-Au0030636				X	X
14	SB7_1.5	Aug 11, 2022		Soil	M22-Au0030637		X			X
15	SB7_3.0	Aug 11, 2022		Soil	M22-Au0030638		X			X
16	SB8_1.5	Aug 11, 2022		Soil	M22-Au0030639		X			X
17	SB8_2.7	Aug 11, 2022		Soil	M22-Au0030640			X		X
18	SB9_0.15	Aug 11, 2022		Soil	M22-Au0030641		X			X
19	SB9_1.5	Aug 11, 2022		Soil	M22-Au0030642		X			X
20	SB9_3.0	Aug 11, 2022		Soil	M22-Au0030643				X	X
21	SB1_0.15	Aug 11, 2022		Soil	M22-Au0030644	X				
22	SB3_0.15	Aug 11, 2022		Soil	M22-Au0030645	X				
23	SB4_0.15	Aug 11, 2022		Soil	M22-Au0030646	X				
24	SB5_0.15	Aug 11, 2022		Soil	M22-Au0030647	X				
25	SB7_0.15	Aug 11, 2022		Soil	M22-Au0030648	X				
26	SB8_0.15	Aug 11, 2022		Soil	M22-Au0030649	X				
Test Counts						6	14	2	4	20

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	µg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank										
Exchangeable Sodium Percentage (ESP)				%	< 0.1			0.1	Pass	
Magnesium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Potassium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Sodium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Method Blank										
Cation Exchange Capacity										
Calcium (exchangeable)				meq/100g	< 0.1			0.1	Pass	
Cation Exchange Capacity				meq/100g	< 0.05			0.05	Pass	
LCS - % Recovery										
Actual Acidity (NLM-3.2)										
pH-KCL (NLM-3.1)				%	97			80-120	Pass	
Titratable Actual Acidity (NLM-3.2)				%	97			80-120	Pass	
LCS - % Recovery										
Potential Acidity - Chromium Reducible Sulfur										
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)				%	96			80-120	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
					Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25 °C as rec.)	M22-Au0030624	CP		uS/cm	37	41	12	30%	Pass	
Exchangeable Sodium Percentage (ESP)	M22-Au0028607	NCP		%	9.5	10	5.9	30%	Pass	
Magnesium (exchangeable)	M22-Au0028607	NCP		meq/100g	3.2	2.4	28	30%	Pass	
Sodium (exchangeable)	M22-Au0028607	NCP		meq/100g	0.8	0.6	20	30%	Pass	
Duplicate										
Cation Exchange Capacity					Result 1	Result 2	RPD			
Calcium (exchangeable)	M22-Au0028607	NCP		meq/100g	4.0	3.2	22	30%	Pass	
Cation Exchange Capacity	M22-Au0028607	NCP		meq/100g	8.2	6.4	25	30%	Pass	
Duplicate										
Actual Acidity (NLM-3.2)					Result 1	Result 2	RPD			
pH-KCL (NLM-3.1)	M22-Au0030625	CP		pH Units	6.5	6.5	<1	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	M22-Au0030625	CP		mol H+/t	< 2	< 2	<1	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	M22-Au0030625	CP		% pyrite S	< 0.003	< 0.003	<1	30%	Pass	
Duplicate										
Potential Acidity - Chromium Reducible Sulfur					Result 1	Result 2	RPD			
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	M22-Au0030625	CP		% S	< 0.005	< 0.005	<1	20%	Pass	
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	M22-Au0030625	CP		mol H+/t	< 3	< 3	<1	30%	Pass	
Duplicate										
Extractable Sulfur					Result 1	Result 2	RPD			
Sulfur - KCl Extractable	M22-Au0030625	CP		% S	N/A	N/A	N/A	30%	Pass	
Peroxide Extractable Sulfur	M22-Au0030625	CP		% S	N/A	N/A	N/A	20%	Pass	
HCl Extractable Sulfur	M22-Au0030625	CP		% S	N/A	N/A	N/A	20%	Pass	
Duplicate										
Retained Acidity (S-NAS)					Result 1	Result 2	RPD			
Net Acid soluble sulfur (SNAS) NLM-4.1	M22-Au0030625	CP		% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (s-SNAS) NLM-4.1	M22-Au0030625	CP		% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (a-SNAS) NLM-4.1	M22-Au0030625	CP		mol H+/t	N/A	N/A	N/A	30%	Pass	

Duplicate								
Acid Neutralising Capacity (ANCbt)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	M22-Au0030625	CP	% CaCO ₃	0.65	0.75	15	20%	Pass
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	M22-Au0030625	CP	% S	0.21	0.24	15	30%	Pass
ANC Fineness Factor	M22-Au0030625	CP	factor	1.5	1.5	<1	30%	Pass
Duplicate								
Net Acidity (Including ANC)				Result 1	Result 2	RPD		
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	M22-Au0030625	CP	mol H ⁺ /t	N/A	N/A	N/A	30%	Pass
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	M22-Au0030625	CP	% S	N/A	N/A	N/A	30%	Pass
SPOCAS - Liming rate - ASSMAC	M22-Au0030625	CP	kg CaCO ₃ /t	N/A	N/A	N/A	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Au0030625	CP	% S	< 0.02	< 0.02	<1	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Au0030625	CP	mol H ⁺ /t	< 10	< 10	<1	30%	Pass
CRS Suite - Liming Rate - NASSG (Including ANC)	M22-Au0030625	CP	kg CaCO ₃ /t	< 1	< 1	<1	30%	Pass
Duplicate								
Potential Acidity - Titratable Peroxide				Result 1	Result 2	RPD		
Titrateable Peroxide Acidity (s-TPA)	M22-Au0030625	CP	% pyrite S	N/A	N/A	N/A	30%	Pass
Titrateable Sulfidic Acidity (a-TSA)	M22-Au0030625	CP	mol H ⁺ /t	N/A	N/A	N/A	30%	Pass
Titrateable Sulfidic Acidity (s-TSA)	M22-Au0030625	CP	% pyrite S	N/A	N/A	N/A	30%	Pass
Duplicate								
Potential Acidity (SPOS)				Result 1	Result 2	RPD		
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	M22-Au0030625	CP	% S	N/A	N/A	N/A	30%	Pass
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	M22-Au0030625	CP	mol H ⁺ /t	N/A	N/A	N/A	30%	Pass
Duplicate								
Extractable Calcium				Result 1	Result 2	RPD		
Calcium - KCl Extractable	M22-Au0030625	CP	% Ca	N/A	N/A	N/A	30%	Pass
Calcium - Peroxide	M22-Au0030625	CP	% Ca	N/A	N/A	N/A	20%	Pass
Calcium - Acid Reacted	M22-Au0030625	CP	% Ca	N/A	N/A	N/A	30%	Pass
Calcium - Acid Reacted (s-aCa)	M22-Au0030625	CP	% S	N/A	N/A	N/A	30%	Pass
Calcium - Acid Reacted (a-aCa)	M22-Au0030625	CP	mol H ⁺ /t	N/A	N/A	N/A	30%	Pass
Duplicate								
Extractable Magnesium				Result 1	Result 2	RPD		
Magnesium - KCl Extractable	M22-Au0030625	CP	% Mg	N/A	N/A	N/A	30%	Pass
Magnesium - Peroxide	M22-Au0030625	CP	% Mg	N/A	N/A	N/A	20%	Pass
Magnesium - Acid Reacted	M22-Au0030625	CP	% Mg	N/A	N/A	N/A	30%	Pass
Magnesium - Acid Reacted (s-aCa)	M22-Au0030625	CP	% S	N/A	N/A	N/A	30%	Pass
Magnesium - Acid Reacted (a-aCa)	M22-Au0030625	CP	mol H ⁺ /t	N/A	N/A	N/A	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCE)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCE)	M22-Au0030625	CP	% CaCO ₃	N/A	N/A	N/A	30%	Pass
Acid Neutralising Capacity - (a-ANCE)	M22-Au0030625	CP	mol H ⁺ /t	N/A	N/A	N/A	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M22-Au0030630	CP	%	13	13	<1	30%	Pass
Duplicate								
Actual Acidity (NLM-3.2)				Result 1	Result 2	RPD		
pH-KCL (NLM-3.1)	M22-Au0030633	CP	pH Units	6.5	6.5	<1	20%	Pass
Titrateable Actual Acidity (NLM-3.2)	M22-Au0030633	CP	mol H ⁺ /t	< 2	< 2	<1	20%	Pass
Titrateable Actual Acidity (NLM-3.2)	M22-Au0030633	CP	% pyrite S	< 0.003	< 0.003	<1	30%	Pass

Duplicate								
Potential Acidity - Chromium Reducible Sulfur				Result 1	Result 2	RPD		
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	M22-Au0030633	CP	% S	N/A	N/A	N/A	20%	Pass
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	M22-Au0030633	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Extractable Sulfur				Result 1	Result 2	RPD		
Sulfur - KCl Extractable	M22-Au0030633	CP	% S	0.016	0.016	<1	30%	Pass
Peroxide Extractable Sulfur	M22-Au0030633	CP	% S	0.018	0.018	<1	20%	Pass
HCl Extractable Sulfur	M22-Au0030633	CP	% S	N/A	N/A	N/A	20%	Pass
Duplicate								
Retained Acidity (S-NAS)				Result 1	Result 2	RPD		
Net Acid soluble sulfur (SNAS) NLM-4.1	M22-Au0030633	CP	% S	N/A	N/A	N/A	30%	Pass
Net Acid soluble sulfur (s-SNAS) NLM-4.1	M22-Au0030633	CP	% S	N/A	N/A	N/A	30%	Pass
Net Acid soluble sulfur (a-SNAS) NLM-4.1	M22-Au0030633	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCbt)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	M22-Au0030633	CP	% CaCO3	N/A	N/A	N/A	20%	Pass
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	M22-Au0030633	CP	% S	N/A	N/A	N/A	30%	Pass
ANC Fineness Factor	M22-Au0030633	CP	factor	1.5	1.5	<1	30%	Pass
Duplicate								
Net Acidity (Including ANC)				Result 1	Result 2	RPD		
SPOCAS - Net Acidity - ASSMAC (Acidity Units)	M22-Au0030633	CP	mol H+/t	< 10	< 10	<1	30%	Pass
SPOCAS - Net Acidity - ASSMAC (Sulfur Units)	M22-Au0030633	CP	% S	< 0.02	< 0.02	<1	30%	Pass
SPOCAS - Liming rate - ASSMAC	M22-Au0030633	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Au0030633	CP	% S	N/A	N/A	N/A	30%	Pass
CRS Suite - Net Acidity - NASSG (Including ANC)	M22-Au0030633	CP	mol H+/t	N/A	N/A	N/A	30%	Pass
CRS Suite - Liming Rate - NASSG (Including ANC)	M22-Au0030633	CP	kg CaCO3/t	N/A	N/A	N/A	30%	Pass
Duplicate								
Potential Acidity - Titratable Peroxide				Result 1	Result 2	RPD		
pH-OX	M22-Au0030633	CP	pH Units	7.2	7.2	<1	20%	Pass
Titrratable Peroxide Acidity (s-TPA)	M22-Au0030633	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass
Titrratable Peroxide Acidity (a-TPA)	M22-Au0030633	CP	mol H+/t	< 2	< 2	<1	20%	Pass
Titrratable Sulfidic Acidity (a-TSA)	M22-Au0030633	CP	mol H+/t	< 2	< 2	<1	30%	Pass
Titrratable Sulfidic Acidity (s-TSA)	M22-Au0030633	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Potential Acidity (SPOS)				Result 1	Result 2	RPD		
Peroxide Oxidisable Sulfur (s-SPOS) (NLM 2.2)	M22-Au0030633	CP	% S	< 0.005	< 0.005	<1	30%	Pass
Peroxide Oxidisable Sulfur (a-SPOS) (NLM 2.2)	M22-Au0030633	CP	mol H+/t	< 2	< 2	<1	30%	Pass
Duplicate								
Extractable Calcium				Result 1	Result 2	RPD		
Calcium - KCl Extractable	M22-Au0030633	CP	% Ca	0.18	0.18	1.7	30%	Pass
Calcium - Peroxide	M22-Au0030633	CP	% Ca	0.19	0.20	2.1	20%	Pass
Calcium - Acid Reacted	M22-Au0030633	CP	% Ca	0.017	0.018	5.9	30%	Pass
Calcium - Acid Reacted (s-aCa)	M22-Au0030633	CP	% S	0.014	0.015	5.9	30%	Pass
Calcium - Acid Reacted (a-aCa)	M22-Au0030633	CP	mol H+/t	8.6	9.1	5.9	30%	Pass

Duplicate								
Extractable Magnesium				Result 1	Result 2	RPD		
Magnesium - KCl Extractable	M22-Au0030633	CP	% Mg	0.11	0.11	1.3	30%	Pass
Magnesium - Peroxide	M22-Au0030633	CP	% Mg	0.12	0.12	2.3	20%	Pass
Magnesium - Acid Reacted	M22-Au0030633	CP	% Mg	0.014	0.015	9.6	30%	Pass
Magnesium - Acid Reacted (s-aCa)	M22-Au0030633	CP	% S	0.018	0.020	9.6	30%	Pass
Magnesium - Acid Reacted (a-aCa)	M22-Au0030633	CP	mol H+/t	11	12	9.6	30%	Pass
Duplicate								
Acid Neutralising Capacity (ANCE)				Result 1	Result 2	RPD		
Acid Neutralising Capacity - (ANCE)	M22-Au0030633	CP	% CaCO ₃	0.22	0.21	4.0	30%	Pass
Acid Neutralising Capacity - (a-ANCE)	M22-Au0030633	CP	mol H+/t	44	42	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25 °C as rec.)	M22-Au0030638	CP	uS/cm	76	100	29	30%	Pass
pH (1:5 Aqueous extract at 25 °C as rec.)	M22-Au0030638	CP	pH Units	9.2	9.2	pass	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M22-Au0030640	CP	%	8.8	8.6	2.7	30%	Pass

Comments

V2: Report amended to include the available pH results.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
S01	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/m ³ in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m ³ '
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl is greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised by:

Savini Suduweli	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Jonathon Angell	Senior Analyst-SPOCAS
Linda Chouman	Senior Analyst-Sample Properties
Mary Makarios	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Metal
Myles Clark	Senior Analyst-SPOCAS



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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