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CAPTAINS FLAT STATION MASTERS COTTAGE DETAILED SITE INVESTIGATION

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CONTENTS

Abbreviations	iv
Executive Summary	1
1. Introduction	3
1.1 Preamble	3
1.2 Background	3
1.3 Objectives	4
1.4 Scope of Work	4
2. Site Identification	5
2.1 Site Identification	5
2.2 Site Details	5
2.3 Surrounding Land Use	5
3. Site History	7
4. Site Condition and Surrounding Environment	8
4.1 Topography and Hydrology	8
4.2 Geology	8
4.3 Hydrogeology	8
4.4 Site Contamination Summary	8
4.5 Air Quality Assessment	9
5. Preliminary Conceptual Site Model	11
5.1 Environmental Setting	11
5.2 Sources of the Contaminant	11
5.3 Potential Contaminants of Concern	11
5.4 Human and Ecological Receptors	11
5.5 Exposure Pathways	11
6. Sampling and Analysis Quality Plan	14
6.1 Sampling Plan	15
6.1.1 Soil Sampling	15
6.1.2 Internal Dust Sampling	16
6.1.3 Groundwater Sampling	16
6.1.4 Analytical Schedule	17
7. Tier 1 Assessment Criteria	18
7.1 Soil	18
7.2 Groundwater	20
7.3 Indoor Dust	23
8. Quality Assurance and Quality Control	24
8.1 Analytical Schedule	24
8.2 Sampling Methodologies	24
8.2.1 Soil Sampling	25
8.2.2 Groundwater Sampling	25
8.2.3 Interior Dust	26
8.2.4 Paint	27
8.3 Quality Control	28
9. Results	34
9.1 Soil Results	34

9.1.1	Soil Lithology	34
9.1.2	Analytical Results	34
9.2	Groundwater Results	36
9.2.1	Groundwater Gauging Data	36
9.2.2	Water Quality Parameters	36
9.2.3	Analytical Results	36
9.3	Indoor Dust and Paint Results	38
10.	Refined Conceptual Site Model	39
10.1	Environmental Setting	39
10.2	Sources of the Contaminant	39
10.3	Potential Contaminants of Concern	39
10.4	Human and Ecological Receptors	39
10.5	Exposure Pathways	39
11.	Site Characterisation	42
12.	Conclusions and Recommendations	43
13.	Limitations	44
13.1	User Reliance	44
14.	References	45

TABLE OF TABLES

Table 2-1: Site Identification	5
Table 4-1: Air Quality Monitoring Locations	9
Table 5-1: Exposure Assessment Summary	13
Table 6-1: Data Quality Objectives	14
Table 6-2: Proposed Soil Sampling Program	16
Table 6-3: Analytical Schedule	17
Table 7-1: Soil Assessment Criteria – Health and Ecological Investigation Levels	19
Table 7-2: Soil Health Screening Levels for Vapour Intrusion HSL A/B - Clay	19
Table 7-3: Ecological Screening Levels, Management Limits and Direct Contact for Petroleum Hydrocarbons and speciated PAHs in Soil	20
Table 7-4: Groundwater Assessment Criteria (mg/L)	21
Table 7-5: Groundwater Investigation Levels (µg/L)	21
Table 7-6: Lead Dust Assessment Criteria (µg/m ²)	23
Table 8-1: Analytical Schedule	24
Table 8-2 Sampling and Analysis Methodology Assessment	28
Table 8-3 Field and Laboratory QA/QC	30
Table 8-4 QA/QC Assessment	31
Table 9-1: Summary of Soil Exceedances	35
Table 9-2: Summary of Groundwater Results	37
Table 9-3: Summary of lead concentrations relevant to health investigation levels	38
Table 10-1: Exposure Assessment Summary	40

APPENDICES

Appendix 1

Figures

Appendix 2

Photographic Log

Appendix 3

EIL Calculations

Appendix 4

Calibration Certificates

Appendix 5

Analytical Summary Tables

Appendix 6

NATA Accredited Laboratory Reports

Appendix 7

Bore Logs

ABBREVIATIONS

Measures	Description
%	per cent
km	Kilometres
m	Metre
m bgl	Metres below ground level
mg/kg	Milligrams per Kilogram
AHD	Australian Height Datum
CLM Act	NSW Contaminated Land Management Act 1997
Council	Queanbeyan Palerang Council
DP	Deposited Plan
EIL	Ecological Investigation Level
EPA	Environment Protection Authority (NSW)
ESA	Environmental Site Assessment
HIL	Health Investigation Level
JHR	John Holland Rail
Mercury	Inorganic mercury unless noted otherwise
ND	Not Detected
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
pH	A measure of acidity, hydrogen ion activity
fpXRF	Field Portable X-Ray Fluorescence metals analyser
QA/QC	Quality Assurance/Quality Control
RAP	Remedial Action Plan
TfNSW	Transport for NSW

EXECUTIVE SUMMARY

Ramboll Australia Pty Ltd (Ramboll) was engaged by John Holland Rail Pty Limited (JHR) on behalf of Transport for NSW (TfNSW) to assess and provide management advice for contamination in the area of a former load-out facility within the Country Regional Network (CRN) at Captains Flat, New South Wales (NSW). This engagement included a detailed site investigation (DSI) for the former Station Masters Cottage at 2 Copper Creek Road, Captains Flat, New South Wales (the site)) which is situated adjacent to the load out facility.

On 25 September 2020 TfNSW notified the NSW EPA of contamination within the rail corridor adjacent the site under section 60 of the CLM Act. On 22 April 2021 the NSW EPA declared the load out facility and surrounding rail corridor (Lot 4425 DP1217100) as significantly contaminated land (Declaration Number: 20211105) and on 25 June 2021 TfNSW submitted a Voluntary Management Proposal (VMP) describing a pathway and schedule for managing contamination from the rail corridor that was approved by the NSW EPA on 13 September 2021 (EPA ref: 20211713).

VMP Stage 1 objectives were to:

01 Assess the nature and extent of contamination at or originating from the site, and impacted residential land bounding the site.

02 Develop an Interim Environmental Management Plan for interim management of risks to off-site receptors from the Contaminants originating from the site

It should be noted that for the purpose of the VMP the rail corridor is the site whereas for the purpose of this report the former station master's cottage at 2 Copper Creek Road, Captains Flat is the site.

Previous assessments within the rail corridor adjacent the site identified high lead concentrations at the boundary of the site and concluded that contamination may extend onto the site (Ramboll 2021a). Previous assessment on site (Ramboll, 2021b) identified high lead in shallow soil and dust within the residence consistent with potential migration of contaminated soils from the adjacent rail corridor and identified potential risks to human health and the environment. As an interim risk mitigation measure, residents were relocated from the site. These previous assessments were prepared to address VMP Objective 01. This DSI was undertaken to determine the degree to which contamination limits the suitability of the site for residential land use.

The scope of work comprised:

- Assessment of the lateral and vertical extent of metals in soil through field portable x-ray Fluorescence (fpXRF)
- Advancement of hand augers to assess potential contaminants associated with the adjacent load-out facility and the historical residential land use.
- Investigation of groundwater upgradient and downgradient of the site to assess contaminant migration from the adjacent rail corridor.
- Investigation of internal dust and paint in buildings on the site to assess the presence of lead and the potential risk from off site contamination and lead-based paints
- Refinement of the existing conceptual site model (CSM)
- Preparation of this report

The key findings of this DSI were:

- Soil contamination was identified onsite. The key contaminant of concern for human health is lead. The key contaminants of concern for ecology are arsenic, lead, nickel and zinc.
- No other contaminants of concern were identified in the soil sampling and the risk of other contaminants is considered to be low based on historical site information.
- Groundwater contamination was identified in the upgradient monitoring well in particular lead concentrations were reported above the drinking water criteria however there are no current groundwater extraction bores nearby the site. Groundwater contamination is not considered to be related to an onsite source.
- Concentrations of indoor dust exceeded the criteria for residential land use in floor and windowsill/shelf samples, residents have been subsequently relocated and items cleaned and validated however the remaining property still presents an exposure risk to future users prior to any remedial works being undertaken.
- There is a potential source pathway receptor linkage for future residential users of the site and on this basis the site is currently considered not suitable for residential land use.

Several potential human receptors were identified including:

- Future residential occupants
- Future intrusive maintenance workers at the site
- Terrestrial ecology onsite including native fauna

Potential for contaminant migration to and from the site through airborne dust remains as a data gap.

Based on this, Ramboll recommends:

- Preparation and implementation of a remedial action plan (RAP) to address the contamination onsite which consists of lead impacted shallow soils across the site and lead dust within the property.
- Further investigation into the ongoing migration of contamination should be addressed by monitoring air quality at the site during conditions representative of seasonal variability
- Groundwater should not be extracted for beneficial use without a detailed assessment of groundwater quality and potential risks associated with the proposed usage. It is noted that any future use of groundwater would require appropriate assessment for the proposed use and licensing under the *Water Act 1912*.

1. INTRODUCTION

1.1 Preamble

Ramboll Australia Pty Ltd (Ramboll) was engaged by John Holland Rail Pty Limited (JHR) on behalf of Transport for NSW (TfNSW) to assess and provide management advice for contamination in the area of a former load-out facility within the Country Regional Network (CRN) at Captains Flat, New South Wales (NSW). This engagement included a detailed site investigation (DSI) for the former Station Masters Cottage at 2 Copper Creek Road, Captains Flat, New South Wales (the site) located approximately 30 m north of the rail load out facility.

1.2 Background

The site comprises a house and land adjacent the southern terminus of the non-operational Captains Flat to Bungendore rail line and is located adjacent the Lake George (legacy) Mine.

Review of the NSW Department of Resources and Geoscience website¹ provides the following background:

'The Lake George Mine is situated at Captains Flat, approximately 50km south east of Canberra. The mine operated from 1892 until 1962, producing lead, zinc, copper, pyrite, silver and gold.

Extensive rehabilitation work has been conducted since closure to control erosion, improve safety and to control tailings pollution leaving the site. Current and ongoing issues include Acid Mine Drainage (AMD) seepage and heavy metal contaminants leaving the site, with zinc being the primary contaminant of concern.'

The Lake George Mine now forms part of the NSW Government Legacy Mines Program (former Derelict Mines Program).

During mining operations ore concentrates were loaded to rail cars at a loadout facility adjacent to the site. John Holland Rail (JHR), current operator of the CRN, identified the potential for contamination at the site as a result of the adjacent historical load out and mining activities.

On 25 September 2020 TfNSW notified the NSW EPA of contamination within the rail corridor adjacent the site under section 60 of the CLM Act based in part on elevated concentrations of lead on the boundary shared between the rail corridor and the site. On 22 April 2021 the NSW EPA declared the loader and surrounding rail corridor (Lot 4425 DP1217100) as significantly contaminated land (Declaration Number: 20211105) and on 25 June 2021 TfNSW submitted a Voluntary Management Proposal (VMP) describing a pathway and schedule for managing contamination from the rail corridor that was approved by the NSW EPA on 13 September 2021 (EPA ref: 20211713).

VMP Stage 1 objectives were to:

01 Assess the nature and extent of contamination at or originating from the site, and impacted residential land bounding the site.

02 Develop an Interim Environmental Management Plan for interim management of risks to off-site receptors from the Contaminants originating from the site

¹ <https://www.resourcesandgeoscience.nsw.gov.au/landholders-and-community/minerals-and-coal/legacy-mines-program/case-studies/captains-flat-lake-george-mine> accessed 10 September 2020

The site referenced in the VMP is the rail corridor described as Lot 4425 Deposited Plan (DP) 1217100. For the purpose of this report the former station master's cottage at 2 Copper Creek Road, Captains Flat is the site (refer Figure 2, Appendix 1).

Previous assessments within the rail corridor adjacent the site identified high lead concentrations at the boundary of the site and concluded that contamination may extend onto the site (Ramboll 2021a). Previous assessment on site (Ramboll, 2021b) identified high lead in shallow soil and internal dust consistent with potential migration from the adjacent rail corridor and mine site and identified potential risks to human health and the environment. As an interim risk mitigation measure, residents were relocated from the site.

1.3 Objectives

The objective of this DSI was to determine the extent of contamination on the site occurring from the adjacent rail corridor and assess the suitability of the site for residential use.

1.4 Scope of Work

The scope of work comprised:

- Assessment of the lateral and vertical extent of metals in soil through field portable x-ray Fluorescence (fpXRF)
- Advancement of hand augers to assess potential contaminants associated with the adjacent load-out facility and the historical residential land use.
- Investigation of groundwater upgradient and downgradient of the site to assess contaminant migration from the adjacent rail corridor.
- Investigation of internal dust and paint in buildings on the site to assess the presence of lead and the potential risk from off site contamination and lead-based paints
- Refinement of the existing conceptual site model (CSM)
- Preparation of this report

2. SITE IDENTIFICATION

2.1 Site Identification

Site details are summarised in **Table 2-1**. The site locality is presented in **Figure 1, Appendix 1** and site features are presented in **Figure 2a, Appendix 1**.

Table 2-1: Site Identification

Information	Description
Street Address:	2 Copper Creek Road, Captains Flat NSW
Identifier:	Lot 1 Deposited Plan (DP) 572636
Site Area:	Approximately 1,380 m ²
Local Government:	Queanbeyan–Palerang Regional Council
Owner:	Private Owner
Current Site Use:	Residential (not currently occupied)

2.2 Site Details

The site is a residential block approximately 1,380 m² comprising the former Station Master's Cottage and a detached garage and shed. The main residence comprises a single-story weatherboard house with brick pier foundations. An outdoor veranda is attached to the rear of the house. The backyard is fully fenced with the front yard and driveway not currently fenced off from the rail corridor.

The site slopes gently towards the north west towards the backyard. The site is serviced by potable water and an onsite septic system is used for wastewater.

The site is also listed as a state heritage item as the Former Station Master's Cottage constructed between 1939 and 1940 and now a private residence.

Photos of the site are presented in **Appendix 2**.

2.3 Surrounding Land Use

The site is located off Copper Creek Road in an area surrounded by land zoned RU1 Primary Production with several surrounding sites Heritage Listed under the Palerang LEP (2014).

Surrounding land use includes:

- North: Copper Creek, Captains Flat Road, Miners Road
- East: Rail corridor, former goods shed, Miners Road, Captains Flat Sewage Treatment Plant, residential community of Captains Flat
- South: Captains Flat Rail Corridor and former Ore Loadout Facility, processing area of the Former Lake George Mine
- West: Captains Flat Rail Corridor, Copper Creek, large lot residential properties

Heritage listings apply to the site and surrounds and include:

- The Captains Flat Railway Precinct including a Goods Shed (leased to the State Emergency Service (SES)) and other remnant rail infrastructure from the southern end of the rail corridor to the north side of the Station
- The Captains Flat Railway Station Group – constructed in 1939 and converted into a private home in 1974 (Pryke 1995).
- Lake George Mine – including the smelter site, and several related mining and processing sites (near the site)
- Roscommon – miners hut constructed in the 19th century (near the site)

3. SITE HISTORY

A review of the historic information related to the adjacent rail corridor (Ramboll, 2021a) found the Station Master's cottage was owned by Crown Lands until the acquisition by the commissioner for Railways in November 1939. The title records show the former Stations Master's Cottage (Lot 1 DP 572636) was divested to private ownership in 1979. The site most recently changed ownership in 2006 from which it's understood the current owners have occupied the site.

A review of the historical aerial photographs (Ramboll, 2021b) shows the site remains relatively unchanged from the 1951 until between 1976-1989 where the detached garage was constructed.

4. SITE CONDITION AND SURROUNDING ENVIRONMENT

4.1 Topography and Hydrology

The site slopes gently down to the north west, the surrounding site topography is characterised by a moderate north facing slope intersected by a moderate – steep gully directing Copper Creek which flows north-east to the Molonglo River. Topographical contours are presented on **Figure 1, Appendix 1**.

4.2 Geology

The regional geology of the Captains Flat area is characterised by a well-defined north-south trending graben² (2 to 8 km wide), bounded by two horsts³ at its southern and northern ends. The horsts comprise tightly folded Middle to Upper Silurian felsic pyroclastics, volcanogenic sediments and shales. Faults at the boundaries of these structures have the potential to be preferential pathways for groundwater (GHD, 2018). Review of the Department of Regional NSW interactive GIS portal MinView⁴ indicates the Narongo Fault passes through the site orientated north – south between Copper Creek Road and Copper Creek. Key geological features are presented on **Figure 2, Appendix 1**.

4.3 Hydrogeology

A review of the Bureau of Meteorology's National Groundwater Information System (BOM, 2019) indicated that no registered groundwater bores are located within 1 km of the site.

The Hydrogeology Map of Australia (Geoscience Australia, 2000) indicates the site is within an area of fractured or fissured aquifers of low to moderate productivity.

Ramboll have installed one monitoring well immediately north of the site (GW10) to inform development of Captains Flat Lead Management Plan (Ramboll, 2021c). This well was advanced adjacent and east of Copper Creek to ten meters below ground level (m bgl) using solid flight auger with standing water level recorded at approximately six m bgl.

4.4 Site Contamination Summary

Results from the environmental site assessment (Ramboll, 2021b) indicated elevated metal concentrations (arsenic and lead) were identified in shallow soils at the site in 29 sampling locations out of a total of 61 measurements. These sampling locations included X-SMC01 – HASMC01 – HA SMC10 and are presented on **Figure 2, Appendix 1**. Lead exceedances were limited to the upper 0.2 m and present across the entire site. The highest concentrations of lead were found in X-SMC07 (2,669 ppm) and X-SMC06 (3,042 ppm) on the southern boundary of the site adjacent the rail corridor.

Seven internal dust swab samples were collected including five of floor dust and two of the windowsill/shelf dust. All exceeded the indoor dust criteria for lead. Lead in paint was also identified in an internal sample of peeling paint above the fireplace as a potential contributor to

² A graben is a valley caused by the downward displacement of a section of the earth's crust. These are produced by parallel faults.

³ A horst is a raised block of land bounded by parallel normal faults. Horsts are bits of land which have either been lifted or has remained stationary while the land on either side (graben) have fallen.

⁴ <https://minview.geoscience.nsw.gov.au/#/?lon=149.4385&lat=-35.59053&z=18&bm=bm1&l=ge611:n:100,ge610:n:100,ge69:n:100,ge68:n:100,ge67:n:100,ge66:n:100,ge65:n:100,ge64:n:100,ge63:n:100,ge62:n:100,ge61:n:100,ge612:y:100,hi1:n:25,wa1:y:100,ut1:y:50,ad0:y:100> accessed 27/09/2021.

lead concentrations however it was considered to be insignificant compared to the contribution from the adjacent mine and rail corridor.

The sampling plan, assessment criteria and QA/ QC for previous soil, dust and paint sampling are described in **Sections 6 – 8** of this report as this information has not been previously reported.

During the installation of the adjacent monitoring well (GW10) (Ramboll, 2021d) soil sampling showed elevated lead (1468 ppm) at shallow depth (0 – 0.1 m bgl) and the interface of conglomerate and shale (184 ppm) at 4 m bgl. Lead between these depths ranged from 21 – 28 ppm.

4.5 Air Quality Assessment

An air quality monitoring (AQM) network has been established within Captains Flat targeting metals identified as CoPC from historic mining in the area. The AQM network consists of total suspended particulate (TSP) monitoring using high-volume air samplers (HVAS; Hi-Vol 3000) at five locations around Captains Flat. A meteorological station maintained at one location (MET) to inform movement and dispersion of air. The network was established 22 June 2021 and it is anticipated will run for at least 12 months.

The five monitoring locations are summarised in **Table 4-1**.

Table 4-1: Air Quality Monitoring Locations

ID	Location	Description	Monitoring Technique	Parameters measured
AQM1	Residence, Old Mine Road	Representative of potential impacts to the south-west. Located on elevated terrain relative other selected locations	High-volume air sampler (HVAS) with total suspended particulate (TSP) size selective inlet, measuring for 24-hours every 1 day in 6	Heavy metals in TSP (As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Pb, Mn, Mo, Ni, Se, Ti, Zn)
AQM2 & MET	Residence, 2 Copper Creek Road (the site)	Identified as the nearest sensitive receptor to identified mining areas to the north-west	HVAS with TSP inlet, measuring for 24-hours every 1 day in 6	Heavy metals in TSP (As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Pb, Mn, Mo, Ni, Se, Ti, Zn)
			Meteorological Station at 10m and 2m height	10m: wind speed; wind direction. 2m: wind speed; wind direction; temperature; humidity. Ground: rainfall.
AQM3	Captains Flat former Preschool, 27 Foxlow Street	Identified as a sensitive receptor of interest and representative of potential impacts to the south-east	HVAS with TSP inlet, measuring for 24-hours every 1 day in 6	Heavy metals in TSP (As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Pb, Mn, Mo, Ni, Se, Ti, Zn)
AQM4	Captains Flat Public School, Montgomery Street	Representative of potentials impacts of the largest community to the north-east	HVAS with TSP inlet, measuring for 24-hours every 1 day in 6	Heavy metals in TSP (As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Pb, Mn, Mo, Ni, Se, Ti, Zn)
AQM5	Residence, 2 Braidwood Road	Representative of potential impacts to residents down-wind of the mine	HVAS with TSP inlet, measuring for 24-hours every 1 day in 6	Heavy metals in TSP (As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Pb, Mn, Mo, Ni, Se, Ti, Zn)

AQM 2 and MET are located at the site and supplement Tier 1 risk assessment with lines of evidence particularly relevant to potential ongoing migration of lead in airborne dust and subsequent human exposure via inhalation and/or deposition on the site.

The following summary describes results from two bi-monthly reports for the June – October monitoring period (Ramboll 2021c – d).

Prevailing winds were observed from the north during June and July, and from the south-west for August to October. Regular rainfall was observed from mid-July to October. Lead concentrations were reported below adopted assessment criteria for human health indicating low risk of contaminant migration via airborne dust over the monitoring period. IT is noted however that meteorological variability may significantly affect movement of airborne dust and that the monitoring period to date does not include hotter drier months when more airborne dust may be expected. Further information is presented in two separate bi-monthly monitoring reports (Ramboll 2021c – d).

5. PRELIMINARY CONCEPTUAL SITE MODEL

A CSM is a qualitative description of the source(s) of contamination, the pathway(s) by which contaminants may migrate through the environmental media, and the populations (human and / or ecological) that may be potentially exposed. This relationship is commonly known as a Source-Pathway-Receptor (SPR) linkage. Where one or more elements of the SPR linkage are missing, the exposure pathway is incomplete, and no further assessment is required.

5.1 Environmental Setting

The site is zoned RU1 Primary Production, and the current use of the site is residential. Local receiving waters (Copper Creek and then the Molonglo River) are understood to form part of a drinking water catchment (GHD 2018) and are high potential groundwater dependant ecosystems. The site is also located adjacent rail corridor declared as significantly contaminated and near the Lake George (legacy) mine with known contaminant issues.

5.2 Sources of the Contaminant

The main source of heavy metals was from adjacent rail corridor activities including the historic loading and transport of ore concentrate. An additional source of contamination to the site may be the nearby mine.

TRH, BTEXN, PAH, OCP, OPP and Asbestos are also potential contaminants of concern based on the age of the Station Master's Cottage and the potential for these contaminants to be used historically at the site.

5.3 Potential Contaminants of Concern

Based on the proximity to the rail corridor where historic heavy metal contamination has been identified and based on the site history as use as a residence since the 1940's the potential contaminants of concern at the site include:

- Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene (BTEXN), Polycyclic Aromatic Hydrocarbons (PAH).
- Heavy metals
- Organochlorine Pesticides (OCP) and organophosphate pesticides (OPP)
- Asbestos

To date only heavy metals have been assessed at the site as contaminants that may have potentially originated from the rail corridor.

5.4 Human and Ecological Receptors

Human receptors are considered to include future residential occupants and future intrusive maintenance workers at the site.

Ecological receptors are considered to be terrestrial ecology onsite including native fauna trafficking the site.

5.5 Exposure Pathways

For a receptor to be exposed to a contaminant derived from a site, there should be an exposure pathway linking the source of contamination and the exposed population. An exposure pathway

describes the course a chemical or physical agent takes from the source to the exposed individual and generally includes the following elements (USEPA, 1989):

- A source and mechanism of chemical release
- A retention or transport medium (or media where chemicals are transferred between media)
- A point of potential human contact with the contaminated media and
- An exposure route (e.g., ingestion, inhalation) at the point of exposure.

Visible evidence of erosion from the mine to the rail corridor and elevated contaminant concentrations in surface water upstream of the site are evidence indicating contamination may be migrating from the adjacent rail corridor and former mine to the site via sediment, surface water and to a lesser extent through airborne dust.

Exposure routes for the contaminants include:

- Direct contact with contaminated soil
- Inhalation of dust from contaminated soil, airborne dust and indoor dust
- Incidental ingestion of contaminated soil, airborne dust and indoor dust
- Root uptake of contaminants in soil and groundwater
- Groundwater extraction for residential use

An assessment of the SPR linkages for the contamination onsite is summarised in **Table 5-1**.

Table 5-1: Exposure Assessment Summary

Exposure Route	Complete SPR? (Y / N / P)			
	Residential Occupants	Intrusive Maintenance Workers	Onsite Ecology	Justification
Soil				
Direct Contact	Y	Y	N/A	Lead concentrations in soil were observed above the adopted health and ecological criteria (lead and arsenic) at the site. Further assessment was required to determine whether other contaminants of concern present a risk to future site users.
Inhalation	Y	Y	N/A	
Incidental Ingestion	Y	Y	N/A	
Root Uptake	N/A	N/A	Y	
Groundwater				
Groundwater Extraction for residential use	P	N/A	N/A	Further assessment of groundwater was required to assess whether concentrations of contaminants in groundwater present an exposure risk. This occurred through assessment of groundwater within the rail corridor and the site. Groundwater was at a depth of six metres below the site and therefore contact by maintenance workers and ecology was unlikely.
Root Uptake	N/A	N/A	P	
Indoor Dust				
Direct Contact	Y	N/A	N/A	Concentrations of indoor dust exceeded the criteria for residential land use in floor and windowsill/shelf samples. Residents had been subsequently relocated and items cleaned and validated however the remaining property still presented an exposure risk to future users prior to any remedial works being undertaken.
Inhalation	Y	N/A	N/A	
Incidental Ingestion	Y	N/A	N/A	
Airborne Dust				
Inhalation	P	N/A	N/A	Potential ongoing risk of exposure to lead in airborne dust from the adjacent mine and rail corridor had been identified. Airborne dust and meteorological data are currently being collected at the site and will provide the basis for the assessment.
Incidental Ingestion	P	N/A	N/A	

6. SAMPLING AND ANALYSIS QUALITY PLAN

To refine the preliminary CSM to appropriately represent exposure risks within the site, both the field and laboratory programs must result in data that is representative of the conditions at the site. Data Quality Objectives (DQOs) have been developed for the tasks to be completed to address data gaps identified in the preliminary CSM. The DQO process is a systematic, seven-step process that defines the criteria that the sampling should satisfy in accordance with the *Guidelines for the NSW Site Auditor Scheme (3rd Edition)* (NSW EPA 2017).

The seven step DQOs process comprises:

- Step 1: State the problem
- Step 2: Identify the decisions/ goal of the study
- Step 3: Identify the information inputs
- Step 4: Define the boundaries of the study
- Step 5: Develop the decision rules or analytical approach
- Step 6: Specify the performance or acceptance criteria
- Step 7: Develop the plan for obtaining data

DQOs applied during previous assessment were not previously reported and so are integrated here. A summary of the seven step DQO process is presented in **Table 6-1**.

Table 6-1: Data Quality Objectives

DQO	Outcome
Step 1 - State the Problem	Historic metalliferous mining has contaminated Captains Flat. Previous assessments define the impacts in terms of heavy metal contaminants only. Further investigation of other COPC and an assessment of potential groundwater impacts is required. Further assessment is required to characterise the degree and extent of contamination with sufficient detail to inform development of a Detailed Site Investigation.
Step 2 - Identify the Decisions	Decisions were made to assess: <ul style="list-style-type: none"> • The degree to which contamination limits the suitability of the site for residential land use • To determine the degree and extent of contamination in groundwater
Step 3 - Identify the Inputs to the Decision	Inputs to the decisions will be sourced from: <ul style="list-style-type: none"> • Historical soil, dust and paint data from previous investigation completed within the site • QA/QC as described in Table 8-4 to assess whether the data collected is of sufficient quality to meet the project objectives • Laboratory analysis for CoPC in soil other than those previously assessed and groundwater at the site • Surveyed groundwater levels from surrounding groundwater monitoring wells.
Step 4 - Define the Study Boundaries	The boundaries for the assessment are the site boundaries as defined in Figure 1, Appendix 1 . The assessment will be limited vertically to an indicative depth of 12 m bgl for groundwater targeting shallowest serviceable aquifer or shallowest groundwater observed. The temporal boundaries of the assessment will cover the previous soil investigations and the proposed mobilisation and sampling event for groundwater.

Step 5 - Develop a Decision Rule	<p>The decision rules for this assessment are as follows:</p> <ul style="list-style-type: none"> • If it is determined that the data generated through this investigation is reliable, complete, comparable, accurate and representative then this information will be used to address the project objectives. • If it is determined that the data generated through this investigation is not suitable, comprehensive or reliable, for use in achieving the project objectives, then further investigations may be recommended to reduce uncertainties. • If contaminant concentrations exceed assessment criteria described in Section 7 then the degree and extent of exceedances will be considered to determine if further assessment or remediation/management is required • Have all identified data gaps been addressed? • If data gaps remain that limit capacity to determine the suitability of the site for residential land use or management/remediation requirements then further assessment will be considered.
Step 6 - Specify Limits of Decision Errors	<p>The acceptable limits on decision error are as follows:</p> <ul style="list-style-type: none"> • Intra- and inter-laboratory duplicate sampling density of 5% (1 in 20 samples) • 1 rinsate sample per day • RPDs below 30% for inorganic analytes. • RPDs below 50% for organic analytes. • No detections in rinsate samples • Laboratories used should be NATA accredited and laboratory certificates should be NATA stamped. • NATA Accredited Methods will be used. • Holding times for all analytes should be met. • PQLs should be below the adopted assessment criteria. • Laboratory quality assurance testing should be undertaken at appropriate frequencies. • Laboratory Quality Control Results should meet laboratory acceptance limits. <p>If the data received is not in accordance with the defined acceptable limits outlined in Steps 5 and 6, it may be an estimate or be rejected. Determination of whether this data may be used or if re-sampling is required will be based on the following considerations:</p> <ul style="list-style-type: none"> • Closeness of the result to the guideline concentrations • Specific contaminant of concern (e.g., response to carcinogens may be more conservative) • The area of site and the potential lateral and vertical extent of questionable information • Whether the uncertainty can be effectively incorporated into site management controls.
Step 7 - Optimise the Design for Obtaining Data	Refer to Section 6.1

6.1 Sampling Plan

6.1.1 Soil Sampling

The plan for previous soil sampling included targeted surface sampling along the south-western boundary shared with the rail corridor, systematic surface sampling through the remainder of the property including under the rear deck but excluding other building footprints and systematic sampling to vertically delineate extent of contamination related to the adjacent rail corridor and nearby mine site. The proposed sampling program is designed to address the identified data gaps and inform the assessment of risk to human health and ecology that may limit the suitability of the site for residential land use (i.e.: other contaminants of potential concern). The sampling plan comprised:

- Seven hand augers across the site to a maximum depth of 1.0 m bgl
- Three samples per borehole (0-0.1 m, 0.25 m and 0.5 m) targeting different soil horizons or fill and natural layers and analysing two samples at each location
- One sample per borehole within the fill/topsoil profile for analysis of asbestos (presence/absence).

Seven sampling locations are proposed for a site 1,400 m² in area which meets the minimum sampling density in the *NSW Sampling Design Guidelines* (1995).

The proposed soil sampling is summarised in **Table 6-2**.

Table 6-2: Proposed Soil Sampling Program

Area of Concern	Sample ID's	CoPC	Number of Primary Analyses	Justification
Entire Site	HA_SMC101, HA_SMC102 HA_SMC103, HA_SMC104 HA_SMC105, HA_SMC106 HA_SMC107	TRH, BTEXN, PAH, OCP, OPP, Asbestos (presence/absence)	TRH, BTEXN, PAH, OCP, OPP – 14 Asbestos (presence/absence) – 7	To assess the nature and extent of contamination (if any) from other potential contaminants of concern not previously addressed.

The proposed sampling locations are presented in **Appendix 1, Figure 2**.

6.1.2 Internal Dust Sampling

The plan for previous internal dust sampling included collection of seven swab samples at locations on the floor (SWAB-F-SMC01 – SWAB-F-SMC05), from windowsills (SWAB-WS-SMC01 – SWAB-WS-SMC02) and from bookshelves (SWAB-BS-SMC01 – SWAB-BS-SMC04). Two vacuum samples were additionally collected to replicate floor samples SWAB-F-SMC01 – SWAB-F-SMC02. Sample locations were selected to assess high traffic areas of the house and the detached garage / shed.

6.1.3 Groundwater Sampling

Further groundwater investigations are proposed for the wider rail corridor and the results of the investigation relevant to the site will be included in the DSI. The proposed groundwater monitoring wells include two monitoring wells: one south west and up / cross gradient of the site (GW103) and one onsite (GW101). An existing well (GW10) is located north and down-gradient of the site. Well locations are presented on **Appendix 1, Figure 2**. Results from these wells have been included in **Section 9.2**.

6.1.4 Analytical Schedule

The previously completed and proposed analytical schedule is presented in **Table 6-3**.

Table 6-3: Analytical Schedule

Sampling Method	Media	Number of Sampling Points	Analysis - number of primary analyses
FpXRF Sampling (completed in February 2021)	Soil	16 surface soil locations and 10 hand augers	<ul style="list-style-type: none"> Heavy Metals – 61 (comprising 16 surface XRF measurements and 45 XRF measurements at hand auger borehole)
Swab (completed in February 2021)	Internal Dust	7	<ul style="list-style-type: none"> Lead - 7
High-flow cyclonic vacuum (completed in February 2021)	Internal Dust	2	<ul style="list-style-type: none"> Lead - 2
Hand Auger Borehole (completed in October 2021)	Soil	7	<ul style="list-style-type: none"> TRH, BTEXN, PAH, OCP, OPP - 14 Asbestos - 7
Low-Flow Sampling (completed in October 2021)	Groundwater	3 (GW10, GW101 and GW103)	<ul style="list-style-type: none"> Heavy Metals - 3

7. TIER 1 ASSESSMENT CRITERIA

Tier 1 assessment criteria relevant to the DSI are presented below.

7.1 Soil

The NEPM (2013) provides health-based soil investigation levels (HILs) and ecological-based investigation levels (EILs) for various land uses. The NEPM (2013) also introduced health-based and ecological screening levels (HSLs and ESLs), management limits and direct contact HSLs for petroleum hydrocarbons.

Based on the proposed ongoing residential use the guidelines adopted for the site are as follows:

- HIL A – Health investigation level for residential use including residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools and primary schools. HIL A has also been adopted for intrusive maintenance workers.
- HSL A/B – Health screening levels for low-high density residential. The HSLs can be modified based on the general soil type (sand, silt or clay). In instances where this is unknown the most conservative value is adopted.
- EIL for urban residential and public open space – ecological investigations levels applicable for assessing risk to terrestrial ecosystems. EILs depend on specific soil physicochemical properties and generally apply to the top 2 m of soil.
- ESL for urban residential and public open space – ecological screening levels developed for selected petroleum hydrocarbon compounds and fractions and are applicable for assessing risk to terrestrial ecosystems. Fine grained soils were adopted based on the site geology. These are also generally applicable to the top 2m of soil.
- Management Limits where concentrations above these limits may indicate poor aesthetics, high odour and potentially explosive vapour. Management limits are to be applied after consideration of relevant ESLs and HSLs.
- HSLs for Direct Contact have been adopted for the direct contact of contaminated soil for residential use.

Table 7-1: Soil Assessment Criteria – Health and Ecological Investigation Levels

Contaminant (mg/kg)	HIL A – Low density residential	EIL – Urban Residential and Public Open Space
Metals		
Arsenic	100	<u>100</u>
Cadmium	20	--
Chromium	100	190
Copper	6,000	220
Mercury	40	--
Lead	300	<u>1,100</u>
Nickel	400	220
Zinc	7,400	630
PAHs		
Naphthalene	--	<u>170</u>
Carcinogenic PAH (B(a)P equivalent)	3	--
Sum of reported PAH	300	--

EIL values based on site-specific EILs derived in the assessment. Underlined values are generic EILs. EIL calculations are presented in **Appendix 3**.

The applicable HSL assessment criteria¹ for petroleum hydrocarbons in soil are presented in **Table 7-2**.

Table 7-2: Soil Health Screening Levels for Vapour Intrusion HSL A/B - Clay

Contaminant (mg/kg)	HSL A/B (Low-High Density Residential)			
	0 - <1m	1m - <2m	2m - <4m	4m+
Toluene	480	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	110	310	NL	NL
Naphthalene	5	NL	NL	NL
Benzene	0.7	1	2	3
TRH (C6-C10) F1 ²	50	90	150	290
TRH (C10-C16) F2 ³	280	NL	NL	NL

NL The soil saturation concentration (C_{sat}) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds C_{sat}, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.

¹ (For soil texture classification undertaken in accord with AS 1726, the classifications of sand, silt and clay may be applied as coarse, fine with liquid limit <50% and fine with liquid limit >50% respectively, as the underlying properties to develop the HSLs may reasonably be selected to be similar. Clay has been adopted based on the site geology.

² To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.

³ To obtain F2 subtract naphthalene from the >C10-C16 fraction.

Table 7-3 identifies the Ecological Screening Levels, Management Limits and Direct Contact for Petroleum hydrocarbons and speciated PAHs in soil.

Table 7-3: Ecological Screening Levels, Management Limits and Direct Contact for Petroleum Hydrocarbons and speciated PAHs in Soil

Contaminant (mg/kg)	ESLs (fine soil)	Management Limits ¹ (fine soil)	Direct Contact ⁴
	Urban Residential / Public Open Space	Urban Residential / Public Open Space	HSL A
F1 TRHC6- C10	180 ^{2,3}	800	4,400
F2 >TRHC10-C16	120 ^{2,3}	1,000	3,300
F3 >TRHC16-C34	1,300	3,500	4,500
F4 >TRHC34-C40	5,600	10,000	6,300
Benzene	65	-	100
Toluene	105	-	14,000
Ethylbenzene	125	-	4,500
Xylenes	45	-	12,000
Naphthalene	170	-	1,400
B(a)P	72 ⁵	-	-

¹ Management limits are applied after consideration of relevant ESLs and HSLs. Separate management limits for BTEX and naphthalene are not available hence these should not be subtracted from the relevant fractions to obtain F1 and F2.

² To obtain F1 subtract the sum of BTEX concentrations from C6-C10 fraction.

³ The ESL is of moderate reliability and all remaining ESLs are of low reliability.

⁴ Direct Contact are applied to surface soils or soils that could result in immediate contact.

⁵ Benzo(a)Pyrene ESL adopted values based on Canadian Council of Ministers of the Environment (CCME) 2008 guidelines developed using a species sensitivity distribution (SSD) for eco-toxicity data from five independent studies involving three soil invertebrate taxa and two plant taxa (14 endpoints) in preference to NEPM low reliability data.

Fine grained soil adopted based on the site geology.

7.2 Groundwater

The tier 1 assessment criteria adopted for different receptor groups are shown in **Table 7-4**. Note that:

- Australian Drinking Water Guidelines (ADWG) Section 6.3.1 (2011) states that guideline values refer to the total amount of the substance present, regardless of its form (e.g., in solution or attached to suspended matter) and so analytical results from unfiltered samples should be assessed against human health criteria. Similar reasoning is also applicable to irrigation and livestock guideline values. However, groundwater samples will be field filtered, in accordance with Australian Standards
- ANZG (2018) guidelines for metals in freshwater states that the major toxic effect of metals comes from the dissolved fraction, so it is valid to filter samples (e.g., to 0.45 µm) and compare the filtered concentration against the respective guideline values

- Water hardness is identified as a physical parameter for which quantifiable effects correction factors are defined in the ANZG (2018) guidelines to address the effect of water hardness on the bioavailability of cadmium, chromium, lead, nickel and zinc to ecology. To define appropriate hardness correction factors, water hardness will be measured during the proposed sampling and the ecological screening criteria presented in **Table 7-4** will be modified accordingly.

Table 7-4: Groundwater Assessment Criteria (mg/L)

Contaminant	Drinking Water (NHMRC 2011) mg/L (or US EPA RSL (for Tap Water))	Human Health - Recreation Screening(mg/L)	ANZG (2018) 95% Protection Freshwater Criteria (mg/L)
Criteria Applied to	Dissolved concentration	Dissolved concentration	Dissolved concentration
Aluminium	(20)	200	0.0008 ^b
Arsenic	0.01 ^a	0.1 ^a	0.0008
Cadmium	0.002	0.02	0.0002
Chromium	0.05	0.5	0.001
Cobalt	(0.006)	0.06	0.0014
Copper	2	20	0.0014
Iron	(14)	140	-
Lead	0.01	0.1	0.0034
Manganese	0.5	5	1.9
Mercury	0.001	0.01	0.00006
Nickel	0.02	0.2	0.011
Zinc	(6)	60	0.008

blank cell denoted with – indicates no criterion available.

^a Guideline value for total arsenic.

^b For pH <6.5

Arsenic guideline based on As (V) for fresh, the lowest of presented guidelines for ANZECC.

NHMRC arsenic guidelines are based on total arsenic.

ANZECC, NEPM and NHMRC guidelines for chromium are based on Cr (VI).

ANZECC, NEPM and NHMRC guidelines for mercury are based on total mercury.

The groundwater criteria for hydrocarbon contaminants are presented in **Table 7-5**.

Table 7-5: Groundwater Investigation Levels (µg/L)

Analytes	Groundwater HSL A for Vapour Intrusion (2 m – >8m, clay)	95% Fresh Water Protection for Aquatic Ecosystems ^a
Polynuclear Aromatic Hydrocarbons		
Naphthalene ^b	NL	16
Phenanthrene ^c		0.6
Anthracene ^c		0.01
Fluoranthene ^c		1

Analytes	Groundwater HSL A for Vapour Intrusion (2 m – >8m, clay)	95% Fresh Water Protection for Aquatic Ecosystems ^a
Benzo(a)pyrene ^c		0.1
BTEXN		
Benzene ^b	5,000	950
Toluene	NL	180
Ethylbenzene	NL	80
meta- & para-Xylene		75
ortho-Xylene		350
Total Xylenes	NL	
Naphthalene ^b		16
Total Recoverable Hydrocarbons		
TRH C6-C10 (F1)	NL	
TRH C10-C16 (F2)	NL	

All results are in µg/L unless stated

^a Australia and New Zealand Environment and Conservation Council (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

^b Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance.

^c Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for further guidance.

Guideline values exist for both meta-xylene and para-xylene as per ANZECC (2000). The guideline value for meta- & para-Xylene guideline has been adopted as the meta-Xylene value from ANZECC (2000) as it is the most conservative of the two guideline values.

The water quality criteria protective of human health adopted for assessment is primarily adopted from Australian Drinking Water guidelines; however, US EPA RSL for tap water is adopted for analytes where no Australian guideline (ADWG) was available. It is considered likely that primary human health exposures will occur via recreational activities. The National Health and Medical Research Council (NHMRC) (2008) suggests that 10-times the ADWG values may provide a conservative estimate of acceptable recreational exposure guidelines values. This approach assumes that recreational activities contribute to 10% of drinking water consumption, which is equivalent to a daily lifetime consumption of about 0.2 L of water. NHMRC (2019) suggests that this approach may not provide realistic site-specific recreational exposure estimate as:

- The method makes no allowance for other exposure routes, such as inhalation and dermal absorption, which may be significant for some chemicals. In the case of heavy metals at the site these exposure routes may be negligible.
- The method does not apply explicit assumptions for rates of accidental water ingestion during recreational water use.
- The method does not provide explicit assumptions regarding patterns of recreational water use. Therefore, it is not possible for communities to assess whether the assumptions apply to realistic patterns of recreational activity at specific sites, which may vary according to location, availability of alternative recreational facilities, and cultural practices.

However, the NHMRC (2011) criteria will be conservatively adopted as a preliminary screening to assess risks of recreational activities in downgradient surface water bodies.

7.3 Indoor Dust

The preliminary screening criteria proposed for the assessment of dust contamination are sourced from the following references:

- USEPA (2020) Protect your family from lead in your home. US Environmental Protection Agency – January 2020.
- AS 4361.2-1998 Guide to lead paint management - Residential and commercial buildings.

The dust results are to be presented as lead loadings ($\mu\text{g lead}/\text{m}^2$). Where dust samples are collected by vacuum, the lead loading is calculated using the following equation:

$$\text{Lead loading } (\mu\text{g}/\text{m}^2) = \frac{\text{lead concentration (mg/kg)} \times \text{dust sample mass (g)}}{\text{sample area (m}^2\text{)}}$$

Where samples are collected by swab, the lead loading is calculated using the following equation:

$$\text{Lead loading } (\mu\text{g}/\text{m}^2) = \frac{\text{total lead } (\mu\text{g})}{\text{sample area (m}^2\text{)}}$$

Assessment criteria adopted for lead dust contamination within the residence are summarised in **Table 7-6**.

Table 7-6: Lead Dust Assessment Criteria ($\mu\text{g}/\text{m}^2$)

Assessment Criteria – Residential Property ($\mu\text{g}/\text{m}^2$)	
Dust interior – hard floors	108
Dust interior – windowsills and shelves	1,076

8. QUALITY ASSURANCE AND QUALITY CONTROL

A quality assurance/quality control (QA/QC) assessment was completed for the field investigations. Sampling methodologies are detailed in **Section 6.1**.

8.1 Analytical Schedule

The analytical schedule for the investigation is shown in **Table 8-1**.

Table 8-1: Analytical Schedule

Sampling Method	Media	Number of Sampling Points	Analysis - number of primary analyses
Hand Auger Borehole	Soil	17	<ul style="list-style-type: none"> • TRH, BTEXN, PAH, OCP, OPP – 14 • Asbestos - 7
Surface XRF		16	<ul style="list-style-type: none"> • Heavy metals – 16
Low-Flow Sampling	Groundwater	2 (GW10 and GW101)	<ul style="list-style-type: none"> • Heavy Metals - 2
Vacuum	Indoor Dust	2	<ul style="list-style-type: none"> • Total Lead
Swab		7	<ul style="list-style-type: none"> • Total Lead
Paint		3	<ul style="list-style-type: none"> • Total Lead

Field and laboratory QC is presented in **Table 8-3**. An assessment was made of data completeness, comparability, representativeness, precision and accuracy based on field and laboratory considerations and a summary is provided in **Table 8-4**.

8.2 Sampling Methodologies

Ramboll completed the assessment works at the site in general accordance with the NEPM (2013). Guidance that was adopted specific to sampling of each media is described below.

- Soil sampling was completed in general accordance with AS 4482-2005 *Guide to the investigation and sampling of sites with potentially contaminated soil Part 1 - Non-volatile and Semi-Volatile Compounds* and *Part 2 - Volatile Compounds* (Standards Australia 2005).
- Vacuum sampling of internal dust was completed in general accordance with the *Guidance for the sampling and analysis of lead in indoor residential dust for use in the integrated exposure uptake biokinetic (IEUBK) model* (US EPA 2008).
- Swab sampling of internal dust sampling was completed in general accordance with US EPA 2009 *Lead Dust Sampling Technician Field Guide* (US EPA 2009).

- Paint sampling was completed in general accordance with AS 4361.2-1998 *Guide to lead paint management - Residential and commercial buildings* (Standards Australia 1998).
- Groundwater Sampling was completed in general accordance with AS 5667.11-1998 *Guidance on Sampling of Groundwaters* (Standards Australia, 1998).

8.2.1 Soil Sampling

The soil assessment comprised a total of 16 surface FpXRF measurements and 17 hand augers within the site. Sample locations are presented on **Figure 2, Appendix 1**.

The first round of investigations comprising 16 surface fpXRF and 10 soil hand augers were conducted over the period 8 February to 3 March 2021 using a ThermoFisher Scientific Niton™ XL3t portable x-ray fluorescence (FpXRF) metal analyser. The instrument in soil mode and data was collected using 60 second dwell. The analyser uses a 50kV x-ray tube which provides sufficient flux to enable separation of spectra lines for highly accurate quantification of elements of interest.

FpXRF measurements were completed by a suitably experienced scientist holding a NSW EPA license required for field based FpXRF testing. Testing was completed in accordance with relevant provisions described in US EPA method 6200 (USEPA 2007).

The FpXRF was used in-situ and measurements were taken by placing the FpXRF directly on the ground surface. The soil surface to be measured was cleared of debris and grass prior to taking the measurement to ensure there was no obstruction. The analyser window was protected and maintained the required contact with the sample surface during measurements. As moisture is known to affect measured concentrations (see uncertainty section), visually dry surfaces were chosen for measurement.

Readings were recorded digitally on the FpXRF unit and are reported as a wet weight and are not directly comparable with the dry weight soil samples and guideline concentration. Duplicate soil samples were collected and sent to a laboratory for analysis to determine the correlation between the FpXRF and laboratory measurements.

Representative soil samples were screened using a portable x-ray fluorescence metal analyser (XRF) and soil samples collected at a minimum of 10% of the locations as field duplicates for laboratory analyses. Samples were collected directly from the hand auger borehole, from undisturbed materials in the centre of the auger where practicable. Samples were collected from each 0.1 m for the top fill layer or where different soil horizons were encountered. Samples were also collected where visual or olfactory evidence of potential contamination were observed.

The second round of investigation comprising soil hand augers was conducted on 27 October 2021 and comprised of seven hand augers to a maximum depth of 1 mbgl and collection of samples for laboratory analysis.

Sample locations are presented on **Figure 2, Appendix 1**.

8.2.2 Groundwater Sampling

Groundwater monitoring wells were constructed by Stratacore Pty Ltd, a licensed drilling contractor and per the Minimum Construction Requirements for Water Bores in Australia, Fourth Edition, 2020. Construction included:

- 50 mm PVC class 18 factory slotted (0.5mm) well screen

- 50 mm PVC class 18 blank casing
- A push-on end cap at the base of each well
- A top cap suitable for suspension of groundwater level data loggers
- A graded 2 mm gravel pack installed from the base, generally to 0.5 m above the top of the well screen in the annulus between the well screen/casing and the borehole wall.
- An annular seal consisting of at least 0.5 m of 3/8" bentonite chips installed on top of the gravel pack
- A cementitious grout slurry installed on top of the bentonite annular seal to near surface
- Wells were completed on the surface with a surface bentonite seal and a concrete plinth in which a flush mount well cover or monument was set.

Wells were generally installed to screen the top of shallowest aquifer determined based on water strike observed during drilling.

Following installation, the wells were developed/purged to remove disturbed fines toward re-establishing the natural hydraulic flow conditions of the formations which may have been disturbed by well construction, around the immediate vicinity of each well. The wells were left for a minimum of 48 hours to equilibrate prior to collection of groundwater samples. Completed monitoring wells were surveyed by an accredited land surveyor, recording easting, northing, ground elevation and top of casing elevation for all wells.

Groundwater well logs are included in **Appendix 7**.

The following procedures were undertaken for the groundwater sampling program:

- All groundwater monitoring wells were gauged prior to sampling.
- All samples were collected using disposable nitrile rubber gloves changed between locations
- Groundwater was purged using a low-flow peristaltic pump targeting the middle of the screened portion of the aquifer.
- Chemical and physical parameters, including temperature, pH, EC, DO and redox potential was measured in the field. Once parameters had stabilised a filtered sample for metals analysis was collected from each location, the sample was filtered through a 0.45 µm syringe filter
- Each sample bottle was clearly labelled with a unique sample name, date and location.
- Samples were analysed for total and dissolved metal(loid)s (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mn, Hg, Ni and Zn).

8.2.3 Interior Dust

Internal dust sampling was completed within the Station Masters Cottage and included sampling via vacuum and swab. Vacuum sampling was limited to floor spaces and included:

- Mark-out of sampling areas using masking tape. Sampling areas of 2 m² were targeted where feasible
- Sampling areas were further divided into 0.5 m² sub-sample areas
- A high-flow cyclonic vacuum was used with plastic barrel and reduced shaft length
- Sampling occurred by running the vacuum in strips to cover each sub-sample area four times back and forth

Swab sampling included:

- Targeted swab sampling of windowsills and hard surface floors.
- Mark-out of sampling areas using masking tape. Sampling areas of 0.09 m² were targeted where feasible. Some exceptions occurred where available surface area was less than 0.09 m² (e.g.: windowsills). In these instances, the maximum available area was sampled.
- Dust sampling was completed wearing single use disposable nitrile gloves and using single use sanitary wipes. Dust was collected by making S-shaped motions through the sampling area, folding the wipe in half and repeating the process at least three times and until all visible dust was removed.

All dust sampling occurred wearing disposable nitrile rubber gloves. Samples were stored in single use zip lock bags labelled with unique identifiers which were cross-referenced with site plans and submitted to the laboratory under chain of custody.

8.2.4 Paint

Where paint was observed to be flaking off the building, the flakes were carefully collected into a resealable bag. If paint was not flaking off, an area of the building determined to not impact on aesthetics to the property, paint was carefully peeled off the building and placed into a resealable plastic bag. The sample bags were clearly labelled with a unique sample name, date and location.

8.3 Quality Control

Table 8-2 Sampling and Analysis Methodology Assessment

Sampling Methodology	Ramboll's Assessment			
	Soil	Groundwater	Internal Dust	Paint
Sampling Pattern, Density and Locations	<p>Field portable XRF measurements were collected in general accordance with the sampling plan at:</p> <ul style="list-style-type: none"> 16 surface locations within the site 17 hand augers at multiple depths within the site <p>Soil sampling for other contaminants of concern occurred through seven hand augers at the site.</p> <p>Sampling and analyses for asbestos and other contaminants occurred in accordance with the SAQP.</p> <p>This is considered adequate to assess the extent of contamination within the site.</p>	<p>Groundwater sampling and analyses occurred in accordance with the SAQP.</p> <p>This sampling program is considered adequate to assess offsite contaminant migration via groundwater as representative upgradient and downgradient locations were sampled.</p>	<p>Targeted sampling plans were developed in accordance with the <i>Guidance for the sampling and analysis of lead in indoor residential dust for use in the integrated exposure uptake biokinetic (IEUBK) model</i> (US EPA 2008) and generally included samples from the main entry, a living area, a child's bedroom and a shelf / windowsill.</p> <p>A total of 9 dust swab and vacuum samples were collected from the Station Masters Cottage. This is considered adequate to assess risks associated with internal dust in the residence.</p>	<p>Paint sampling and analyses occurred in accordance with the SAQP and was considered adequate to inform indicative assessment of potential lead-based paints on SES lease area structures.</p>
Sample Depths	<p>Field portable XRF measurements were collected from soils at various depths until readings were recorded below site criteria (300 mg/kg (Ramboll 2020)) during the February 2021 investigations. Samples were collected in-situ where possible.</p> <p>At least three samples per hand auger were collected for laboratory analysis targeting each soil horizon within the seven soil hand augers undertaken in October 2021.</p>	<p>Groundwater samples were collected from the centre of the screened interval of the monitoring well.</p>	-	-
Decontamination Procedures	<p>Measurement of blank reference material (silicon dioxide, SiO₂) was completed prior to the commencement of fieldwork and repeated every 10 samples. This ensured</p>	<p>Measurement of blank reference material (silicon dioxide, SiO₂) was completed prior to the commencement of fieldwork and repeated every 10 samples. This ensured that cross-</p>	<p>The vacuum was decontaminated using swabs to wipe out the barrel, cyclone and accessible sections of the wand.</p>	<p>The paint scraper was decontaminated between sampling locations by rinsing with Decon®90 solution and potable water.</p>

Sampling Methodology	Ramboll's Assessment			
	Soil	Groundwater	Internal Dust	Paint
	that cross-contamination of samples was not occurring. The analyser window was cleaned regularly to prevent cross contamination.	contamination of samples was not occurring. The analyser window was cleaned regularly to prevent cross contamination.		
Sample Storage and Handling	Samples were collected into laboratory supplied bottles dosed with the correct preservative (where applicable). The samples were stored in an ice filled cooler in the field and during transit to the laboratory.			
Chain of Custody	All analytical samples were submitted to the laboratory under chain of custody conditions.			
Calibration of Field Equipment	Field portable XRF measurements were collected using a calibrated instrument (calibration certificates provided in Appendix 4). Field calibration occurred using blank/certified reference materials.	The water quality meter was rented from an equipment hire company. The water quality meter was calibrated prior to hire and the calibration certificate is provided in Appendix 4 .	-	-

Table 8-3 Field and Laboratory QA/QC

Data quality indicator	Ramboll's Assessment			
	Soil	Groundwater	Internal Dust	Paint
Field Quality Control Samples	<p>One laboratory QA sample (for TRH, BTEXN, PAH, OCP and OPP analysis) was collected for a total of 14 soil samples at a rate of 7.14% which exceeds the target rate of 5%.</p> <p>11 laboratory QA samples (for heavy metals analysis) were collected for a total of 61 field portable XRF measurements at a rate of 18.03% which exceeds the target rate of 10 %.</p>	<p>One intra-laboratory and one inter-laboratory duplicate sample were collected as part of the groundwater sampling for a total of three primary samples equaling a rate of 33.33% for both intra and inter laboratory duplicates. This exceeds minimum targeted intra and inter-laboratory duplicate densities of 5% and so is considered appropriate.</p>	<p>One QA sample was collected from a swab sample.</p> <p>One rinsate blank sample was collected from the vacuum following decontamination to assist determining whether any cross contamination had occurred.</p>	-
Field Quality Control Results	<p>For the assessment of RPDs, it is noted that concentrations close to the laboratory limit of reporting (LOR) will have higher RPDs. As such, RPDs where concentrations were < 10 x LOR were discounted from assessment. The acceptance criteria for RPDs of sample pairs > 10 x LOR was 30%.</p> <p>For the assessment of XRF / laboratory correlations an acceptance criterion of 0.7 was adopted for data to be considered screening level.</p> <p>Where a higher contaminant concentration was reported in a duplicate sample, that concentration was adopted in the site investigation as a conservative approach.</p>			
	<p>Intra-laboratory and inter-laboratory duplicate results are presented in Table 8, Appendix 5.</p> <p>Relative Percentage Differences (RPDs) were all below the above criterion.</p> <p>The performance of XRF samples within the site was assessed through correlation of XRF results against laboratory duplicates separately for copper, lead and zinc. In summary, the correlation</p>	<p>Intra-laboratory and inter-laboratory duplicate results are presented in Table 9, Appendix 5.</p> <p>RPDs were below the criterion except for:</p> <ul style="list-style-type: none"> GW103/T01_GW_20211102 for Se 161% <p>The high RPD values are likely the result of instrument error as the primary and duplicate reported similar concentrations. Higher concentrations were observed in the primary and Selenium is not a</p>	<p>Intra-laboratory and inter-laboratory duplicate results are presented in Table 10, Appendix 5.</p> <p>Relative Percentage Differences (RPDs) were all below the above criterion.</p> <p>The rinsate blank sample reported no detections of lead above the limit of reporting.</p>	-

Data quality indicator	Ramboll's Assessment			
	Soil	Groundwater	Internal Dust	Paint
	coefficient (R) was calculated as: <ul style="list-style-type: none"> R Cu: 0.87 R Pb: 0.95 R Zn: 0.89 	contaminant of concern so it was considered acceptable.		
NATA Registered Laboratory and NATA Endorsed Methods	Eurofins and Envirolab were the primary and secondary analytical laboratories, respectively. Laboratory certificates are NATA stamped.			
Analytical Methods	A summary of analytical methods was included in the laboratory certificates. As stated in US EPA Method 6200 (2007), to increase accuracy of the results, the labs were given an indication of likely concentration (0-5000 mg/kg, 5000-10,000 mg/kg and >10,000 mg/kg) to ensure complete digestion could be undertaken.			
Holding Times	Review of the CoC and laboratory certificates indicate that holding times were met.			
Practical Quantitation Limit (PQL)	PQLs for all analytes were below the adopted guideline values.			
Laboratory Quality Control Samples	Laboratory quality assurance testing was undertaken at appropriate frequencies.			
Laboratory Quality Control Results	Results are contained within the laboratory certificates attached in Appendix 6 .			

Table 8-4 QA/QC Assessment

Ramboll's Comments				
Data Quality Indicator	Soil	Groundwater	Internal Dust	Paint
Completeness: The completeness of the data set was judged by	Hand auger sampling occurred in accordance with the sampling plan.	Groundwater sampling occurred upgradient and downgradient of the site in accordance with the SAQP.	All locations sampled as per the SAQP.	All locations sampled as per the SAQP.

Ramboll's Comments				
Data Quality Indicator	Soil	Groundwater	Internal Dust	Paint
Comparability: Comparability to existing field data was maintained by	<p>The investigation was completed by experienced Ramboll personnel.</p> <p>Field portable XRF measurements were completed using a calibrated instrument.</p> <p>Laboratory analysis was undertaken by NATA registered laboratories using accredited analytical methods.</p>	<p>The investigation was completed by experience Ramboll personnel.</p> <p>Laboratory analysis was undertaken by NATA registered laboratories using accredited analytical methods.</p>	<p>The field investigation was completed by experienced Ramboll personnel using standard operating procedures.</p> <p>Laboratory analysis was undertaken by NATA registered laboratories using accredited analytical methods.</p>	<p>The field investigation was completed by experienced Ramboll personnel using standard operating procedures.</p> <p>Laboratory analysis was undertaken by NATA registered laboratories using accredited analytical methods.</p>
Representativeness: The representativeness of the field data was judged by	In the field, representativeness was achieved by completing the sampling plans described in Section 6.1			
Precision: The degree to which data generated from replicate or repetitive measurements differ from one another due to random ss. Precision of field data was maintained by	<p>Field portable XRF measurements were collected by an experiment environmental scientist holding a NSW EPA licence required for field based XRF testing.</p> <p>Field portable XRF measurements were collected from soil in-situ (where possible) and measurements were taken by placing the field portable XRF directly on to the soil.</p> <p>As moisture is known to effect measured concentrations, visibly dry surfaces were chosen for measurement.</p> <p>Laboratory quality control results indicate precision was achieved at the primary and secondary laboratory.</p>	Laboratory quality control results indicate precision was achieved at the primary and secondary laboratory.	Laboratory quality control results indicate precision was achieved at the primary and secondary laboratory.	Laboratory quality control results indicate precision was achieved at the primary and secondary laboratory.

Ramboll's Comments				
Data Quality Indicator	Soil	Groundwater	Internal Dust	Paint
Accuracy: Accuracy in the collection of field data was controlled by	<p>Appropriate sampling methodologies utilised and complied with.</p> <p>Field portable XRF works completed in accordance with US EPA 2007, Method 6200, Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment.</p>	<p>Groundwater Sampling was completed in general accordance with AS 5667.11-1998 Guidance on Sampling of Groundwaters (Standards Australia, 1998).</p>	<p>Appropriate sampling methodologies utilised and complied with. Works completed in accordance with the <i>Guidance for the sampling and analysis of lead in indoor residential dust for use in the integrated exposure uptake biokinetic (IEUBK) model</i> (US EPA 2008)</p>	<p>Appropriate sampling methodologies utilised and complied with.</p>

In general, the DQIs outlined above have been met and Ramboll considers that the data is of suitable quality to meet the project objectives.

9. RESULTS

9.1 Soil Results

9.1.1 Soil Lithology

The soil lithology within the site comprised:

- TOPSOIL: sandy silt: Grey, dry, with grass and roots. Encountered from the surface to between 0.1 m - 0.2 m bgl.
- FILL: Gravelly CLAY: Grey-light brown, dry, medium plasticity (dry of plastic limit), soft to firm, coarse gravels (20-60 mm). Encountered below the topsoil to between 0.4 m – 0.6 m bgl.
- CLAY: Orange-grey, slightly moist, firm-hard, high plasticity, with quartz gravels (10-60 mm). Encountered below the fill layer from between 0.4 m – 0.6 m bgl to the depth of termination.

The soil profile logs are provided in **Appendix 7**.

9.1.2 Analytical Results

A tabulated assessment of soil concentrations against Tier 1 assessment criteria is presented as **Appendix 5**. A summary of contaminant concentrations that exceeded Tier 1 assessment criteria is summarised in **Table 9-1**.

Table 9-1: Summary of Soil Exceedances

	Number of Samples	Minimum	Maximum	Mean	No > Health Based Criteria	No > Ecological Criteria
Metals						
Arsenic	61	31	132	61	1	1
Chromium	61	15	43	31	0	0
Copper	61	33	344	96	0	2
Iron	61	4100	29672	9487	--	--
Lead	61	14	3042	433	29	4
Nickel	61	67	67	67	0	0
Zinc	61	32	1890	566	0	25
Asbestos w/w %	7	<0.001%	<0.001%	<0.001 %	0	-
Petroleum Hydrocarbons						
TRH (F1)	14	<20	<20	<20	0	0
TRH (F2)	14	<50	<50	<50	0	0
TRH (F3)	14	<100	160	160	0	0
TRH (F4)	14	<100	<100	<100	0	0
Polycyclic Aromatic Hydrocarbons						
Total PAH	14	<0.5	<0.5	<0.5	0	-
Benzo(a)pyrene	14	<0.5	1.2	1.2	-	0
Naphthalene	14	<LOR	<LOR	<LOR	0	0
Monocyclic Aromatic Hydrocarbons						
Benzene	14	<LOR	<LOR	<LOR	0	0
Toluene	14	<LOR	<LOR	<LOR	0	0
Ethylbenzene	14	<LOR	<LOR	<LOR	0	0
Xylene	14	<LOR	<LOR	<LOR	0	0

There were no exceedances to the health or ecological criteria for TRH, BTEXN, PAH OCP and OPP.

Twenty nine of 61 lead concentrations and one of 61 arsenic concentrations exceeded the health-based criteria. Within this context lead is considered to be the primary driver of potential risks to human health.

One of 61 arsenic concentrations, two copper concentrations, four lead concentrations and 25 zinc concentrations exceeded the adopted ecological assessment criteria.

Figure 2 presents a summary of the distribution of contaminants exceeding Tier 1 human health assessment criteria on site. Lead exceedances were generally reported across the site with higher concentrations reported on the southern boundary adjacent to the rail corridor. There were no lead exceedances reported beyond 0.2 m across the site.

Concentrations of arsenic, copper, lead and zinc were reported above ecological assessment criteria at multiple locations. The lateral distribution included mainly the southern and western boundaries of the site. The vertical extent of contamination was limited to the upper 0.2 m of soil.

9.2 Groundwater Results

9.2.1 Groundwater Gauging Data

The three nearby wells were gauged on the 2 November 2021 including one existing monitoring well (GW10) and two newly installed monitoring wells (GW101 and GW103). Groundwater elevation across the three monitoring wells ranged from 860.25 m above Australian Height Datum (m AHD) and 861.54 m AHD. A summary of the groundwater gauging data is presented in **Table 10, Appendix 5**. Groundwater Elevation contours are shown on **Figure 3, Appendix 1**. Based on the contoured water levels, the inferred flow direction was in a north west direction. This flow direction generally correlates with the topography of the site.

9.2.2 Water Quality Parameters

Groundwater quality parameters were measured in the field prior to sampling to ensure collection of water that is representative of the groundwater conditions. The groundwater quality parameters for the two monitoring wells are summarised below:

- pH measurements ranged from 3.98-6.28 pH, , indicating neutral to acidic conditions.
- Electrical conductivity (EC) measurements ranged from 1035 $\mu\text{S}/\text{cm}$ to 2567 $\mu\text{S}/\text{cm}$, and reported an average of 1759 $\mu\text{S}/\text{cm}$, indicating fresh to slightly saline groundwater conditions.
- Dissolved oxygen ranged from 1.52 mg/L to 4.04 mg/L, with an average of 2.75 mg/L. medium to high dissolved oxygen levels were generally reported across the site, indicating slightly aerobic conditions.
- Redox potential measurements varied between -96.7 mV to 137.9 mV, indicating predominately reducing conditions.

The groundwater quality parameters reported a freshwater system with neutral to acidic pH, slightly aerobic conditions and redox measurements indicate a slightly reducing environment.

The groundwater quality parameters are presented in **Table 12, Appendix 5**.

9.2.3 Analytical Results

A tabulated assessment of groundwater results against adopted assessment criteria is presented in **Appendix 5** and in summary as **Table 9-2**.

Table 9-2: Summary of Groundwater Results

	Number of Samples	Detections	Minimum	Maximum	Mean	No > health-based recreational criteria	No > Ecological 95% Fresh Water Criteria
Metals							
Arsenic (filtered)	3	2	<LOR	0.003	0.003	0	0
Barium (filtered)	3	2	0.030	0.250	0.140	0	N/A
Cadmium (filtered)	3	3	0.004	0.250	0.087	3	3
Chromium (filtered)	3	2	<LOR	0.044	0.024	0	2
Cobalt (filtered)	3	3	0.021	0.490	0.240	0	3
Copper (filtered)	3	3	0.002	1.100	0.404	0	3
Iron (filtered)	3	1	<LOR	11.000	11.000	1	N/A
Lead (filtered)	3	2	0.092	0.390	0.241	2	2
Manganese (filtered)	3	3	0.580	4.100	2.193	3	2
Mercury (filtered)	3	0	<LOR	<LOR	<LOR	0	0
Molybdenum (filtered)	3	0	<LOR	<LOR	<LOR	0	0
Nickel (filtered)	3	3	0.082	0.590	0.274	3	3
Selenium (filtered)	3	3	0.002	0.028	0.016	2	2
Tin (filtered)	3	0	<LOR	<LOR	<LOR	0	N/A
Titanium (filtered)	3	0	<LOR	<LOR	<LOR	0	N/A
Zinc (filtered)	3	3	0.64	75.000	25.880	1	3

Analytical results from groundwater exceeded adopted human health criteria for cadmium at three locations, Iron at one location, lead at two locations, manganese at three locations, nickel at three locations, selenium at two locations and zinc at one location.

Several exceedances of the ecological criteria were observed in the monitoring wells for cadmium, cobalt, copper, lead, Manganese, nickel, selenium and zinc.

Upgradient concentrations of heavy metals were reported to be higher in general than downgradient locations.

9.3 Indoor Dust and Paint Results

A tabulated assessment of paint and internal dust results against relevant criteria is presented as **Table 9-3**. Concentrations shown in BOLD are above the relevant guideline.

Table 9-3: Summary of lead concentrations relevant to health investigation levels

Type	Guideline	Results		
Dust Interior – Hard floors	108 (µg/m ²) ^{1,2}	SWAB-F-SMC01 989	SWAB-F-SMC02 122	SWAB-F-SMC03 156
Dust Interior – Carpet floors	108 (µg/m ²) ^{1,2} 300 (mg/kg) ^{3,4}	V-F-SMC01 326 µg/m² 660 mg/kg	V-F-SMC02 207 µg/m² 510 mg/kg	
	108 (µg/m ²) ^{1,2}	SWAB-F-SMC04 91	SWAB-F-SMC05 101	
Dust Interior – Windowsills and Shelves	1076 (µg/m ²) ^{1,2}	SWAB-WS-SMC01 3636	SWAB-WS-SMC02 2364	
Exterior Paint	0.1% ⁵	P-SMC01 <0.01	P-SMC02 0.02	P-SMC03 1.5

¹ USEPA (2020) Protect your family from lead in your home. US Environmental Protection Agency – January 2020

² The dust results presented are lead loadings (µg lead/m²). For vacuum samples, lead loadings were calculated as follows:

$$\text{Lead loading } (\mu\text{g}/\text{m}^2) = (\text{lead concentration } (\text{mg}/\text{kg}) \times \text{dust sample mass } (\text{g}) / \text{sample area } (\text{m}^2))$$

For swab samples, lead loadings were calculated as follows:

$$\text{Lead loading } (\mu\text{g}/\text{m}^2) = \text{Total lead } (\mu\text{g}) / \text{sample area } (\text{m}^2).$$

³ There are no guidelines specific to vacuum samples. Criteria for swab samples and for soil samples have been used as a preliminary screening number to assess whether any further evaluation of dust in carpet is required.

⁴ NEPM (2013) Schedule B1: Guideline on investigation levels for soil and groundwater. National Environment Protection (Assessment of Site Contamination) Measure 1999. Federal Register of Legislative Instruments F2013C00288 (HIL A - Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools). No poultry observed.

⁵ Australian Government Department of the Environment, Lead Alert: the six-step guide to painting your home, 5th Ed. 2016.

Table 9-3 presents a comparison of paint and internal dust results against adopted health guidelines. Lead loadings (µg/m²) were observed above dust guidelines in five of seven swab samples and both vacuum samples. Lead in paint exceeded criteria definitive of lead-based paints in one of three samples tested, P-SMC03. The sampling of paint is limited however does indicate the presence of lead in paint, and this could contribute to the presence of lead in soil and dust. Further analysis would be required to assess the extent of lead paint at the residence and the contribution of lead to soil concentrations.

10. REFINED CONCEPTUAL SITE MODEL

The CSM was refined from the preliminary CSM presented in **Section 5**. A CSM is a qualitative description of the source(s) of contamination, the pathway(s) by which contaminants may migrate through the environmental media, and the populations (human and / or ecological) that may be potentially exposed. This relationship is commonly known as a Source-Pathway-Receptor (SPR) linkage. Where one or more elements of the SPR linkage are missing, the exposure pathway is incomplete, and no further assessment is required.

10.1 Environmental Setting

The site is zoned RU1 Primary Production, and the current use of the site is residential. Local receiving waters (Copper Creek and then the Molonglo River) are understood to form part of a drinking water catchment (GHD 2018) and are high potential groundwater dependant ecosystems. The site is also located adjacent rail corridor declared as significantly contaminated and near the Lake George (legacy) mine with known contaminant issues.

10.2 Sources of the Contaminant

The main source of heavy metals was from adjacent rail corridor activities including the historic loading and transport of ore concentrate. An additional source of contamination to the site may be the nearby mine. Historic practices adjacent the site and observation of highest metal concentrations in surface soils indicate the mechanism of contamination is through surficial deposition with limited top-down migration.

TRH, BTEXN, PAH, OCP, OPP and Asbestos are also potential contaminants of concern based on the site history however have been ruled out based on no reported exceedances to health and ecological criteria.

10.3 Potential Contaminants of Concern

Based on the investigation the remaining potential contaminants of concern include lead above human health criteria and arsenic, copper, lead and zinc above ecological assessment criteria in soils.

Concentrations of a range of metals were identified in groundwater samples near to the site. Concentrations were found to be generally higher at the upgradient location when compared to down gradient wells. When considering the legacy mine site located upgradient of the site, and the comparably low concentrations of metals in soils on site, it is unlikely that the site is a contributor to elevated metals in groundwater.

10.4 Human and Ecological Receptors

Human receptors are considered to include future residential occupants and future intrusive maintenance workers at the site. The site is currently not occupied and therefore there are no current human health receptors on site. Groundwater is not beneficially used for drinking water in the area.

Ecological receptors are considered to be terrestrial ecology onsite including native fauna trafficking the site and off site groundwater receiving environments.

10.5 Exposure Pathways

For a receptor to be exposed to a contaminant derived from a site, there should be an exposure pathway linking the source of contamination and the exposed population. An

exposure pathway describes the course a chemical or physical agent takes from the source to the exposed individual and generally includes the following elements (USEPA, 1989):

- A source and mechanism of chemical release
- A retention or transport medium (or media where chemicals are transferred between media)
- A point of potential human contact with the contaminated media and
- An exposure route (e.g., ingestion, inhalation) at the point of exposure.

Visible evidence of erosion from the mine to the rail corridor and elevated contaminant concentrations in surface water upstream of the site are evidence indicating contamination may be migrating from the adjacent rail corridor and former mine to the site via sediment, surface water and to a lesser extent through airborne dust.

Exposure routes for the contaminants include:

- Direct contact with contaminated soil
- Inhalation of dust from contaminated soil, airborne dust and indoor dust
- Incidental ingestion of contaminated soil, airborne dust and indoor dust
- Root uptake of contaminants in soil and groundwater
- Groundwater extraction for residential use

An assessment of the SPR linkages for the contamination onsite is summarised in **Table 10-1**.

Table 10-1: Exposure Assessment Summary

Exposure Route	Complete SPR? (Y / N / P)			Justification
	Residential Occupants	Intrusive Maintenance Workers	Ecology	
Soil				
Direct Contact	Y	Y	N/A	Lead concentrations in soil were observed above the adopted health and ecological criteria at the site. Therefore, based on lead concentrations alone the contamination may present a risk to future site users. Concentrations of arsenic, copper, lead and zinc were reported above ecological assessment criteria at multiple locations and therefore present a risk to ecological receptors.
Inhalation	Y	Y	N/A	
Incidental Ingestion	Y	Y	N/A	
Ecological Uptake	N/A	N/A	Y	
Groundwater				
Groundwater Extraction for Residential Use	P	N/A	N/A	One exceedance of the drinking water criteria for lead was observed in the upgradient monitoring well. In general, upgradient concentrations were higher than downgradient concentrations indicating the source is originating from offsite. There is no current residential use of groundwater and groundwater is at a depth of six metres below the site and therefore contact by maintenance workers is unlikely. Ecological uptake of contaminants in groundwater following discharge to receiving
Ecological Uptake	N/A	N/A	P	

				surface waters presents a potential risk.
Surface Water				
Direct Contact	N/A	N/A	N/A	Surface water exists downgradient of the site in the rail corridor however exposure to human receptors is considered unlikely and so complete SPR linkages to human receptors are considered unlikely. SPR Linkages are complete for ecological receptors in Copper Creek and the Molonglo River downstream of the Copper Creek discharge based on the results of the DSI (Ramboll, 2021a)
Incidental Ingestion	N/A	N/A	N/A	
Ecological Uptake	N/A	N/A	Y	
Indoor Dust				
Direct Contact	Y	N/A	N/A	Concentrations of indoor dust exceeded the criteria for residential land use in floor and windowsill/shelf samples. Residents have been subsequently relocated and items cleaned and validated however the remaining property still presents an exposure risk to future users prior to any remedial works being undertaken.
Inhalation	Y	N/A	N/A	
Incidental Ingestion	Y	N/A	N/A	
Airborne Dust				
Inhalation	P	N/A	N/A	Potential ongoing risk of exposure to lead in airborne dust from the adjacent mine and rail corridor has been identified.
Incidental Ingestion	P	N/A	N/A	

11. SITE CHARACTERISATION

Lead contamination is throughout the site in surface and near surface soils and in indoor dust within the main residence and detached garage. Concentrations of lead above criteria appear limited to the upper 0.1-0.3 m of soil.

Site investigations identified:

- Concentrations of lead elevated above human health criteria within surface soils generally to less than 0.3 mbgl.
- Concentrations of arsenic, copper, lead and zinc were found above ecological criteria at multiple locations in surface soil samples generally to depths less than 0.1 m bgl.

Metals were also identified in groundwater near to the site. The site is not likely a contributor to the concentrations identified on the basis that concentrations were generally higher upgradient of the site in comparison to down gradient and there is a contaminant source (legacy mine) located upgradient of the site.

Elevated lead concentrations measured in the adjacent rail corridor (Ramboll 2021), visible evidence of erosion from the rail corridor and elevated contaminant concentrations in groundwater upgradient of the site indicate contamination has historically migrated to the site from the rail corridor and/or legacy mine site via airborne dust, soil erosion, and groundwater. No contamination of the site from on site sources was identified.

The following data gaps remain with regards to contamination at the site:

- One groundwater monitoring event was completed therefore information on seasonal variation of contaminants in groundwater is not well understood.
- The migration of contaminants from off site to the site in air and water is not understood.

The elevated soil and dust concentrations identified present a potential risk to residential site users without remediation. Currently the site is unoccupied and is managed under the John Holland Rail Environmental Management System. It is recommended that this management continue (integrating transition to UGL Regional Linx in January 2022) until remediation of the site is completed.

Adopting an average depth of soil contamination of 0.2 m and yard areas (excluding building footprints) of 930 m² an indicative volume of soil requiring remediation is calculated at 185 m³.

12. CONCLUSIONS AND RECOMMENDATIONS

On behalf of JHR, Ramboll has completed a DSI in the area of a former load-out facility within the Country Regional Network (CRN) at Captains Flat, New South Wales (NSW). The DSI included a review of historical information and soil, groundwater and dust sampling and analysis for COPCs. The key findings of this DSI were:

- Soil contamination was identified onsite. The key contaminant of concern for human health is lead. The key contaminants of concern for ecology are arsenic, lead, nickel and zinc.
- No other contaminants of concern were identified in the soil sampling and the risk of other contaminants is considered to be low based on information regarding historical site use.
- Groundwater contamination was identified in the upgradient monitoring well in particular lead concentrations were reported above the drinking water criteria however there are no current groundwater extraction bores nearby the site. Groundwater contamination is not considered to be related to an onsite source.
- Concentrations of indoor dust exceeded the criteria for residential land use in floor and windowsill/shelf samples. There is a potential source pathway receptor linkage for residential users of the site and on this basis the site is currently considered not suitable for residential land use.
- Residents have been subsequently relocated and items cleaned and validated however the remaining property still presents an exposure risk to future users due to soil lead concentrations and the potential for reaccumulation of dust in the residence. Remediation of the site is required prior to residential occupation.

Several potential human receptors were identified including:

- Future residential occupants
- Future intrusive maintenance workers at the site
- Terrestrial ecology onsite including native fauna

Potential for contaminant migration through airborne dust remains as a data gap.

Based on this, Ramboll recommends:

- Preparation and implementation of a remedial action plan (RAP) to address the contamination onsite which consists of lead impacted shallow soils across the site and lead dust within the property.
- Further investigation into the ongoing migration of contamination to the site should be addressed by monitoring air quality at the site during conditions representative of seasonal variability
- Groundwater should not be extracted for beneficial use without a detailed assessment of groundwater quality and potential risks associated with the proposed usage. It is noted that any future use of groundwater would require appropriate assessment for the proposed use and licensing under the *Water Act 1912*.

13. LIMITATIONS

Ramboll Australia Pty Ltd (Ramboll) prepared this report in accordance with the scope of work as outlined in our proposal to JHR dated 27 August 2021 and in accordance with our understanding and interpretation of current regulatory standards.

A representative program of sampling and laboratory analyses was undertaken as part of this investigation, based on past and present known uses of the site. While every care has been taken, concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. We cannot therefore preclude the presence of materials that may be hazardous. Site conditions may change over time. This report is based on conditions encountered at the Site at the time of the report and Ramboll disclaims responsibility for any changes that may have occurred after this time.

The conclusions presented in this report represent Ramboll's professional judgment based on information made available during the course of this assignment and are true and correct to the best of Ramboll's knowledge as at the date of the assessment.

Ramboll did not independently verify all of the written or oral information provided to Ramboll during the course of this investigation. While Ramboll has no reason to doubt the accuracy of the information provided to it, the report is complete and accurate only to the extent that the information provided to Ramboll was itself complete and accurate.

This report does not purport to give legal advice. This advice can only be given by qualified legal advisors.

13.1 User Reliance

This report has been prepared exclusively for JHR and may not be relied upon by any other person or entity without Ramboll's express written permission.





14. REFERENCES

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APPENDIX 1

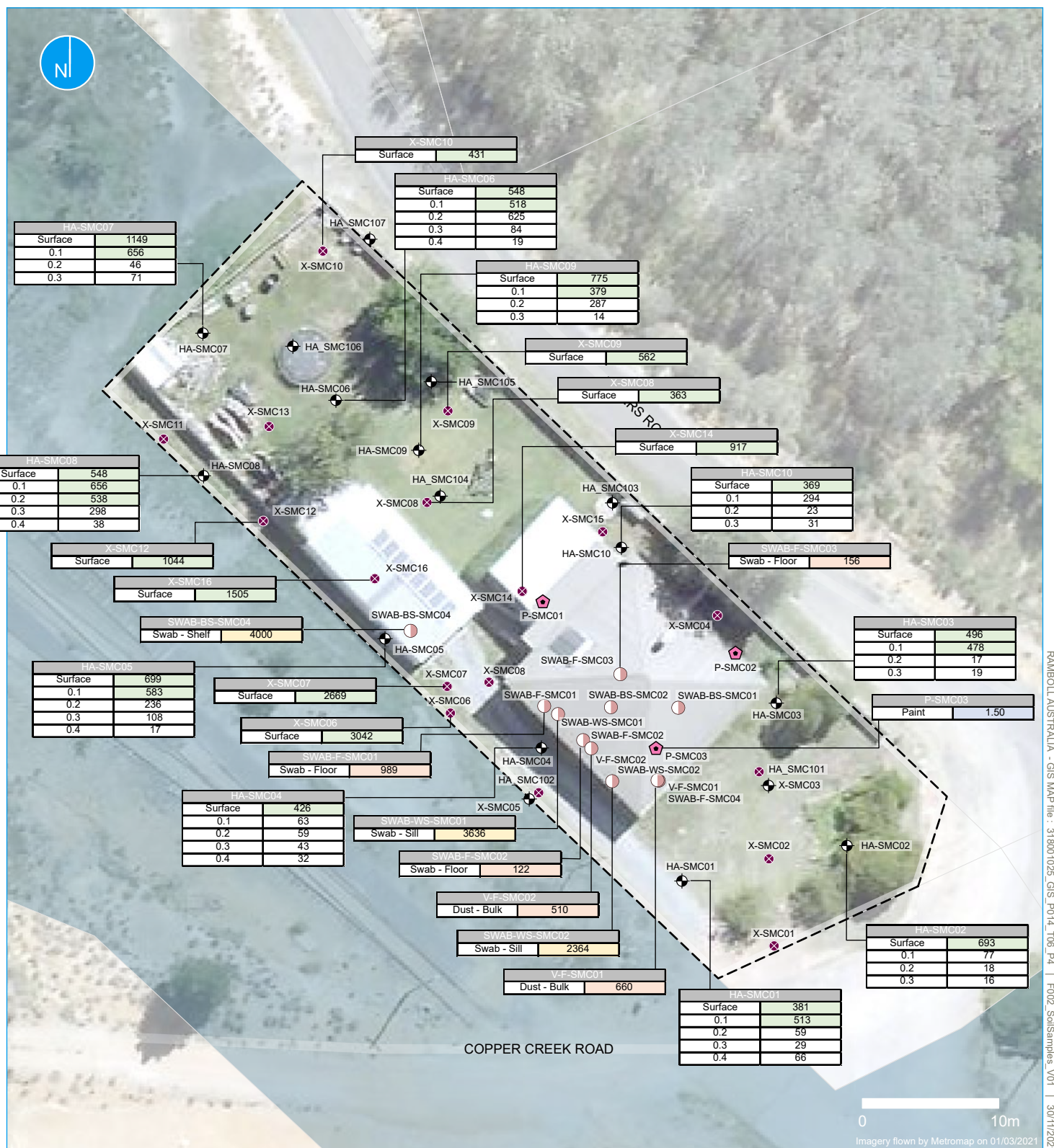
FIGURES

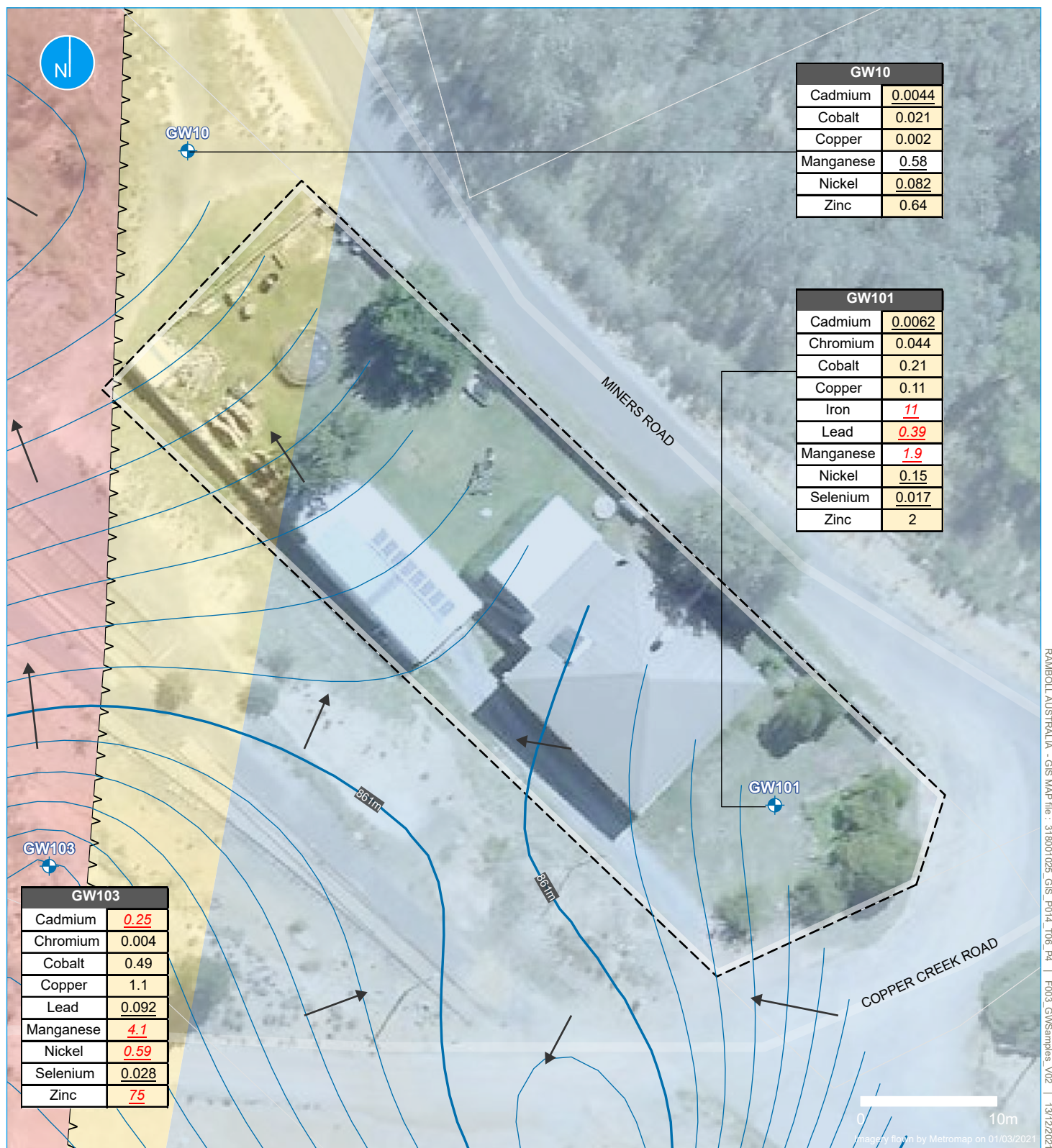


 Area of assessment
 Rail corridor
 Creek
 Contour line 2m

A topographic map of a mountain area. A purple dot marks a specific location on a trail. The text "Location" is in the top left, and "Captains Flat" is to the right of the purple dot. A road or path is visible in the upper right.

Figure 1 | Site Locality
Detailed Site Investigation : 2 Copper Creek Road, Captains Flat





RAMBOLL AUSTRALIA - GIS MAP file - 318001025_GIS_P014_T06_P4 | F003_GWSamples_V02 | 13/12/2021

Key

- Area of Assessment
- Groundwater well
- Groundwater contours (mAHd)
 - 1m contour
 - 0.1m contour
- Inferred groundwater flow
- Geology (derived from ©State of New South Wales through Regional NSW 2021)
 - Bumballa Formation (Sandstone)
 - Captains Flat Formation (Shale)
 - Kohinoor Volcanics (Dacite)
 - Narongo Fault

Exceedance Criteria

Analyte (filtered) (mg/L)	95% Fresh Water Protection for Aquatic Ecosystems	Drinking Water Guidelines	Human Health - Recreational
Arsenic	0.013	0.01	0.1
Barium		2	20
Cadmium	0.0002	0.002	0.02
Chromium	0.001	0.05	0.5
Cobalt	0.0014		
Copper	0.0014	2	20
Iron		0.3	3
Lead	0.0034	0.01	0.1
Manganese	1.9	0.1	1
Mercury	0.0006	0.001	0.01
Molybdenum	0.034	0.05	0.5
Nickel	0.011	0.02	0.2
Selenium	0.011	0.01	0.1
Zinc	0.008	3	30

A4
1:400



Figure 3 | Groundwater Sampling Locations and Exceedances
Detailed Site Investigation : 2 Copper Creek Road, Captains Flat

APPENDIX 2

PHOTOGRAPHIC LOG



Photograph 1: Station Masters Cottage adjacent to the rail corridor.



Photograph 2: northern portion of the site showing the septic tank.



Photograph 3: Detached shed and backyard of SMC.




Photograph 4: Backyard of former SMC looking west.



Photograph 5: Chicken coop (not in use) and septic tank in the northern portion of the site.



Photograph 6: Sediment accumulating in the detached garage is possible evidence of erosion near the rail corridor boundary.

Title:	Detailed Site Investigation	Approved: SM	Project-Nr.: 318001025	Date: November 2021
Site:	Station Masters Cottage			
Client:	John Holland Rail			

APPENDIX 3

EIL CALCULATIONS

Inputs	
Select contaminant from list below	
Cr_III	
Below needed to calculate fresh and aged ACLs	
Enter % clay (values from 0 to 100%)	
1	
Below needed to calculate fresh and aged ABCs	
Measured background concentration (mg/kg). Leave blank if no measured value	
or for fresh ABCs only	
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration	
1.5	
or for aged ABCs only	
Enter State (or closest State)	
NSW	
Enter traffic volume (high or low)	
low	

Outputs		
Land use	Cr III soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	50	70
Urban residential and open public spaces	100	190
Commercial and industrial	150	320

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
15
Enter soil pH (calcium chloride method) (values from 1 to 14)
6.4
Enter organic carbon content (%OC) (values from 0 to 50%)
8.3
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
1.5
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cu soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	60	85
Urban residential and open public spaces	110	220
Commercial and industrial	160	310

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
15
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
1.5
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Ni soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	20	40
Urban residential and open public spaces	75	220
Commercial and industrial	150	380

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
15
Enter soil pH (calcium chloride method) (values from 1 to 14)
6.4
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
1.5
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Zn soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	65	200
Urban residential and open public spaces	230	630
Commercial and industrial	350	930

Inputs
Select contaminant from list below
As
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Arsenic generic EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	20	40
Urban residential and open public spaces	50	100
Commercial and industrial	80	160

Inputs
Select contaminant from list below
Pb
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Lead generic EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	110	470
Urban residential and open public spaces	270	1100
Commercial and industrial	440	1800

APPENDIX 4

CALIBRATION CERTIFICATES

Multi Parameter Water Meter

Instrument **YSI Quatro Pro Plus**
Serial No. **17K101079**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 10.00		pH 10.00		355386	pH 9.91
2. pH 7.00		pH 7.00		355072	pH 6.99
3. pH 4.00		pH 4.00		351412	pH 3.95
4. mV		227.4mV		357172/357173	227.7mV
5. EC		2.76mS		350510	2.74mS
6. D.O		0.00ppm		10959	0.03ppm
7. Temp		22.7°C		MultiTherm	23.3°C

Calibrated by: Kylie Rawlings

Calibration date: **27/01/2021**

Next calibration due: **26/02/2021**

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
 Serial No. 18J104319



Air-Met Scientific Pty Ltd
 1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad Display	Operation	✓	
	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 10.00		pH 10.00		370064	pH 10.09
2. pH 7.00		pH 7.00		372012	pH 7.10
3. pH 4.00		pH 4.00		367234	pH 3.90
4. mV		231.8mV		365451/370891	231.8mV
5. EC		2.75mS		369734	2.76mS
6. D.O		0.00ppm		1910294760	0.00ppm
7. Temp		21.0°C		MultiTherm	20.4°C

Calibrated by:

Darcy Keogh

Calibration date:

29/10/2021

Next calibration due:

28/11/2021

Oil / Water Interface Meter

Instrument **Interface Meter (30M)**
Serial No. **483864**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Compartment Capacity	✓ ✓	
Probe	Cleaned/Decon. Operation	✓ ✓	
Connectors	Condition	✓ ✓	
Tape Check	Cleaned Checked for cuts	✓ ✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: Eloise Carroll

Calibration date: 19/10/2021

Next calibration due: 18/12/2021

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-111087**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6 ev			
Alarms	Beeper	✓	Low	High	TWA	STEL
	Settings	✓	50ppm	100ppm		
Software	Version	✓				
Data logger	Operation	✓				
Download	Operation	✓				
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No	Instrument Reading	
PID Lamp		93ppm Isobutylene	NATA	SY361	93.1 ppm	

Calibrated by:

Calibration date: 25/10/2021

Gary Needs

Next calibration due: 23/04/2022

APPENDIX 5

ANALYTICAL SUMMARY TABLES



	NEPM 2013 HIL A Residential	Sample Type:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		Sample ID:		X-SMC01	X-SMC02	X-SMC03	X-SMC04	X-SMC05	X-SMC06	X-SMC07	X-SMC08	X-SMC09	X-SMC10	X-SMC11	X-SMC12	X-SMC13	X-SMC14	X-SMC15	X-SMC16	HA-SMC01_0.0	HA-SMC01_0.1	HA-SMC01_0.2	HA-SMC01_0.3	HA-SMC01_0.4	HA-SMC02_0.0
		Sample date:		11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021
		Project Name:		Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat
		Sampling Method:		XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF
Analyte grouping/Analyte																									
Units				LOR																					
Moisure Content																									
Moisure Content			%																						
Heavy Metals																									
Arsenic	100	mg/kg	5	< LOD	< LOD	< LOD	68	< LOD	156	< LOD	< LOD	< LOD	< LOD	< LOD	70	< LOD	< LOD	< LOD	< LOD	< LOD	56	< LOD	< LOD	< LOD	< LOD
Chromium	100	mg/kg	2	31	< LOD	< LOD	46	28	< LOD	< LOD	< LOD	42	< LOD	< LOD	< LOD	< LOD	< LOD	47	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	51
Copper	6000	mg/kg	5	< LOD	< LOD	39	174	< LOD	407	300	67	93	< LOD	49	100	47	158	< LOD	137	< LOD	112	< LOD	< LOD	< LOD	85
Iron		mg/kg	0.005	13646	9231	5629	16518	8517	25348	17498	8759	10690	11706	5420	6254	8861	15726	5940	23409	12439	13378	5534	6441	35082	15739
Lead	300	mg/kg	5	285	351	254	861	870	3596	3155	430	664	509	221	1234	247	1084	236	1780	450	607	69	34	78	819
Nickel	400	mg/kg	2	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	80	< LOD	< LOD
Zinc	7400	mg/kg	5	422	552	334	1580	720	672	1037	655	868	784	339	2235	480	1999	483	1152	657	1109	374	201	139	761

Blank Cell indicates no criterion available
LOD = Limit of Detection
National Environment Protection Council (2013) National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (NEPM).
Health Investigation Levels for chromium based on chromium (VI)
Concentrations in green box exceed exceed adopted HIL A for residential use



	NEPM 2013 HIL A Residential	Sample Type:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample ID:			HA-SMC02_0.1	HA-SMC02_0.2	HA-SMC02_0.3	HA-SMC03_0.0	HA-SMC03_0.1	HA-SMC03_0.2	HA-SMC03_0.3	HA-SMC04_0.0	HA-SMC04_0.1	HA-SMC04_0.2	HA-SMC04_0.3	HA-SMC04_0.4	HA-SMC05_0.0	HA-SMC05_0.1	HA-SMC05_0.2	HA-SMC05_0.3	HA-SMC05_0.4	HA-SMC06_0.0	HA-SMC06_0.1	HA-SMC06_0.2	HA-SMC06_0.3	
Sample date:			11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021
Project Name:			Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat
		Sampling Method:		XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF
Analyte grouping/Analyte																								
Units				LOR																				
Moisure Content																								
Moisure Content			%																					
Heavy Metals																								
Arsenic	100	mg/kg	5	< LOD	< LOD	< LOD	53	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	89	65	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD
Chromium	100	mg/kg	2	30	< LOD	< LOD	18	< LOD	< LOD	< LOD	35	< LOD	< LOD	< LOD	< LOD	43	< LOD	< LOD	< LOD	< LOD	< LOD	29	< LOD	< LOD
Copper	6000	mg/kg	5	< LOD	< LOD	< LOD	< LOD	87	< LOD	< LOD	90	< LOD	< LOD	< LOD	< LOD	114	115	65	< LOD	< LOD	< LOD	61	63	143
Iron		mg/kg	0.005	20416	4848	6231	6136	9185	6786	7999	12319	9923	9799	9741	18817	15338	13854	9929	6877	7486	9661	11196	11594	6352
Lead	300	mg/kg	5	91	22	19	586	565	20	22	504	75	70	51	38	827	689	279	128	21	648	613	739	99
Nickel	400	mg/kg	2	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD
Zinc	7400	mg/kg	5	129	38	< LOD	975	794	155	128	506	54	230	146	314	1238	1452	619	277	81	976	1118	1296	179

Blank Cell indicates no criterion available
LOD = Limit of Detection
National Environment Protection Council (2013) National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (NEPM).
Health Investigation Levels for chromium based on chromium (VI)
Concentrations in green box exceed adopted HIL A for residential use



	NEPM 2013 HIL A Residential	Sample Type:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
		Sample ID:		HA-SMC06_0.4	HA-SMC07_0.0	HA-SMC07_0.1	HA-SMC07_0.2	HA-SMC07_0.3	HA-SMC08_0.0	HA-SMC08_0.1	HA-SMC08_0.2	HA-SMC08_0.3	HA-SMC08_0.4	HA-SMC09_0.0	HA-SMC09_0.1	HA-SMC09_0.2	HA-SMC09_0.3	HA-SMC10_0.0	HA-SMC10_0.1	HA-SMC10_0.2	HA-SMC10_0.3	
		Sample date:		11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021	
		Project Name:		Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat	Captains Flat
		Sampling Method:		XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF
Analyte grouping/Analyte																						
Units				LOR																		
Moisure Content																						
Moisure Content			%																			
Heavy Metals																						
Arsenic	100	mg/kg	5	< LOD	< LOD	80	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	48	< LOD	< LOD	37	< LOD	< LOD	< LOD	
Chromium	100	mg/kg	2	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	
Copper	6000	mg/kg	5	< LOD	155	129	< LOD	< LOD	90	108	72	78	< LOD	121	107	58	< LOD	89	< LOD	< LOD	< LOD	
Iron		mg/kg	0.005	11151	17582	14783	7716	7344	8494	13856	11785	11823	7438	11837	9885	8130	6458	12244	9927	7175	10325	
Lead	300	mg/kg	5	22	1359	775	55	84	648	776	636	353	45	916	448	339	17	436	347	27	37	
Nickel	400	mg/kg	2	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	< LOD	
Zinc	7400	mg/kg	5	< LOD	973	791	166	144	953	1435	1006	1362	375	1191	703	282	65	892	748	70	79	

Blank Cell indicates no criterion available
LOD = Limit of Detection
National Environment Protection Council (2013) National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (NEPM).
Health Investigation Levels for chromium based on chromium (VI)
Concentrations in green box exceed exceed adopted HIL A for residential use

Table 2:
Indoor Dust Results



				Sample Type:		Dust Residence	Dust Residence	Dust Residence	Dust Residence	Dust Residence	Dust Residence	Dust Residence	Dust Residence	Dust Residence	Dust Residence	Dust Residence	Dust Residence
				Site:													
				Lab Sample number:		S21-Fe25654	S21-Fe25655	S21-Fe25656	S21-Fe25657	S21-Fe25658	S21-Fe25659	S21-Fe25660	S21-Fe25661	S21-Fe25670	S21-Fe25662	S21-Fe25663	S21-Fe25664
				Sample date:		9/02/2021	9/02/2021	9/02/2021	9/02/2021	9/02/2021	9/02/2021	9/02/2021	9/02/2021	9/02/2021	9/02/2021	9/02/2021	9/02/2021
				Sample ID:		SWAB-BS-SMC01	SWAB-BS-SMC02	SWAB-BS-SMC03	SWAB-WS-SMC01	SWAB-WS-SMC02	SWAB-F-SMC01	SWAB-F-SMC02	SWAB-F-SMC03	SWAB-F-SMC04	SWAB-F-SMC05	V-F-SMC01	V-F-SMC02
				Project Name:		Captains Flat DSI	Captains Flat DSI	Captains Flat DSI	Captains Flat DSI	Captains Flat DSI	Captains Flat DSI	Captains Flat DSI	Captains Flat DSI	Captains Flat DSI	Captains Flat DSI	Captains Flat DSI	Captains Flat DSI
				Sampling Method:		Swab	Swab	Swab	Swab	Swab	Swab	Swab	Swab	Swab	Swab	Vacuum	Vacuum
Analyte grouping/Analyte				Units		LOR											
LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS																	
Lead			300	mg/kg	5											660	510
Total Lead				Total µg	1	64	24	26	200	130	89	11	14	8.2	9.1		
Lead Loading																	
Sample Area				m²	NA	0.09	0.09	0.086	0.055	0.055	0.09	0.09	0.09	0.09	0.09	2	2
Sample Mass				g		-	-	-	-	-	-	-	-	-	-	0.989	0.812
Lead Loading	108	1076		µg/m²	NA	711	267	302	3636	2364	989	122	156	91	101	326	207

LOR = Limit of Reporting

National Environment Protection Council (2013) National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (NEPM).

Concentration in **red** font and grey box exceed the adopted residential dust criteria

Concentrations in **green bold font** exceed adopted HIL A for residential use

Concentrations in box exceed the screening value >2.5 times

Where one or more guideline value is exceeded, the highest guideline exceeded will be highlighted

¹USEPA (2020) Protect your family from lead in your home. US Environmental Protection Agency – January 2020.

Table 3
Station Masters Cottage Paint Results



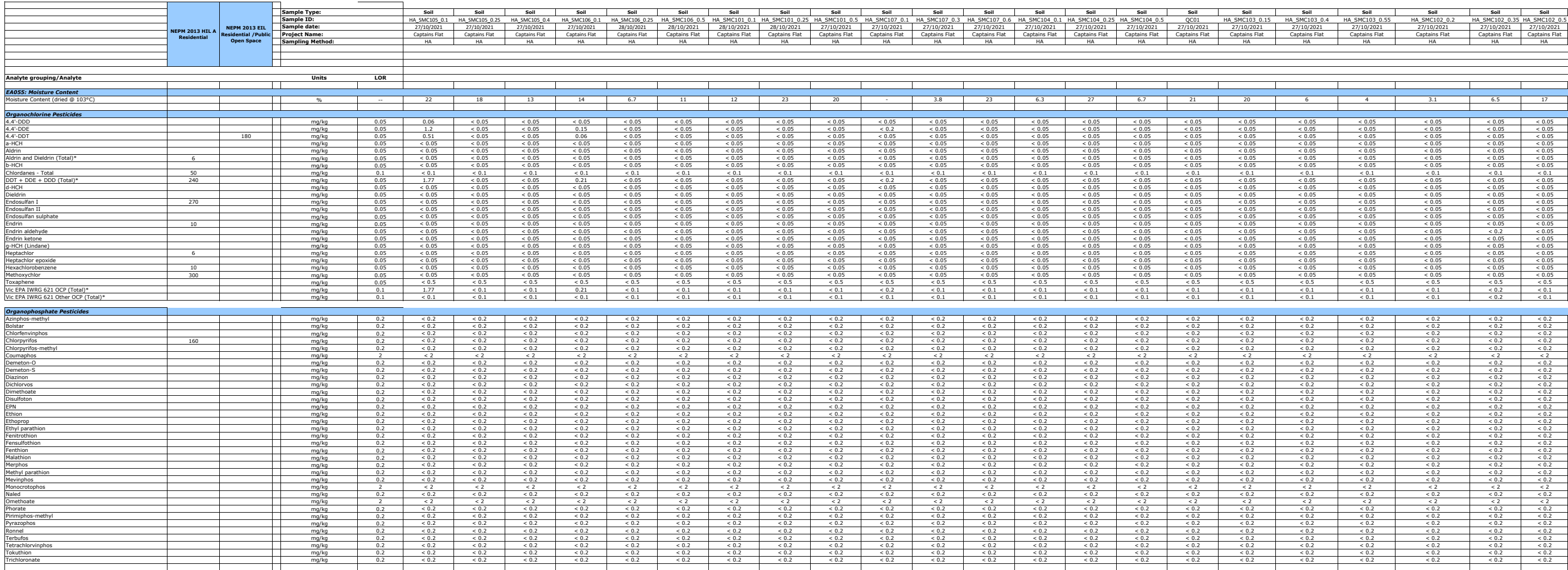
	NSW EPA Lead in Paint guideline ^A	Sample Type:		Paint		Paint		Paint	
		Site:		Residence		Residence		Residence	
		Lab Sample number:		S21-Fe25666		S21-Fe25667		S21-Fe25668	
		Sample date:		9/02/2021		9/02/2021		9/02/2021	
		Sample ID:		P-SMC01		P-SMC02		P-SMC03	
		Project Name:		Captains Flat DSI		Captains Flat DSI		Captains Flat DSI	
		Sampling Method:		Grab		Grab		Grab	
Analyte grouping/Analyte				Units	LOR				
E022.5 - ACID EXTRACTABLE METALS IN PAINT by ICP-MS									
Lead	0.1		%	0.01		< 0.01	0.02	1.5	

LOR = Limit of Reporting

Concentration in **red** font and grey box exceed the adopted maximum allowable lead amount in house paint

^ANSW EPA Managing Lead Contamination in Home Maintenance, Renovation and Demolition Practices. A Guide for Councils 2003.

Concentrations in green box exceed adopted HIL A for residential use



Concentrations in green box exceed adopted HIL A for residential use

Client: John Holland Rail

Job No: 318001025

Project Name: Stations Masters Cottage DSI

25/11/2021

DSI - Resi Asbestos Results

Table 6
Stations Masters Cottage DSI - Soil Sampling Results - Asbestos



	Health Screening Level - Residential A	Sample Type:		Building Material		Building Material		Building Material		Soil		Soil		Soil		Soil	
		Sample ID:		HA_SMC101		HA_SMC102		HA_SMC103		HA_SMC104		HA_SMC105		HA_SMC106		HA_SMC107	
		Sample date:		27/10/2021		28/10/2021		28/10/2021		27/10/2021		27/10/2021		27/10/2021		27/10/2021	
		Project Name:		Captains Flat		Captains Flat		Captains Flat		Captains Flat		Captains Flat		Captains Flat		Captains Flat	
		Sampling Method:		Grab Sample		Grab Sample		Grab Sample		Grab Sample		Grab Sample		Grab Sample		Grab Sample	
Analyte grouping/Analyte																	
Units				LOR													
Asbestos																	
Weight of soil			g	-		251g	446g	188g	140g	296g	102g	476g					
Asbestos fines and Friable Asbestos in soil (AF + FA)	0.001			0.001		<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%					

Concentrations in orange box exceed adopted asbestos HSL

Client: John Holland Rail
Job No: 318001025
Project Name: Stations Masters Cottage DSI

Table 7
Stations Masters Cottage DSI - Groundwater Sampling Results



24/02/2022	95% Fresh Water Protection for Aquatic Ecosystems ^A	Drinking Water Guidelines ^B	Human Health - Recreational ^C	Sample Type:		Water	Water	Water
				Sample ID:		GW101	GW103	GW10
				Sample date:		2/11/2021	2/11/2021	2/11/2021
				Site:		Captains Flat	Captains Flat	Captains Flat
				Sampling Method:		Micropurge	Micropurge	Micropurge
Guidelines								
Analyte grouping/Analyte				Units	LOR			
Heavy Metals								
Arsenic (filtered) ^D	0.013	0.01	0.1	mg/L	0.001	0.003	0.002	< 0.001
Barium (filtered)		2	20	mg/L	0.02	0.25	< 0.02	0.03
Cadmium (filtered)	0.0002	0.002	0.02	mg/L	0.0002	0.0062	0.25	0.0044
Chromium (filtered) ^E	0.001	0.05	0.5	mg/L	0.001	0.044	0.004	< 0.001
Cobalt (filtered)	0.0014			mg/L	0.001	0.21	0.49	0.021
Copper (filtered)	0.0014	2	20	mg/L	0.001	0.11	1.1	0.002
Iron (filtered)		0.3	3	mg/L	0.05	11	< 0.05	< 0.05
Lead (filtered)	0.0034	0.01	0.1	mg/L	0.001	0.39	0.092	< 0.001
Manganese (filtered)	1.9	0.1	1	mg/L	0.005	1.9	4.1	0.58
Mercury (filtered)	0.0006	0.001	0.01	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum (filtered)	0.034	0.05	0.5	mg/L	0.005	< 0.005	< 0.005	< 0.005
Nickel (filtered)	0.011	0.02	0.2	mg/L	0.001	0.15	0.59	0.082
Selenium (filtered)	0.011	0.01	0.1	mg/L	0.001	0.017	0.028	0.002
Tin (filtered)				mg/L	0.005	< 0.005	< 0.005	< 0.005
Titanium (filtered)				mg/L	0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.008	3	30	mg/L	0.005	2	75	0.64

Blank Cell indicates no criterion available
All results are in µg/L unless stated
LOR = Limit of Reporting
Concentrations below the LOR noted as <value
NOC = No observed contamination

^A ANZG 2018, Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018
^B NHMRC 2019, Australian Drinking Water Guidelines (2011) — Updated May 2019, National Health and Medical Research Council, Canberra.
^C NHMRC 2008, Guidelines for Managing Risks in Recreational Water, National Health and Medical Research Council, Canberra.

^D Arsenic was based on the lowest criteria of As (III) and As (V) as speciation of arsenic was not measured
^E Based on the Chromium (VI) criteria as more conservative

25/11/2021	Sample Type:		Soil	Soil	RPD %	Soil	RPD %
	Sample date:		27/10/2021	27/10/2021		27/10/2021	
	Sample ID:		HA_SMC101_0.5	QC01		QC02	
	Project Name:		Captains Flat DSI	Captains Flat DSI		Captains Flat DSI	
	Project No:		318001025	318001025		318001025	
	Sample Location		Station Master Cottage	Station Master Cottage		Station Master Cottage	
	Sampling Method:		Hand Auger	Hand Auger		Hand Auger	
Analyte grouping/Analyte	Units	LOR					
Polynuclear Aromatic Hydrocarbons							
Naphthalene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Acenaphthylene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Acenaphthene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Fluorene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Phenanthrene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Anthracene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Fluoranthene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Pyrene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Benz(a)anthracene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Chrysene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Benzo(b+j)fluoranthene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.2	< 10 times LOR
Benzo(k)fluoranthene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.2	< 10 times LOR
Benzo(a)pyrene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.05	< 10 times LOR
Indeno(1.2.3.cd)pyrene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Dibenz(a,h)anthracene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Benzo(g,h,i)perylene	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.1	< 10 times LOR
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	-	-
Benzo(a)pyrene TEQ (zero)	mg/kg	0.5	< 0.5	< 0.5	< 10 times LOR	< 0.5	< 10 times LOR
Benzo(a)pyrene TEQ (half LOR)	mg/kg	0.6	0.6	0.6	< 10 times LOR	< 0.5	< 10 times LOR
Benzo(a)pyrene TEQ (LOR)	mg/kg	1.2	1.2	1.2	< 10 times LOR	< 0.5	< 10 times LOR
Total Petroleum Hydrocarbons							
C6 - C9 Fraction	mg/kg	10	< 20	< 20	< 10 times LOR	< 25	< 10 times LOR
C10 - C14 Fraction	mg/kg	50	< 20	< 20	< 10 times LOR	< 50	< 10 times LOR
C15 - C28 Fraction	mg/kg	100	< 50	< 50	< 10 times LOR	< 100	< 10 times LOR
C29 - C36 Fraction	mg/kg	100	< 50	< 50	< 10 times LOR	< 100	< 10 times LOR
C10 - C36 Fraction (sum)	mg/kg	50	< 50	< 50	< 10 times LOR	< 50	< 10 times LOR
Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
C6 - C10 Fraction	mg/kg	10	< 20	< 20	< 10 times LOR	< 25	< 10 times LOR
C6 - C10 Fraction minus BTEX (F1)	mg/kg	10	< 20	< 20	< 10 times LOR	< 25	< 10 times LOR
>C10 - C16 Fraction	mg/kg	50	< 50	< 50	< 10 times LOR	< 50	< 10 times LOR
>C16 - C34 Fraction (F3)	mg/kg	100	< 100	< 100	< 10 times LOR	< 100	< 10 times LOR
>C34 - C40 Fraction (F4)	mg/kg	100	< 100	< 100	< 10 times LOR	< 100	< 10 times LOR
>C10 - C40 Fraction (sum)	mg/kg	50	< 100	< 100	< 10 times LOR	< 50	< 10 times LOR
>C10 - C16 Fraction minus Naphthalene (F2)	mg/kg	50	< 50	< 50	< 10 times LOR	< 50	< 10 times LOR
BTEXN							
Benzene	mg/kg	0.2	< 0.1	< 0.1	< 10 times LOR	< 0.2	< 10 times LOR
Toluene	mg/kg	0.5	< 0.1	< 0.1	< 10 times LOR	< 0.5	< 10 times LOR
Ethylbenzene	mg/kg	0.5	< 0.1	< 0.1	< 10 times LOR	< 1	< 10 times LOR
meta- & para-Xylene	mg/kg	0.5	< 0.2	< 0.2	< 10 times LOR	< 2	< 10 times LOR
ortho-Xylene	mg/kg	0.5	< 0.1	< 0.1	< 10 times LOR	< 1	< 10 times LOR
Total Xylenes	mg/kg	0.5	< 0.3	< 0.3	< 10 times LOR	< 3	< 10 times LOR
Sum of BTEX	mg/kg	0.2	-	-	-	-	-
Naphthalene	mg/kg	1	< 0.5	< 0.5	< 10 times LOR	< 1	< 10 times LOR

Client: John Holland Rail
Job No: 318001025
Project Name: Stations Masters Cottage DSI
25/11/2021

Table 9
Stations Masters Cottage DSI - Groundwater Duplicate RPDs



Sample Type:			Groundwater	Groundwater	RPD %	Groundwater	RPD %
Sample date:			2/11/2021	2/11/2021		2/11/2021	
Sample ID:			GW103	DO1_GW_20211102		TO1_GW_20211102	
Project Name:			Captains Flat DSI	Captains Flat DSI		Captains Flat DSI	
Project No:			318001025	318001025		318001025	
Sample Location			Copper Creek	Copper Creek		Copper Creek	
Sampling Method:			Micropurge	Micropurge		Micropurge	
Sample Description:			Clear	Clear		Clear	
Analyte grouping/Analyte			Units	LOR			
Dissolved and Total Metals							
Arsenic (filtered) ^D	mg/L	0.001	0.002	0.002	< 10 times LOR	0.002	< 10 times LOR
Barium (filtered)	mg/L	0.02	< 0.02	< 0.02	< 10 times LOR	0.017	< 10 times LOR
Cadmium (filtered)	mg/L	0.0002	0.25	0.24	4.08%	0.26	3.92%
Chromium (filtered) ^E	mg/L	0.001	0.004	0.004	< 10 times LOR	0.004	< 10 times LOR
Cobalt (filtered)	mg/L	0.001	0.49	0.48	2.06%	0.5	2.02%
Copper (filtered)	mg/L	0.001	1.1	1.1	0.00%	1.1	0.00%
Iron (filtered)	mg/L	0.05	< 0.05	< 0.05	< 10 times LOR	0.04	< 10 times LOR
Lead (filtered)	mg/L	0.001	0.092	0.09	2.20%	0.094	2.15%
Manganese (filtered)	mg/L	0.005	4.1	4.1	0.00%	3.7	10.26%
Mercury (filtered)	mg/L	0.0001	< 0.0001	< 0.0001	< 10 times LOR	<0.0005	< 10 times LOR
Molybdenum (filtered)	mg/L	0.005	< 0.005	< 0.005	< 10 times LOR	<0.001	< 10 times LOR
Nickel (filtered)	mg/L	0.001	0.59	0.57	3.45%	0.58	1.71%
Selenium (filtered)	mg/L	0.001	0.028	0.023	19.61%	0.003	161.29%
Tin (filtered)	mg/L	0.005	< 0.005	< 0.005	< 10 times LOR	-	-
Titanium (filtered)	mg/L	0.005	< 0.005	< 0.005	< 10 times LOR	<0.001	< 10 times LOR
Zinc (filtered)	mg/L	0.005	75	82	8.92%	98	26.59%

RPD Control Limits
Pass - RPD <= 30%
Pass-1 - RPD > 30%, Analysis results < 10 times Detection Limit
Pass-2 - RPD > 30% and RPD <= 50%, Analysis result > 10 times Detection Limit and < 20 times Detection Limit
Exceeds RPD Control Limits



Well ID	Easting	Northing	Gauging Date	TOC Elevation	Surface Elevation	Stick-Up	Total Well Depth	SWL		Relative Groundwater Elevation
				(m AHD)	(m AHD)		(m btoc)	(m btoc)	(m bgl)	(m AHD)
GW10	720896.718	6058791.975	2/11/2021	867.18	865.97	1.21	10.92	6.93	5.72	860.25
GW101	720939.879	6058743.851	2/11/2021	868.99	869.09	-0.10	12.7	7.61	7.71	861.38
GW103	720886.545	6058739.37	2/11/2021	868.37	867.75	0.63	10.15	6.83	6.20	861.54

Notes
Survey by PHL Surveyors (2021) measured at Top of Casing (TOC).
m = Metres
btoc = Below Top of Casing
SWL = Standing Water Level
TOC = Top of Casing
Easting projection MGA94: Map Grid of Australia 1994



Sample Type:			Rinsate
Sample ID:			RO1_GW_20211102
Sample date:			2/11/2021
Site:			Captains Flat
Sampling Method:			Micropurge
Guidelines			
Analyte grouping/Analyte	Units	LOR	
Heavy Metals			
Arsenic (filtered) ^a	mg/L	0.001	< 0.001
Barium (filtered)	mg/L	0.02	< 0.02
Cadmium (filtered)	mg/L	0.0002	< 0.0002
Chromium (filtered) ^b	mg/L	0.001	< 0.001
Cobalt (filtered)	mg/L	0.001	< 0.001
Copper (filtered)	mg/L	0.001	< 0.001
Iron (filtered)	mg/L	0.05	< 0.05
Lead (filtered)	mg/L	0.001	< 0.001
Manganese (filtered)	mg/L	0.005	< 0.005
Mercury (filtered)	mg/L	0.0001	< 0.0001
Molybdenum (filtered)	mg/L	0.005	< 0.005
Nickel (filtered)	mg/L	0.001	< 0.001
Selenium (filtered)	mg/L	0.001	0.001
Tin (filtered)	mg/L	0.005	< 0.005
Titanium (filtered)	mg/L	0.005	< 0.005
Zinc (filtered)	mg/L	0.005	0.011

Blank Cell indicates no criterion available

All results are in µg/L unless stated

LOR = Limit of Reporting

Concentrations below the LOR noted as <value

NOC = No observed contamination

^a Arsenic was based on the lowest criteria of As (III) and As (V) as speciation of arsenic was not measured

^b Based on the Chromium (VI) criteria as more conservative



Well ID	Gauging Date	Temperature (°C)	pH	EC (µScm ⁻¹)	DO (mg/L)	Eh (mV)	Turbidity (NTU)	TDS (ppm)	Comments
GW10	2/11/2021	15.60	5.86	1,035.00	1.52	-96.70	-	669.50	turbid, black
GW101	2/11/2021	14.90	6.28	2,567.00	4.04	-62.90	-	1,670.50	turbid, brown
GW103	2/11/2021	14.70	3.98	1,677.00	2.69	137.90	-	1092	turbid, brown

Notes
L = Litre
DO = Dissolved Oxygen
ppm = parts per million
EC = Electrical Conductivity
µScm⁻¹ = microSiemens per centimetre
Eh = Redox
mV = milli Volts
NTU = Nephelometric Turbidity Units

APPENDIX 6

NATA ACCREDITED LABORATORY REPORTS

CERTIFICATE OF ANALYSIS 281764

Client Details

Client	Ramboll Australia Pty Ltd
Attention	J Auld
Address	PO Box 560, North Sydney, NSW, 2060

Sample Details

Your Reference	<u>318001025, Stations Masters Cottage</u>
Number of Samples	1 Soil
Date samples received	02/11/2021
Date completed instructions received	02/11/2021

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	09/11/2021
Date of Issue	08/11/2021
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Dragana Tomas, Senior Chemist
Manju Dewendrage, Prep Team Leader
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		281764-1
Your Reference	UNITS	QC02
Date Sampled		27/10/2021
Type of sample		Soil
Date extracted	-	03/11/2021
Date analysed	-	04/11/2021
TRH C ₆ - C ₉	mg/kg	<25
TRH C ₆ - C ₁₀	mg/kg	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	79

svTRH (C10-C40) in Soil		
Our Reference		281764-1
Your Reference	UNITS	QC02
Date Sampled		27/10/2021
Type of sample		Soil
Date extracted	-	03/11/2021
Date analysed	-	04/11/2021
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	98

PAHs in Soil		
Our Reference		281764-1
Your Reference	UNITS	QC02
Date Sampled		27/10/2021
Type of sample		Soil
Date extracted	-	03/11/2021
Date analysed	-	05/11/2021
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	96

Moisture		
Our Reference	UNITS	281764-1
Your Reference		QC02
Date Sampled		27/10/2021
Type of sample		Soil
Date prepared	-	03/11/2021
Date analysed	-	04/11/2021
Moisture	%	23

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Client Reference: 318001025, Stations Masters Cottage

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			03/11/2021	[NT]	[NT]	[NT]	[NT]	03/11/2021	[NT]
Date analysed	-			04/11/2021	[NT]	[NT]	[NT]	[NT]	04/11/2021	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	88	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	88	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	89	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	97	[NT]	[NT]	[NT]	[NT]	99	[NT]

Client Reference: 318001025, Stations Masters Cottage

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			03/11/2021	[NT]	[NT]	[NT]	[NT]	03/11/2021	[NT]
Date analysed	-			04/11/2021	[NT]	[NT]	[NT]	[NT]	04/11/2021	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	82	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	97	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	109	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	82	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	97	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	109	[NT]
Surrogate o-Terphenyl	%		Org-020	99	[NT]	[NT]	[NT]	[NT]	85	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			03/11/2021	[NT]	[NT]	[NT]	[NT]	03/11/2021	[NT]
Date analysed	-			05/11/2021	[NT]	[NT]	[NT]	[NT]	05/11/2021	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	69	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	88	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	89	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

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For VOCs in water samples, three vials are required for duplicate or spike analysis.

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Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

836 638

RAMBOLL

Chain of Custody & Analysis Request Form

Tel: 02 9954 8100 (Ramboll)

Laboratory Details

Tel: 9900 6490

Lab. Name:

Eurofins

Fax:

Lab. Address:

Unit 7 7 Friesian Close SANDGATE, NSW, 2304

Contact Name:

Final Report by:

Lab. Ref:

Lab Quote No:

Project Name: Stations Masters CottageProject Number: 38001025Site: Braidwood Captains flat

Sample collected by:

Sample Results to be returned to:

apw@ramboll.com; frank@ramboll.com; jauld@ramboll.com; smaxwell@ramboll.com

Specifications:

(Tick)

1. Urgent TAT required? (please circle: 24hr 48hr days) STANDARD
2. Fast TAT Guarantee Required? Yes ☐ Yes ☐ No ☐ N/A
3. Is any sediment layer present in waters to be excluded from extractions? ☐ Yes ☐ No ☐ N/A
4. Special storage requirements? ☐ Yes ☐ No ☐ N/A
5. Preservation requirements? ☐ Yes ☐ No ☐ N/A
6. Other requirements? ☒ Yes ☐ No ☐ N/A

7. Report Format: equls / excel / pdf8. Project Manager: Andrew Maxwelltel: 9900 6490

Analysis Request

Remarks & comments

Lab. ID	Sample ID	Sampling Date	Sampling Time	Matrix			Preservation			Container (No. & type)	PEAS - Standard Sample	TRH, BTEX	Asbestos (p)	Lead to Envirolab	HOLD
				soil	biota	water	filtered	acid	low						
	HA-SMC105-0.1	27/10		X					X	Jar		X			
	HA-SMC105-0.25								X			X			
	HA-SMC105-0.4											X			
	HA-SMC106-0.1											X			
	HA-SMC106-0.25											X			
	HA-SMC106-0.5											X			
	HA-SMC101-0.1											X			
	HA-SMC101-0.25											X			
	HA-SMC101-0.5											X			
	HA-SMC107-0.1											X			
	HA-SMC107-0.3											X			
	HA-SMC107-0.6											X			
	HA-SMC104-0.1											X			
	HA-SMC104-0.25											X			
	HA-SMC104-0.5											X			
①	QC01											X			
	QC02			X						Jar		X			
	QC03				X			X		bottle		X			
	HA-SMC105			X					X	bag			X		
	HA-SMC106												X		
	HA-SMC101												X		
	HA-SMC101												X		
	HA-SMC104	27/10		X					X	bag			X		
	HA-SMC105	28/10								bag			X		
	HA-SMC102	28/10		X					X	bag			X		

ENVIROLAB GROUP

Job No:

Date Received:
Time Received:
Received By:
Temp: Coo/A
Cooling: Ice/I
Security: Inta



Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No:

281764

Date Received:

2/11/21

Time Received:

1150

Received By:

T.H.A.W.

Temp: Cool/Ambient

Cooling: Ice/depack

Security: Intact/Broken/None

Relinquished By:

Jenny Aida

Received by:

Name:

C. du Roy

Date: 28/10

Time: 4 pm

Received in good condition?

Yes/No/NA

Method of Shipment

Samples received chilled?

Yes/No/NA

Consignment Note No.

Yes/No/NA

Transport Co:

of: Ramboll

Time:



Chain of Custody & Analysis Request Form

Tel: 02 9954 8100 (Ramboll)		Laboratory Details Tel: 9900 8490 Lab. Name: Eurofins Lab. Address: Unit 7 7 Friesian Close SANDGATE, NSW, 2304 Contact Name: Final Report by: Lab. Ref: Lab Quote No:	
Project Name: <u>Stations Masters Cottage</u> <u>88 Wallace St Braidwood</u>		Project Number: <u>318001025</u> Site: <u>Braidwood Captains flat</u>	
Sample collected by: <u>JA</u>		Sample Results to be returned to: <u>snaxwell@rambol.com</u>	

Specifications:										Analysis Request															
1. Urgent TAT required? (please circle: 24hr 48hr days) <u>STANDARD</u> 2. Fast TAT Guarantee Required? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 3. Is any sediment layer present in waters to be excluded from extractions? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 4. Special storage requirements? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 5. Preservation requirements? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 6. Other requirements? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A										7. Report Format: <u>equils / excel / pdf</u> 8. Project Manager: <u>Stephen Maxwell</u> tel: <u>318001025</u>															
Lab. ID	Sample ID	Sampling Date	Sampling Time	Matrix			Preservation				Container	Remarks & comments													
				soil	biota	water	filtered	acid	ice	other	(No. & type)														
	HA-SMC103-0.15	28/10		X					X		Jar														
	HA-SMC103-0.4																								
	HA-SMC103-0.55																								
	HA-SMC102-0.2																								
	HA-SMC102-0.35																								
	HA-SMC102-0.5	28/10		X							Jar														
	GC04	28/10				X			X		200ml bottle														

#281764
TS.

Relinquished By: <u>Jeremy Auld</u> Date: <u>28/10/10</u> Time:		Received by: <u>E. de la Cruz</u> Name: <u>W. de la Cruz</u> Date: <u>28/10</u> Time: <u>4/10</u>		Received in good condition? Yes/No/NA Samples received chilled? Yes/No/NA Method of Shipment Consignment Note No. Transport Co:	
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CERTIFICATE OF ANALYSIS 282234

Client Details

Client	Ramboll Australia Pty Ltd
Attention	Stephen Maxwell
Address	PO Box 560, North Sydney, NSW, 2060

Sample Details

Your Reference	<u>318001025, Stations Masters Cottage</u>
Number of Samples	1 Water
Date samples received	08/11/2021
Date completed instructions received	08/11/2021

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	15/11/2021
Date of Issue	12/11/2021
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Giovanni Agosti, Group Technical Manager

Authorised By



Nancy Zhang, Laboratory Manager

All metals in water-dissolved		
Our Reference		282234-1
Your Reference	UNITS	T01_GW_20211 102
Date Sampled		02/11/2021
Type of sample		Water
Date prepared	-	10/11/2021
Date analysed	-	10/11/2021
Arsenic-Dissolved	µg/L	2
Barium-Dissolved	µg/L	17
Cadmium-Dissolved	µg/L	260
Chromium-Dissolved	µg/L	4
Cobalt-Dissolved	µg/L	500
Copper-Dissolved	µg/L	1,100
Iron-Dissolved	µg/L	40
Mercury-Dissolved	µg/L	<0.05
Lead-Dissolved	µg/L	94
Manganese-Dissolved	µg/L	3,700
Molybdenum-Dissolved	µg/L	<1
Nickel-Dissolved	µg/L	580
Selenium-Dissolved	µg/L	3
Titanium-Dissolved	µg/L	<1
Zinc-Dissolved	µg/L	98,000

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

QUALITY CONTROL: All metals in water-dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			10/11/2021	[NT]	[NT]	[NT]	[NT]	10/11/2021	[NT]
Date analysed	-			10/11/2021	[NT]	[NT]	[NT]	[NT]	10/11/2021	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Iron-Dissolved	µg/L	10	Metals-022	<10	[NT]	[NT]	[NT]	[NT]	98	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	112	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	[NT]	[NT]	[NT]	[NT]	97	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Titanium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]

Result Definitions

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Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

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2

CHAIN OF CUSTODY RECORD

AS/NZS 5065:2015

Sydney Laboratory
Unit F3 Bldg F, 16 Mars Rd, Lane Cove West, NSW 2056
02 9502 8400 EnviroSampleNSW@eurofins.com

Brisbane Laboratory
Unit 1, 21 Smallwood Pl, Murrumbidgee, QLD 4172
07 3502 4600 EnviroSampleQLD@eurofins.com

Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9800 EnviroSampleWA@eurofins.com

Melbourne Laboratory
2 Kingston Town Cntr, Oakleigh, VIC 3165
03 8554 5000 EnviroSampleVIC@eurofins.com

Company	Ramboll	Project No	318001025	Project Manager	Stephan Maxwell	Sampler(s)	NM + TF
Address	50 Globe Road the Junction	Project Name		EDD Format (ESStat, EQUIS, ...)	Excel and PDF	Handed over by	TF
Contact Name	Stephen Maxwell					Email for Invoice	smaxwell@ramboll.com asiapac-accounts@ramboll.com
Phone No						Email for Results	smaxwell@ramboll.com
Special Directions							
Purchase Order							
Quote ID No	180813RAMN_1						
NE	Client Sample ID	Sampled Date/Time (dd/mm/yyyy hh:mm)	Matrix (Solid (S) / Water (W))				Turnaround Time (TAT) Requirements (default will be 5 days, if not stated)
1	QA09	9/12/21	S				<input type="checkbox"/> Overnight (9am)* <input type="checkbox"/> 1 Day* <input checked="" type="checkbox"/> 3 Day* <input type="checkbox"/> 5 Day* *Surcharges apply
2	QA10						
3	QA11						
4	QA12	10/12/21					
5	QA13						
6	QA14						
7	QA15						
8	QA16						
9							
10							
Total Counts							
Method of Shipment	Courier (#)	Hand Delivered	Name	Signature	Date	Date	Time
Eurofins mgt Laboratory Use Only	Received By	MR	SYD BNE MEL PER ADL NTL DRW		12/12/21	100PM	23.8°C
	Received By		SYD BNE MEL PER ADL NTL DRW				773658

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Eurofins Environment Testing Australia Pty Ltd trading as Eurofins | mgt

[Sydney Laboratory
Unit F3 8d.F, 16 Mars R
02 9900 8400 EnviroS

Sydney Laboratory
Unit F3 Bld.F, 16 Mars Rd, Lane Cove West, NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

Brisbane Laboratory
Unit 1, 21 Smallwood Pl., Murarie, QLD 4172
07 3902 4600 EnviroSampleQLD@neurofin.com

Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

■ Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVIC@elrnlabs.com

[Sydney Laboratory
Unit F3 8d.F, 16 Mars R
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Sydney Laboratory
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02 9900 8400 EnviroSampleNSW@eurofins.com

Brisbane Laboratory
Unit 1, 21 Smallwood Pl., Murarie, QLD 4172
07 3902 4600 EnviroSample@neuroinfo.com

Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

■ Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVIC@elrnlms.com

Company	Ramboll	Project No.	318001025 - 1	Project Manager	Stephen Maxwell	Sampler(s)	NM + TF
Address	30 Glebe Road the Junction	Project Name		EDD Format (ESdat, EQUIS,	Excel and PDF	Handed over by	TF
Contact Name	Stephen Maxwell					Email for Invoice	smaxwell@ramboll.com asia-pac-accounts@ramboll.com
Phone No.						Email for Results	smaxwell@ramboll.com
Special Directions							Turnaround Time (TAT) Requirements (Outline will be 5 days if not ticked)
Purchase Order							<input type="checkbox"/> Overnight (9am)* <input type="checkbox"/> 1 Day* <input type="checkbox"/> 2 Day* <input checked="" type="checkbox"/> 3 Day* <input checked="" type="checkbox"/> 5 Day* (Surcharges apply) <input type="checkbox"/> Other ()
Quote ID No.	180813RAMN_1						Sample Comments / Dangerous Goods Hazard Warning
No.	Client Sample ID	Sampled Date/Time (dd/mm/yyyy hh:mm)	Matrix (Solid (S) Water (W))				
1	QA17	10/12/21	S	X			Please send to envirolab
2	QA18			X			
3	QA19			X			
4	QA20			X			
5	QA21			X			
6	QA22			X			Please send to envirolab
7	QA23	11/12/21		X			
8	QA24			X			
9							
10							
Total Counts							
Method of Shipment	Courier (#)	Hand Delivered	Name	Signature	Date	Time	Temperature
Enrollee mgt Laboratory Use Only	Received By	MR	SYD BNE MEL PER ADL NTL DRW		12/12/21	10:00 AM	23.8°C
	Received By		SYD BNE MEL PER ADL NTL DRW				77.3658

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Submission of samples to the laboratory will be deemed as acceptance of Eurofins | mgmt

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

Sydney Laboratory
Unit F3 Bld F, 10 Mars Rd, Lane Cove West, NSW 2055
02 9500 6400 EnviroSampleNSW@eurofins.com

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Unit 1, 21 Smallwood Pl, Murarie, QLD 4172
07 3522 4800 EnviroSampleQLD@eurofins.com

Perth Laboratory
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08 9251 9500 EnviroSampleWA@eurofins.com

Melbourne Laboratory
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03 9554 5000 EnviroSampleVIC@eurofins.com

Company		Ramboll		Project No		318001025 -1		Project Manager		Stephen Maxwell		Sampler(s)		NM, TF	
Address		50 Glebe Road the Junction		Project Name				EDD Format (ESdt, EQULS)		Excel and PDF		Handed over by		TF	
Contact Name		Stephen Maxwell										Email for Invoice		smaxwell@ramboll.com asiapac-accounts@ramboll.com	
Phone No												Email for Results		smaxwell@ramboll.com	
Special Directions															
Purchase Order															
Quote ID No		180813RAMN_1													
No		Client Sample ID		Sampled Date/Time (dd/mm/yyyy hh:mm)		Matrix (Solid (S) Water (W))									
1		QA25		14/2/21		S									
2		QA26													
3		QA27													
4		QA28													
5		QA29													
6		QA30													
7		QA31													
8		QA32													
9															
10															
Total Counts															
Method of Shipment		Courier (#)		Hand Delivered		Signature		Date		Time		Temperature		Report No	
Eurofins mgt Laboratory Use Only		Received By		NR		Signature		Date		Time		23.8°C		773658	
		Received By				Signature		Date		Time					

Submission of samples to the laboratory will be deemed as acceptance of Eurofins | mgt Standard Terms and Conditions unless agreed otherwise. A copy of Eurofins | mgt Standard Terms and Conditions is available on request.

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CHAIN OF CUSTODY RECORD

Sydney Laboratory
Unit F3 Bld F, 10 Mars Rd, Lane Cove West, NSW 2205
02 9520 6400 EnviroSampleNSW@eurofins.com

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03 8554 5000 EnviroSampleVIC@eurofins.com

ABN 50 005 055 521

Company	Ramboll	Project No	318001025 - 1	Project Manager	Stephen Maxwell	Sampler(s)	
Address	50 Glebe Road the Junction	Project Name		EDD Format (ESdat, EDULS)	Excel and PDF	Handed over by	
Contact Name	Stephen Maxwell					Email for Invoice	smaxwell@ramboll.com asia@ac-accounts@ramboll.com
Phone No						Email for Results	tjfrank@ramboll.com smaxwell@ramboll.com mmevins@ramboll.com
Special Directions							
Purchase Order							
Quote ID No	180813RAMBL_1						
No	Client Sample ID	Sampled Date/Time (dd/mm/yyyy hh:mm)	Matrix (Solid (S) Water (W))	Analyses (Note: Where matrix not requested, please specify 'Total' or 'Fraction' in SUTTECH case number) Cation Suite: Na, K, Ca, Mg, others. 8 metals (dissolved). 8 metals (total).			
1	SW01	10/01/21	M	X	X	X	X
2	SW02			X	X	X	X
3	SW03			X	X	X	X
4	SW04			X	X	X	X
5	SW05			X	X	X	X
6	SW06			X	X	X	X
9	QA01-SW			X	X	X	X
10	QA02-SW			X	X	X	X
Total Counts							
Method of Shipment	Courier (#)	Hand Delivered	Name	Signature	Date	Date	Time
		<input checked="" type="checkbox"/>	T. FRANK		12/12/21	12/12/21	10:00 AM
Eurofins mgt Laboratory Use Only	Received By	Received By	Signature	Signature	Time	Time	Report No
	MR				12/12/21	10:00 AM	25.8°C
							773658

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CHAIN OF CUSTODY RECORD

ABN 60 005 065 521

Sydney Laboratory
Unit F3 Bld F, 16 Miers Rd, Lane Cove West, NSW 2206
02 9520 0400 EnviroSampleNSW@eurofins.com

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Perth Laboratory
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08 9251 8500 EnviroSampleWA@eurofins.com

Melbourne Laboratory
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03 8554 5000 EnviroSampleVIC@eurofins.com

Company		Ramboll		Project No		318000780		Project Manager		Stephen Maxwell		Sampler(s)	
Address		50 Giebe Road the Junction		Project Name				EDD Format		Excel and PDF		Handed over by	
Contact Name		Stephen Maxwell										Email for Invoice	
Phone No												Email for Results	
Special Directions												Email for Results	
Purchase Order												Email for Results	
Quote ID No		180813RAMN_1										Email for Results	
No		Client Sample ID		Sampled Date/Time (dd/mm/yyyy hh:mm)		Matrix (Solid (S)/Water (W))		Analyses		Turnaround Time (TAT)		Requirements (please tick 5 days if not ticked)	
1		SED01		10/02/24		S		Total dust		8 metals		TL Plastic	
2		SED02		10/02/24		S		X		200mL Amber Glass		125mL Plastic	
3		SED03		10/02/24		S		X		40mL VOA vial		500mL PFAS Bottle	
4		SED04		10/02/24		S		X		250mL Plastic		125mL Plastic	
5		SED05		10/02/24		S		X		250mL Plastic		125mL Plastic	
6		SED06		10/02/24		S		X		250mL Plastic		125mL Plastic	
7		DRAIN01		10/02/24		S		X		250mL Plastic		125mL Plastic	
8		QA01-SED		10/02/24		S		X		250mL Plastic		125mL Plastic	
9													
10													
Method of Shipment		Courier (#)		Hand Delivered		Name		Signature		Date		Time	
Eurofins mgt Laboratory Use Only		Received By		Received By		Signature		Signature		Date		Time	
		MR		MR		T-FRANK		T-FRANK		12/02/24		23°C	
										12/02/24		773658	

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Eurofins Environment Testing Australia Pty Ltd trading as Eurofins | mgt

AGN 50 005 085 521

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ns.com

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Melbourne Laboratory
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03 8564 5000 EnviroSample

AGN 50 005 085 521

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Perth Laboratory
Unit 2, 91 Leach Highway
08 9251 9600 Enviro

Melbourne Laboratory
2 Kingston Town Close, Oaklands
03 8564 5000 EnviroSample

[illegible]

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Eurofins Environment Testing Australia Pty Ltd trading as Eurofins | mgt

Australia

Melbourne 6 Monterey Road Dandenong South VIC 3175 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271	Sydney Unit F3, Building F 16 Mars Road 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	Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736	Newcastle 4/52 Industrial Drive Mayfield East NSW 2304 PO Box 60 Wickham 2293 Phone : +61 2 4968 8448	New Zealand Auckland 35 O'Rorke 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
--	--	---	---	--	--	--

Sample Receipt Advice

Company name:	Ramboll Australia Pty Ltd
Contact name:	Stephen Maxwell
Project name:	Not provided
Project ID:	318001025-1
Turnaround time:	3 Day
Date/Time received	Feb 12, 2021 1:00 PM
Eurofins reference	773658

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✓ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Samples QA02, QA03, QA06, QA17, QA22, QA02_SED (1x jar each) and QA02_SW (1x unpreserved inorganics, 1x filtered and 1x filtered metals bottles) forwarded to Envirolab.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Stephen Maxwell - smaxwell@ramboll.com.

Note: A copy of these results will also be delivered to the general Ramboll Australia Pty Ltd email address.

Australia

Melbourne
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Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

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

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NATA # 1261 Site # 20794

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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
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PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

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Penrose, Auckland 1061
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Christchurch
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Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 773658
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Feb 12, 2021 1:00 PM
Due: Feb 17, 2021
Priority: 3 Day
Contact Name: Stephen Maxwell

Project Name:
Project ID: 318001025-1

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Conductivity (1:5 aqueous extract at 25°C as rec.)	Iron (%)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Sulphur	Total Organic Carbon	AUS Leaching Procedure	USA Leaching Procedure	Metals M8	Metals M8 filtered	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID															
1	QA01	Feb 09, 2021		Soil	S21-Fe25590	X			X	X					X			X		
2	QA03	Feb 09, 2021		Soil	S21-Fe25591	X			X	X					X			X		
3	QA05	Feb 09, 2021		Soil	S21-Fe25592	X			X	X					X			X		
4	QA07	Feb 09, 2021		Soil	S21-Fe25593	X			X	X					X			X		
5	QA08	Feb 09, 2021		Soil	S21-Fe25594	X			X	X					X			X		
6	QA09	Feb 09, 2021		Soil	S21-Fe25595	X			X	X					X			X		
7	QA10	Feb 09, 2021		Soil	S21-Fe25596	X			X	X					X			X		
8	QA11	Feb 09, 2021		Soil	S21-Fe25597	X			X	X					X			X		
9	QA12	Feb 10, 2021		Soil	S21-Fe25598	X			X	X					X			X		

Australia

Melbourne
6 Monterey Road
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NATA # 1261
Site # 1254 & 14271

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

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

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

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

New Zealand

Auckland
35 O'Rorke 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

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 773658
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Feb 12, 2021 1:00 PM
Due: Feb 17, 2021
Priority: 3 Day
Contact Name: Stephen Maxwell

Project Name:
Project ID: 318001025-1

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Conductivity (1:5 aqueous extract at 25°C as rec.)	Iron (%)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Sulphur	Total Organic Carbon	AUS Leaching Procedure	USA Leaching Procedure	Metals M8	Metals M8 filtered	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
10	QA13	Feb 10, 2021		Soil	S21-Fe25599		X			X	X				X			X		
11	QA14	Feb 10, 2021		Soil	S21-Fe25600		X			X	X				X			X		
12	QA15	Feb 10, 2021		Soil	S21-Fe25601		X			X	X				X			X		
13	QA16	Feb 10, 2021		Soil	S21-Fe25602		X			X	X				X			X		
14	QA18	Feb 10, 2021		Soil	S21-Fe25603		X			X	X				X			X		
15	QA19	Feb 10, 2021		Soil	S21-Fe25604		X			X	X				X			X		
16	QA20	Feb 10, 2021		Soil	S21-Fe25605		X			X	X				X			X		
17	QA21	Feb 10, 2021		Soil	S21-Fe25606		X			X	X				X			X		
18	QA23	Feb 11, 2021		Soil	S21-Fe25607		X			X	X				X			X		
19	QA24	Feb 11, 2021		Soil	S21-Fe25608		X			X	X				X			X		
20	QA25	Feb 11, 2021		Soil	S21-Fe25609		X			X	X				X			X		

Australia

Melbourne
6 Monterey Road
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Phone : +61 3 8564 5000
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Sydney
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NATA # 1261 Site # 18217

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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

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Phone : 0800 856 450
IANZ # 1290

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 773658
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Feb 12, 2021 1:00 PM
Due: Feb 17, 2021
Priority: 3 Day
Contact Name: Stephen Maxwell

Project Name:
Project ID: 318001025-1

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Conductivity (1:5 aqueous extract at 25°C as rec.)	Iron (%)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Sulphur	Total Organic Carbon	AUS Leaching Procedure	USA Leaching Procedure	Metals M8	Metals M8 filtered	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
21	QA26	Feb 11, 2021		Soil	S21-Fe25610		X			X	X				X			X		
22	QA27	Feb 11, 2021		Soil	S21-Fe25611		X			X	X				X			X		
23	QA28	Feb 11, 2021		Soil	S21-Fe25612		X			X	X				X			X		
24	QA29	Feb 11, 2021		Soil	S21-Fe25613		X			X	X				X			X		
25	QA30	Feb 11, 2021		Soil	S21-Fe25614		X			X	X				X			X		
26	QA31	Feb 11, 2021		Soil	S21-Fe25615		X			X	X				X			X		
27	QA32	Feb 11, 2021		Soil	S21-Fe25616		X			X	X				X			X		
28	QA33	Feb 11, 2021		Soil	S21-Fe25617		X			X	X				X			X		
29	SW01	Feb 10, 2021		Water	S21-Fe25618										X	X				X
30	SW02	Feb 10, 2021		Water	S21-Fe25619										X	X				X
31	SW03	Feb 10, 2021		Water	S21-Fe25620										X	X				X

Australia

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Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 773658
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Feb 12, 2021 1:00 PM
Due: Feb 17, 2021
Priority: 3 Day
Contact Name: Stephen Maxwell

Project Name:
Project ID: 318001025-1

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Conductivity (1:5 aqueous extract at 25°C as rec.)	Iron (%)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Sulphur	Total Organic Carbon	AUS Leaching Procedure	USA Leaching Procedure	Metals M8	Metals M8 filtered	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
32	SW04	Feb 10, 2021		Water	S21-Fe25621										X	X				X
33	SW05	Feb 10, 2021		Water	S21-Fe25622										X	X				X
34	SW06	Feb 10, 2021		Water	S21-Fe25623										X	X				X
35	QA01_SW	Feb 10, 2021		Water	S21-Fe25624										X	X				X
36	SED01	Feb 10, 2021		Soil	S21-Fe25625										X			X		
37	SED02	Feb 10, 2021		Soil	S21-Fe25626										X			X		
38	SED03	Feb 10, 2021		Soil	S21-Fe25627										X			X		
39	SED04	Feb 10, 2021		Soil	S21-Fe25628										X			X		
40	SED05	Feb 10, 2021		Soil	S21-Fe25629										X			X		
41	SED06	Feb 10, 2021		Soil	S21-Fe25630										X			X		
42	DRAIN01	Feb 10, 2021		Soil	S21-Fe25631										X			X		

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
43	QA01_SED	Feb 10, 2021		Soil	S21-Fe25632										X			X		
44	R01	Feb 10, 2021		Water	S21-Fe25633										X					
45	R02	Feb 10, 2021		Water	S21-Fe25634										X					
46	HA-SMC08_0.1	Feb 11, 2021		Soil	S21-Fe25635	X		X	X			X					X		X	
47	HA-SMC08_0.5	Feb 11, 2021		Soil	S21-Fe25636	X		X	X			X					X		X	
48	QA03	Feb 09, 2021		AUS Leachate	S21-Fe25637								X		X					
49	QA05	Feb 09, 2021		AUS Leachate	S21-Fe25638								X		X					
50	QA18	Feb 10, 2021		AUS Leachate	S21-Fe25639								X		X					
51	QA19	Feb 10, 2021		AUS Leachate	S21-Fe25640								X		X					

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
52	QA03	Feb 09, 2021		US Leachate	S21-Fe25641									X	X					
53	QA05	Feb 09, 2021		US Leachate	S21-Fe25642									X	X					
54	QA18	Feb 10, 2021		US Leachate	S21-Fe25643									X	X					
55	QA19	Feb 10, 2021		US Leachate	S21-Fe25644									X	X					
Test Counts						2	28	2	30	30	28	2	4	4	53	7	38	38	2	7

Ramboll Environ Australia Pty Ltd
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NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Stephen Maxwell**

Report **773658-L**
Project name
Project ID **318001025-1**
Received Date **Feb 12, 2021**

Client Sample ID			QA03	QA05	QA18	QA19
Sample Matrix			AUS Leachate	AUS Leachate	AUS Leachate	AUS Leachate
Eurofins Sample No.			S21-Fe25637	S21-Fe25638	S21-Fe25639	S21-Fe25640
Date Sampled			Feb 09, 2021	Feb 09, 2021	Feb 10, 2021	Feb 10, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	0.01	mg/L	0.01	0.01	0.02	< 0.01
Cadmium	0.0002	mg/L	0.0052	0.0013	0.0010	0.023
Chromium	0.001	mg/L	0.014	0.011	0.015	0.013
Copper	0.001	mg/L	0.071	0.039	0.13	0.048
Lead	0.001	mg/L	0.83	0.21	0.98	0.47
Mercury	0.0001	mg/L	0.0003	< 0.0001	0.0001	0.0002
Nickel	0.001	mg/L	0.003	0.005	0.004	0.002
Zinc	0.005	mg/L	1.6	0.29	1.4	8.7
AUS Leaching Procedure						
Leachate Fluid ^{C01}		comment	4.0	4.0	4.0	4.0
pH (initial)	0.1	pH Units	6.1	5.3	5.0	5.8
pH (Leachate fluid)	0.1	pH Units	5.5	5.5	5.5	5.5
pH (off)	0.1	pH Units	6.3	5.7	6.4	6.4

Client Sample ID			QA03	QA05	QA18	QA19
Sample Matrix			US Leachate	US Leachate	US Leachate	US Leachate
Eurofins Sample No.			S21-Fe25641	S21-Fe25642	S21-Fe25643	S21-Fe25644
Date Sampled			Feb 09, 2021	Feb 09, 2021	Feb 10, 2021	Feb 10, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	0.01	mg/L	0.02	0.02	< 0.01	0.03
Cadmium	0.005	mg/L	0.12	0.046	0.023	1.2
Chromium	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Copper	0.05	mg/L	0.24	0.50	0.25	0.27
Lead	0.01	mg/L	0.12	0.11	4.0	0.82
Mercury	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel	0.01	mg/L	0.02	0.02	0.01	0.02
Zinc	0.05	mg/L	37	16	22	540
USA Leaching Procedure						
Leachate Fluid ^{C01}		comment	1.0	1.0	1.0	1.0
pH (initial)	0.1	pH Units	5.9	5.1	4.9	5.9
pH (off)	0.1	pH Units	5.4	5.1	5.1	5.7
pH (USA HCl addition)	0.1	pH Units	1.9	1.9	1.9	1.9

Sample History

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

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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
Metals M8	Sydney	Feb 17, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
AUS Leaching Procedure	Sydney	Feb 13, 2021	7 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			
USA Leaching Procedure	Sydney	Feb 13, 2021	14 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID															
1	QA01	Feb 09, 2021		Soil	S21-Fe25590	X			X	X					X			X		
2	QA03	Feb 09, 2021		Soil	S21-Fe25591	X			X	X					X			X		
3	QA05	Feb 09, 2021		Soil	S21-Fe25592	X			X	X					X			X		
4	QA07	Feb 09, 2021		Soil	S21-Fe25593	X			X	X					X			X		
5	QA08	Feb 09, 2021		Soil	S21-Fe25594	X			X	X					X			X		
6	QA09	Feb 09, 2021		Soil	S21-Fe25595	X			X	X					X			X		
7	QA10	Feb 09, 2021		Soil	S21-Fe25596	X			X	X					X			X		
8	QA11	Feb 09, 2021		Soil	S21-Fe25597	X			X	X					X			X		
9	QA12	Feb 10, 2021		Soil	S21-Fe25598	X			X	X					X			X		

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
10	QA13	Feb 10, 2021		Soil	S21-Fe25599		X			X	X				X			X		
11	QA14	Feb 10, 2021		Soil	S21-Fe25600		X			X	X				X			X		
12	QA15	Feb 10, 2021		Soil	S21-Fe25601		X			X	X				X			X		
13	QA16	Feb 10, 2021		Soil	S21-Fe25602		X			X	X				X			X		
14	QA18	Feb 10, 2021		Soil	S21-Fe25603		X			X	X				X			X		
15	QA19	Feb 10, 2021		Soil	S21-Fe25604		X			X	X				X			X		
16	QA20	Feb 10, 2021		Soil	S21-Fe25605		X			X	X				X			X		
17	QA21	Feb 10, 2021		Soil	S21-Fe25606		X			X	X				X			X		
18	QA23	Feb 11, 2021		Soil	S21-Fe25607		X			X	X				X			X		
19	QA24	Feb 11, 2021		Soil	S21-Fe25608		X			X	X				X			X		
20	QA25	Feb 11, 2021		Soil	S21-Fe25609		X			X	X				X			X		

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
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21	QA26	Feb 11, 2021		Soil	S21-Fe25610		X			X	X				X			X		
22	QA27	Feb 11, 2021		Soil	S21-Fe25611		X			X	X				X			X		
23	QA28	Feb 11, 2021		Soil	S21-Fe25612		X			X	X				X			X		
24	QA29	Feb 11, 2021		Soil	S21-Fe25613		X			X	X				X			X		
25	QA30	Feb 11, 2021		Soil	S21-Fe25614		X			X	X				X			X		
26	QA31	Feb 11, 2021		Soil	S21-Fe25615		X			X	X				X			X		
27	QA32	Feb 11, 2021		Soil	S21-Fe25616		X			X	X				X			X		
28	QA33	Feb 11, 2021		Soil	S21-Fe25617		X			X	X				X			X		
29	SW01	Feb 10, 2021		Water	S21-Fe25618										X	X				X
30	SW02	Feb 10, 2021		Water	S21-Fe25619										X	X				X
31	SW03	Feb 10, 2021		Water	S21-Fe25620										X	X				X

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
32	SW04	Feb 10, 2021		Water	S21-Fe25621										X	X				X
33	SW05	Feb 10, 2021		Water	S21-Fe25622										X	X				X
34	SW06	Feb 10, 2021		Water	S21-Fe25623										X	X				X
35	QA01_SW	Feb 10, 2021		Water	S21-Fe25624										X	X				X
36	SED01	Feb 10, 2021		Soil	S21-Fe25625										X			X		
37	SED02	Feb 10, 2021		Soil	S21-Fe25626										X			X		
38	SED03	Feb 10, 2021		Soil	S21-Fe25627										X			X		
39	SED04	Feb 10, 2021		Soil	S21-Fe25628										X			X		
40	SED05	Feb 10, 2021		Soil	S21-Fe25629										X			X		
41	SED06	Feb 10, 2021		Soil	S21-Fe25630										X			X		
42	DRAIN01	Feb 10, 2021		Soil	S21-Fe25631										X			X		

Australia

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Site # 1254 & 14271

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NATA # 1261 Site # 20794

Perth
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Kewdale WA 6105
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NATA # 1261
Site # 23736

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Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 773658
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Feb 12, 2021 1:00 PM
Due: Feb 17, 2021
Priority: 3 Day
Contact Name: Stephen Maxwell

Project Name:
Project ID: 318001025-1

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Conductivity (1:5 aqueous extract at 25°C as rec.)	Iron (%)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Sulphur	Total Organic Carbon	AUS Leaching Procedure	USA Leaching Procedure	Metals M8	Metals M8 filtered	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
43	QA01_SED	Feb 10, 2021		Soil	S21-Fe25632										X			X		
44	R01	Feb 10, 2021		Water	S21-Fe25633										X					
45	R02	Feb 10, 2021		Water	S21-Fe25634										X					
46	HA-SMC08_0.1	Feb 11, 2021		Soil	S21-Fe25635	X		X	X			X					X		X	
47	HA-SMC08_0.5	Feb 11, 2021		Soil	S21-Fe25636	X		X	X			X					X		X	
48	QA03	Feb 09, 2021		AUS Leachate	S21-Fe25637								X		X					
49	QA05	Feb 09, 2021		AUS Leachate	S21-Fe25638								X		X					
50	QA18	Feb 10, 2021		AUS Leachate	S21-Fe25639								X		X					
51	QA19	Feb 10, 2021		AUS Leachate	S21-Fe25640								X		X					

Australia

Melbourne
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Company Name: Ramboll Australia Pty Ltd
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Eurofins Analytical Services Manager : Andrew Black

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
52	QA03	Feb 09, 2021		US Leachate	S21-Fe25641									X	X					
53	QA05	Feb 09, 2021		US Leachate	S21-Fe25642									X	X					
54	QA18	Feb 10, 2021		US Leachate	S21-Fe25643									X	X					
55	QA19	Feb 10, 2021		US Leachate	S21-Fe25644									X	X					
Test Counts						2	28	2	30	30	28	2	4	4	53	7	38	38	2	7

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.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	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.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

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. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. 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.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. 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										
Heavy Metals										
Arsenic				mg/L	< 0.01			0.01	Pass	
Cadmium				mg/L	< 0.0002			0.0002	Pass	
Chromium				mg/L	< 0.001			0.001	Pass	
Copper				mg/L	< 0.001			0.001	Pass	
Lead				mg/L	< 0.001			0.001	Pass	
Mercury				mg/L	< 0.0001			0.0001	Pass	
Nickel				mg/L	< 0.001			0.001	Pass	
Zinc				mg/L	< 0.005			0.005	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	88			80-120	Pass	
Cadmium				%	89			80-120	Pass	
Chromium				%	88			80-120	Pass	
Copper				%	87			80-120	Pass	
Lead				%	92			80-120	Pass	
Mercury				%	90			80-120	Pass	
Nickel				%	88			80-120	Pass	
Zinc				%	88			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Heavy Metals					Result 1					
Zinc	S21-Fe23191	NCP	%	111				75-125	Pass	
Spike - % Recovery										
Heavy Metals					Result 1					
Arsenic	S21-Fe25640	CP	%	84				75-125	Pass	
Cadmium	S21-Fe25640	CP	%	86				75-125	Pass	
Chromium	S21-Fe25640	CP	%	82				75-125	Pass	
Copper	S21-Fe25640	CP	%	80				75-125	Pass	
Lead	S21-Fe25640	CP	%	88				75-125	Pass	
Mercury	S21-Fe25640	CP	%	84				75-125	Pass	
Nickel	S21-Fe25640	CP	%	82				75-125	Pass	
Spike - % Recovery										
Heavy Metals					Result 1					
Arsenic	S21-Fe25644	CP	%	93				75-125	Pass	
Chromium	S21-Fe25644	CP	%	87				75-125	Pass	
Copper	S21-Fe25644	CP	%	86				75-125	Pass	
Lead	S21-Fe25644	CP	%	98				75-125	Pass	
Mercury	S21-Fe25644	CP	%	98				75-125	Pass	
Nickel	S21-Fe25644	CP	%	85				75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
Heavy Metals					Result 1	Result 2	RPD			
Arsenic	S21-Fe25637	CP	mg/L	0.01	0.01	8.0	30%	Pass		
Cadmium	S21-Fe25637	CP	mg/L	0.0052	0.0063	18	30%	Pass		
Chromium	S21-Fe25637	CP	mg/L	0.014	0.015	9.0	30%	Pass		
Copper	S21-Fe25637	CP	mg/L	0.071	0.084	17	30%	Pass		
Lead	S21-Fe25637	CP	mg/L	0.83	1.00	18	30%	Pass		
Mercury	S21-Fe25637	CP	mg/L	0.0003	0.0003	19	30%	Pass		
Nickel	S21-Fe25637	CP	mg/L	0.003	0.003	19	30%	Pass		
Zinc	S21-Fe25637	CP	mg/L	1.6	1.9	17	30%	Pass		

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S21-Fe25641	CP	mg/L	0.02	0.02	4.0	30%	Pass
Cadmium	S21-Fe25641	CP	mg/L	0.12	0.12	1.0	30%	Pass
Chromium	S21-Fe25641	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Copper	S21-Fe25641	CP	mg/L	0.24	0.23	5.0	30%	Pass
Lead	S21-Fe25641	CP	mg/L	0.12	0.12	2.0	30%	Pass
Mercury	S21-Fe25641	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel	S21-Fe25641	CP	mg/L	0.02	0.02	4.0	30%	Pass
Zinc	S21-Fe25641	CP	mg/L	37	37	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S21-Fe25643	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Cadmium	S21-Fe25643	CP	mg/L	0.023	0.023	4.0	30%	Pass
Chromium	S21-Fe25643	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Copper	S21-Fe25643	CP	mg/L	0.25	0.24	2.0	30%	Pass
Lead	S21-Fe25643	CP	mg/L	4.0	4.1	<1	30%	Pass
Mercury	S21-Fe25643	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel	S21-Fe25643	CP	mg/L	0.01	< 0.01	66	30%	Fail
Zinc	S21-Fe25643	CP	mg/L	22	21	2.0	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
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Andrew Black	Analytical Services Manager
John Nguyen	Senior Analyst-Metal (NSW)



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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Ramboll Environ Australia Pty Ltd
Level 3/100 Pacific Highway
North Sydney
NSW 2060



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Stephen Maxwell**

Report **773658-S**
Project name
Project ID **318001025-1**
Received Date **Feb 12, 2021**

Client Sample ID			QA01	QA03	QA05	QA07
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe25590	S21-Fe25591	S21-Fe25592	S21-Fe25593
Date Sampled			Feb 09, 2021	Feb 09, 2021	Feb 09, 2021	Feb 09, 2021
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	92	60	340	36
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	7.7	6.6	5.0	7.0
Sulphur	5	mg/kg	1300	7900	2500	1800
% Moisture	1	%	15	21	9.9	17
Heavy Metals						
Arsenic	2	mg/kg	4.5	120	93	58
Cadmium	0.4	mg/kg	0.7	37	21	22
Chromium	5	mg/kg	16	48	31	17
Copper	5	mg/kg	12	1200	650	560
Lead	5	mg/kg	49	3900	3700	1400
Mercury	0.1	mg/kg	< 0.1	1.2	0.8	1.0
Nickel	5	mg/kg	9.8	52	31	14
Zinc	5	mg/kg	150	9200	5200	4000

Client Sample ID			QA08	QA09	QA10	QA11
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe25594	S21-Fe25595	S21-Fe25596	S21-Fe25597
Date Sampled			Feb 09, 2021	Feb 09, 2021	Feb 09, 2021	Feb 09, 2021
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	140	57	86	52
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	6.4	6.6	6.1	6.4
Sulphur	5	mg/kg	290	720	2000	1800
% Moisture	1	%	8.7	18	33	31
Heavy Metals						
Arsenic	2	mg/kg	13	69	40	110
Cadmium	0.4	mg/kg	2.0	25	21	11
Chromium	5	mg/kg	19	22	34	21
Copper	5	mg/kg	48	910	380	480
Lead	5	mg/kg	110	3200	3100	2300
Mercury	0.1	mg/kg	< 0.1	1.8	0.6	0.4
Nickel	5	mg/kg	17	25	11	33
Zinc	5	mg/kg	450	5600	3100	1500

Client Sample ID			QA12	QA13	QA14	QA15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe25598	S21-Fe25599	S21-Fe25600	S21-Fe25601
Date Sampled			Feb 10, 2021	Feb 10, 2021	Feb 10, 2021	Feb 10, 2021
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	21	18	22	54
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	5.2	5.7	4.9	7.3
Sulphur	5	mg/kg	670	390	180	770
% Moisture	1	%	14	1.7	8.6	12
Heavy Metals						
Arsenic	2	mg/kg	71	14	11	10
Cadmium	0.4	mg/kg	3.0	1.5	1.5	0.5
Chromium	5	mg/kg	20	20	22	15
Copper	5	mg/kg	640	98	44	40
Lead	5	mg/kg	4700	430	270	230
Mercury	0.1	mg/kg	2.3	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	22	20	10	11
Zinc	5	mg/kg	1400	400	260	690

Client Sample ID			QA16	QA18	QA19	QA20
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe25602	S21-Fe25603	S21-Fe25604	S21-Fe25605
Date Sampled			Feb 10, 2021	Feb 10, 2021	Feb 10, 2021	Feb 10, 2021
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	120	75	87	340
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	5.0	5.9	6.9	4.3
Sulphur	5	mg/kg	820	4200	8200	440
% Moisture	1	%	11	2.2	18	3.8
Heavy Metals						
Arsenic	2	mg/kg	22	44	150	9.5
Cadmium	0.4	mg/kg	1.2	7.5	270	4.2
Chromium	5	mg/kg	28	12	25	9.9
Copper	5	mg/kg	130	1500	630	50
Lead	5	mg/kg	1200	4500	2400	110
Mercury	0.1	mg/kg	< 0.1	< 0.1	1.5	< 0.1
Nickel	5	mg/kg	15	8.7	18	< 5
Zinc	5	mg/kg	690	29000	100000	1200

Client Sample ID			QA21	QA23	QA24	QA25
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe25606	S21-Fe25607	S21-Fe25608	S21-Fe25609
Date Sampled			Feb 10, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	17	80	130	120
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	5.0	6.3	5.7	5.7
Sulphur	5	mg/kg	200	650	640	940
% Moisture	1	%	17	4.8	29	29

Client Sample ID			QA21 Soil S21-Fe25606 Feb 10, 2021	QA23 Soil S21-Fe25607 Feb 11, 2021	QA24 Soil S21-Fe25608 Feb 11, 2021	QA25 Soil S21-Fe25609 Feb 11, 2021
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	22	21	14	12
Cadmium	0.4	mg/kg	4.3	4.6	2.3	2.2
Chromium	5	mg/kg	36	12	20	18
Copper	5	mg/kg	73	170	85	89
Lead	5	mg/kg	350	950	600	650
Mercury	0.1	mg/kg	0.1	0.1	< 0.1	< 0.1
Nickel	5	mg/kg	12	6.8	15	10
Zinc	5	mg/kg	1700	1600	870	850

Client Sample ID			QA26 Soil S21-Fe25610 Feb 11, 2021	QA27 Soil S21-Fe25611 Feb 11, 2021	QA28 Soil S21-Fe25612 Feb 11, 2021	QA29 Soil S21-Fe25613 Feb 11, 2021
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	500	< 10	25	21
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	7.4	6.3	5.9	6.5
Sulphur	5	mg/kg	2000	49	780	200
% Moisture	1	%	1.9	10	17	15
Heavy Metals						
Arsenic	2	mg/kg	22	6.0	16	11
Cadmium	0.4	mg/kg	3.2	< 0.4	3.7	2.2
Chromium	5	mg/kg	29	6.9	11	13
Copper	5	mg/kg	160	22	140	89
Lead	5	mg/kg	1600	66	750	430
Mercury	0.1	mg/kg	0.2	< 0.1	< 0.1	0.1
Nickel	5	mg/kg	9.5	< 5	5.5	5.6
Zinc	5	mg/kg	1300	96	820	920

Client Sample ID			QA30 Soil S21-Fe25614 Feb 11, 2021	QA31 Soil S21-Fe25615 Feb 11, 2021	QA32 Soil S21-Fe25616 Feb 11, 2021	QA33 Soil S21-Fe25617 Feb 11, 2021
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	21	220	15	56
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	6.5	5.2	6.0	6.9
Sulphur	5	mg/kg	170	760	140	590
% Moisture	1	%	15	19	12	17
Heavy Metals						
Arsenic	2	mg/kg	11	19	8.8	45
Cadmium	0.4	mg/kg	2.5	3.0	1.5	2.1
Chromium	5	mg/kg	18	15	12	20
Copper	5	mg/kg	90	150	89	89
Lead	5	mg/kg	400	1200	380	520
Mercury	0.1	mg/kg	0.1	0.2	< 0.1	0.4

Client Sample ID			QA30	QA31	QA32	QA33
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe25614	S21-Fe25615	S21-Fe25616	S21-Fe25617
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Nickel	5	mg/kg	21	10	< 5	6.3
Zinc	5	mg/kg	970	1100	370	1000

Client Sample ID			SED01	SED02	SED03	SED04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe25625	S21-Fe25626	S21-Fe25627	S21-Fe25628
Date Sampled			Feb 10, 2021	Feb 10, 2021	Feb 10, 2021	Feb 10, 2021
Test/Reference	LOR	Unit				
% Moisture	1	%	26	40	9.4	25
Heavy Metals						
Arsenic	2	mg/kg	65	44	16	21
Cadmium	0.4	mg/kg	0.8	0.5	0.8	0.5
Chromium	5	mg/kg	9.0	15	23	21
Copper	5	mg/kg	210	210	100	55
Lead	5	mg/kg	1100	1100	590	670
Mercury	0.1	mg/kg	0.2	0.2	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	12	8.3
Zinc	5	mg/kg	800	600	3800	490

Client Sample ID			SED05	SED06	DRAIN01	QA01_SED
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe25629	S21-Fe25630	S21-Fe25631	S21-Fe25632
Date Sampled			Feb 10, 2021	Feb 10, 2021	Feb 10, 2021	Feb 10, 2021
Test/Reference	LOR	Unit				
% Moisture	1	%	9.2	18	3.6	10
Heavy Metals						
Arsenic	2	mg/kg	18	24	25	9.6
Cadmium	0.4	mg/kg	0.9	2.2	1.9	0.4
Chromium	5	mg/kg	19	21	22	11
Copper	5	mg/kg	68	80	150	26
Lead	5	mg/kg	780	1000	1500	250
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1
Nickel	5	mg/kg	8.5	9.5	7.1	< 5
Zinc	5	mg/kg	470	910	920	440

Client Sample ID			HA-SMC08_0.1	HA-SMC08_0.5
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-Fe25635	S21-Fe25636
Date Sampled			Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit		
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	550	30
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	6.4	7.0
% Moisture	1	%	27	1.3
% Clay	1	%	< 1	9.0
Total Organic Carbon	0.1	%	8.3	0.2
Heavy Metals				
Iron (%)	0.01	%	1.5	1.1
Cation Exchange Capacity				
Cation Exchange Capacity	0.05	meq/100g	15	7.3

Sample History

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

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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 13, 2021	7 Days
Cation Exchange Capacity - Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage	Melbourne	Feb 15, 2021	180 Days
pH (1:5 Aqueous extract at 25°C as rec.) - Method: LTM-GEN-7090 pH in soil by ISE	Melbourne	Feb 13, 2021	7 Days
Sulphur - Method: LTM-MET-3010 Alkali Metals Sulfur Silicon and Phosphorus by ICP-AES	Melbourne	Feb 16, 2021	7 Days
% Clay - Method: LTM-GEN-7040	Brisbane	Feb 15, 2021	14 Days
Total Organic Carbon - Method: LTM-INO-4060 Total Organic Carbon in water and soil	Melbourne	Feb 15, 2021	28 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Feb 13, 2021	180 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Feb 13, 2021	180 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Feb 12, 2021	14 Days

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Order No.:
Report #: 773658
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Feb 12, 2021 1:00 PM
Due: Feb 17, 2021
Priority: 3 Day
Contact Name: Stephen Maxwell

Project Name:
Project ID: 318001025-1

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Conductivity (1:5 aqueous extract at 25°C as rec.)	Iron (%)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Sulphur	Total Organic Carbon	AUS Leaching Procedure	USA Leaching Procedure	Metals M8	Metals M8 filtered	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID															
1	QA01	Feb 09, 2021		Soil	S21-Fe25590	X			X	X					X			X		
2	QA03	Feb 09, 2021		Soil	S21-Fe25591	X			X	X					X			X		
3	QA05	Feb 09, 2021		Soil	S21-Fe25592	X			X	X					X			X		
4	QA07	Feb 09, 2021		Soil	S21-Fe25593	X			X	X					X			X		
5	QA08	Feb 09, 2021		Soil	S21-Fe25594	X			X	X					X			X		
6	QA09	Feb 09, 2021		Soil	S21-Fe25595	X			X	X					X			X		
7	QA10	Feb 09, 2021		Soil	S21-Fe25596	X			X	X					X			X		
8	QA11	Feb 09, 2021		Soil	S21-Fe25597	X			X	X					X			X		
9	QA12	Feb 10, 2021		Soil	S21-Fe25598	X			X	X					X			X		

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
10	QA13	Feb 10, 2021		Soil	S21-Fe25599		X			X	X				X			X		
11	QA14	Feb 10, 2021		Soil	S21-Fe25600		X			X	X				X			X		
12	QA15	Feb 10, 2021		Soil	S21-Fe25601		X			X	X				X			X		
13	QA16	Feb 10, 2021		Soil	S21-Fe25602		X			X	X				X			X		
14	QA18	Feb 10, 2021		Soil	S21-Fe25603		X			X	X				X			X		
15	QA19	Feb 10, 2021		Soil	S21-Fe25604		X			X	X				X			X		
16	QA20	Feb 10, 2021		Soil	S21-Fe25605		X			X	X				X			X		
17	QA21	Feb 10, 2021		Soil	S21-Fe25606		X			X	X				X			X		
18	QA23	Feb 11, 2021		Soil	S21-Fe25607		X			X	X				X			X		
19	QA24	Feb 11, 2021		Soil	S21-Fe25608		X			X	X				X			X		
20	QA25	Feb 11, 2021		Soil	S21-Fe25609		X			X	X				X			X		

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
21	QA26	Feb 11, 2021		Soil	S21-Fe25610		X			X	X				X			X		
22	QA27	Feb 11, 2021		Soil	S21-Fe25611		X			X	X				X			X		
23	QA28	Feb 11, 2021		Soil	S21-Fe25612		X			X	X				X			X		
24	QA29	Feb 11, 2021		Soil	S21-Fe25613		X			X	X				X			X		
25	QA30	Feb 11, 2021		Soil	S21-Fe25614		X			X	X				X			X		
26	QA31	Feb 11, 2021		Soil	S21-Fe25615		X			X	X				X			X		
27	QA32	Feb 11, 2021		Soil	S21-Fe25616		X			X	X				X			X		
28	QA33	Feb 11, 2021		Soil	S21-Fe25617		X			X	X				X			X		
29	SW01	Feb 10, 2021		Water	S21-Fe25618										X	X				X
30	SW02	Feb 10, 2021		Water	S21-Fe25619										X	X				X
31	SW03	Feb 10, 2021		Water	S21-Fe25620										X	X				X

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
32	SW04	Feb 10, 2021		Water	S21-Fe25621										X	X				X
33	SW05	Feb 10, 2021		Water	S21-Fe25622										X	X				X
34	SW06	Feb 10, 2021		Water	S21-Fe25623										X	X				X
35	QA01_SW	Feb 10, 2021		Water	S21-Fe25624										X	X				X
36	SED01	Feb 10, 2021		Soil	S21-Fe25625										X			X		
37	SED02	Feb 10, 2021		Soil	S21-Fe25626										X			X		
38	SED03	Feb 10, 2021		Soil	S21-Fe25627										X			X		
39	SED04	Feb 10, 2021		Soil	S21-Fe25628										X			X		
40	SED05	Feb 10, 2021		Soil	S21-Fe25629										X			X		
41	SED06	Feb 10, 2021		Soil	S21-Fe25630										X			X		
42	DRAIN01	Feb 10, 2021		Soil	S21-Fe25631										X			X		

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
43	QA01_SED	Feb 10, 2021		Soil	S21-Fe25632										X			X		
44	R01	Feb 10, 2021		Water	S21-Fe25633										X					
45	R02	Feb 10, 2021		Water	S21-Fe25634										X					
46	HA-SMC08_0.1	Feb 11, 2021		Soil	S21-Fe25635	X		X	X			X					X		X	
47	HA-SMC08_0.5	Feb 11, 2021		Soil	S21-Fe25636	X		X	X			X					X		X	
48	QA03	Feb 09, 2021		AUS Leachate	S21-Fe25637								X		X					
49	QA05	Feb 09, 2021		AUS Leachate	S21-Fe25638								X		X					
50	QA18	Feb 10, 2021		AUS Leachate	S21-Fe25639								X		X					
51	QA19	Feb 10, 2021		AUS Leachate	S21-Fe25640								X		X					

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Project ID: 318001025-1

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Conductivity (1:5 aqueous extract at 25°C as rec.)	Iron (%)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Sulphur	Total Organic Carbon	AUS Leaching Procedure	USA Leaching Procedure	Metals M8	Metals M8 filtered	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
52	QA03	Feb 09, 2021		US Leachate	S21-Fe25641									X	X					
53	QA05	Feb 09, 2021		US Leachate	S21-Fe25642									X	X					
54	QA18	Feb 10, 2021		US Leachate	S21-Fe25643									X	X					
55	QA19	Feb 10, 2021		US Leachate	S21-Fe25644									X	X					
Test Counts						2	28	2	30	30	28	2	4	4	53	7	38	38	2	7

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.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	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.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

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. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. 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.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. 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	
Sulphur			mg/kg	< 5		5	Pass	
Total Organic Carbon			%	< 0.1		0.1	Pass	
Method Blank								
Heavy Metals								
Arsenic			mg/kg	< 2		2	Pass	
Cadmium			mg/kg	< 0.4		0.4	Pass	
Chromium			mg/kg	< 5		5	Pass	
Copper			mg/kg	< 5		5	Pass	
Lead			mg/kg	< 5		5	Pass	
Mercury			mg/kg	< 0.1		0.1	Pass	
Nickel			mg/kg	< 5		5	Pass	
Zinc			mg/kg	< 5		5	Pass	
Method Blank								
Cation Exchange Capacity								
Cation Exchange Capacity			meq/100g	< 0.05		0.05	Pass	
LCS - % Recovery								
Conductivity (1:5 aqueous extract at 25°C as rec.)			%	96		70-130	Pass	
Total Organic Carbon			%	104		70-130	Pass	
LCS - % Recovery								
Heavy Metals								
Arsenic			%	102		80-120	Pass	
Cadmium			%	101		80-120	Pass	
Chromium			%	100		80-120	Pass	
Copper			%	100		80-120	Pass	
Lead			%	97		80-120	Pass	
Mercury			%	98		80-120	Pass	
Nickel			%	102		80-120	Pass	
Zinc			%	100		80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	S21-Fe25591	CP	%	100		75-125	Pass	
Cadmium	S21-Fe25591	CP	%	105		75-125	Pass	
Chromium	S21-Fe25591	CP	%	87		75-125	Pass	
Lead	S21-Fe25591	CP	%	82		75-125	Pass	
Mercury	S21-Fe25591	CP	%	105		75-125	Pass	
Nickel	S21-Fe25591	CP	%	84		75-125	Pass	
Zinc	S21-Fe25591	CP	%	114		75-125	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	S21-Fe25611	CP	%	119		75-125	Pass	
Cadmium	S21-Fe25611	CP	%	122		75-125	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Copper	M21-Fe27342	NCP	%	84		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	S21-Fe25590	CP	uS/cm	92	110	20	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	S21-Fe25590	CP	pH Units	7.7	7.7	Pass	30%	Pass	
Sulphur	S21-Fe25590	CP	mg/kg	1300	1200	1.0	30%	Pass	
% Moisture	S21-Fe25590	CP	%	15	19	24	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe25590	CP	mg/kg	4.5	6.3	34	30%	Fail	Q15
Cadmium	S21-Fe25590	CP	mg/kg	0.7	0.6	12	30%	Pass	
Chromium	S21-Fe25590	CP	mg/kg	16	25	40	30%	Fail	Q15
Copper	S21-Fe25590	CP	mg/kg	12	17	34	30%	Fail	Q15
Lead	S21-Fe25590	CP	mg/kg	49	48	3.0	30%	Pass	
Mercury	S21-Fe25590	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Fe25590	CP	mg/kg	9.8	14	34	30%	Fail	Q15
Zinc	S21-Fe25590	CP	mg/kg	150	160	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	S21-Fe25600	CP	uS/cm	22	23	8.0	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	S21-Fe25600	CP	pH Units	4.9	4.9	Pass	30%	Pass	
Sulphur	S21-Fe25600	CP	mg/kg	180	220	20	30%	Pass	
% Moisture	S21-Fe25600	CP	%	8.6	8.3	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	S21-Fe25610	CP	uS/cm	500	480	3.0	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	S21-Fe25610	CP	pH Units	7.4	7.5	Pass	30%	Pass	
% Moisture	S21-Fe25610	CP	%	1.9	2.1	8.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe25610	CP	mg/kg	22	23	6.0	30%	Pass	
Cadmium	S21-Fe25610	CP	mg/kg	3.2	3.3	2.0	30%	Pass	
Chromium	S21-Fe25610	CP	mg/kg	29	29	2.0	30%	Pass	
Copper	S21-Fe25610	CP	mg/kg	160	190	16	30%	Pass	
Lead	S21-Fe25610	CP	mg/kg	1600	1700	4.0	30%	Pass	
Mercury	S21-Fe25610	CP	mg/kg	0.2	0.2	2.0	30%	Pass	
Nickel	S21-Fe25610	CP	mg/kg	9.5	9.3	3.0	30%	Pass	
Zinc	S21-Fe25610	CP	mg/kg	1300	2000	38	30%	Fail	Q02
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe25617	CP	mg/kg	45	59	26	30%	Pass	
Cadmium	S21-Fe25617	CP	mg/kg	2.1	2.3	6.0	30%	Pass	
Chromium	S21-Fe25617	CP	mg/kg	20	18	10	30%	Pass	
Copper	S21-Fe25617	CP	mg/kg	89	95	6.0	30%	Pass	
Lead	S21-Fe25617	CP	mg/kg	520	550	5.0	30%	Pass	
Mercury	S21-Fe25617	CP	mg/kg	0.4	0.3	11	30%	Pass	
Nickel	S21-Fe25617	CP	mg/kg	6.3	6.3	1.0	30%	Pass	
Zinc	S21-Fe25617	CP	mg/kg	1000	1300	22	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe25627	CP	%	9.4	9.9	6.0	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S21-Fe25635	CP	%	27	28	4.0	30%	Pass
Total Organic Carbon	S21-Fe13324	NCP	%	1.8	1.6	8.0	30%	Pass
Duplicate								
Cation Exchange Capacity				Result 1	Result 2	RPD		
Cation Exchange Capacity	S21-Fe08539	NCP	meq/100g	16	17	7.0	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
Q02	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Andrew Black	Analytical Services Manager
Charl Du Preez	Senior Analyst-Inorganic (NSW)
Emily Rosenberg	Senior Analyst-Metal (VIC)
John Nguyen	Senior Analyst-Metal (NSW)
Jonathon Angell	Senior Analyst-Inorganic (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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Ramboll Environ Australia Pty Ltd
Level 3/100 Pacific Highway
North Sydney
NSW 2060



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Stephen Maxwell

Report 773658-W
Project name
Project ID 318001025-1
Received Date Feb 12, 2021

Client Sample ID			SW01	SW02	SW03	SW04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S21-Fe25618	S21-Fe25619	S21-Fe25620	S21-Fe25621
Date Sampled			Feb 10, 2021	Feb 10, 2021	Feb 10, 2021	Feb 10, 2021
Test/Reference	LOR	Unit				
Hardness mg equivalent CaCO ₃ /L	1	mg/L	690	560	28	47
Alkali Metals						
Calcium	0.5	mg/L	120	100	3.2	6.9
Magnesium	0.5	mg/L	92	75	4.8	7.4
Potassium	0.5	mg/L	1.5	1.9	1.3	1.6
Sodium	0.5	mg/L	83	66	14	14
Heavy Metals						
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.001	0.002	0.002
Cadmium	0.0002	mg/L	0.032	0.024	0.0014	0.0057
Cadmium (filtered)	0.0002	mg/L	0.028	0.023	0.0014	0.0051
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Copper	0.001	mg/L	0.20	0.15	0.045	0.040
Copper (filtered)	0.001	mg/L	0.16	0.13	0.039	0.036
Lead	0.001	mg/L	0.35	0.41	0.075	0.22
Lead (filtered)	0.001	mg/L	0.26	0.34	0.052	0.16
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.013	0.017	0.005	0.010
Nickel (filtered)	0.001	mg/L	0.010	0.015	0.004	0.009
Zinc	0.005	mg/L	18	27	0.73	2.5
Zinc (filtered)	0.005	mg/L	15	23	0.66	2.3

Client Sample ID			SW05	SW06	QA01_SW	R01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S21-Fe25622	S21-Fe25623	S21-Fe25624	S21-Fe25633
Date Sampled			Feb 10, 2021	Feb 10, 2021	Feb 10, 2021	Feb 10, 2021
Test/Reference	LOR	Unit				
Hardness mg equivalent CaCO ₃ /L	1	mg/L	70	71	71	-

Client Sample ID			SW05	SW06	QA01_SW	R01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S21-Fe25622	S21-Fe25623	S21-Fe25624	S21-Fe25633
Date Sampled			Feb 10, 2021	Feb 10, 2021	Feb 10, 2021	Feb 10, 2021
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	12	11	12	-
Magnesium	0.5	mg/L	9.8	10	10	-
Potassium	0.5	mg/L	1.8	1.8	1.8	-
Sodium	0.5	mg/L	15	16	15	-
Heavy Metals						
Arsenic	0.001	mg/L	0.001	0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	0.002	0.002	-
Cadmium	0.0002	mg/L	0.012	0.0093	0.012	< 0.0002
Cadmium (filtered)	0.0002	mg/L	0.011	0.0092	0.010	-
Chromium	0.001	mg/L	0.001	0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	0.001	-
Copper	0.001	mg/L	0.049	0.042	0.052	< 0.001
Copper (filtered)	0.001	mg/L	0.039	0.036	0.038	-
Lead	0.001	mg/L	0.25	0.17	0.27	0.001
Lead (filtered)	0.001	mg/L	0.13	0.12	0.13	-
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Nickel	0.001	mg/L	0.015	0.014	0.015	< 0.001
Nickel (filtered)	0.001	mg/L	0.013	0.013	0.012	-
Zinc	0.005	mg/L	3.8	3.3	3.9	< 0.005
Zinc (filtered)	0.005	mg/L	3.5	3.3	3.5	-

Client Sample ID			R02
Sample Matrix			Water
Eurofins Sample No.			S21-Fe25634
Date Sampled			Feb 10, 2021
Test/Reference	LOR	Unit	
Heavy Metals			
Arsenic	0.001	mg/L	< 0.001
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Lead	0.001	mg/L	0.005
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	0.008

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

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
Eurofins Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO ₃ /L	Sydney	Feb 16, 2021	28 Days
- Method: E020.1 Hardness in water			
Alkali Metals	Sydney	Feb 16, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8	Sydney	Feb 16, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8 filtered	Sydney	Feb 12, 2021	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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NATA # 1261 Site # 18217

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ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 773658
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Feb 12, 2021 1:00 PM
Due: Feb 17, 2021
Priority: 3 Day
Contact Name: Stephen Maxwell

Project Name:
Project ID: 318001025-1

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Conductivity (1:5 aqueous extract at 25°C as rec.)	Iron (%)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Sulphur	Total Organic Carbon	AUS Leaching Procedure	USA Leaching Procedure	Metals M8	Metals M8 filtered	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID															
1	QA01	Feb 09, 2021		Soil	S21-Fe25590	X			X	X					X			X		
2	QA03	Feb 09, 2021		Soil	S21-Fe25591	X			X	X					X			X		
3	QA05	Feb 09, 2021		Soil	S21-Fe25592	X			X	X					X			X		
4	QA07	Feb 09, 2021		Soil	S21-Fe25593	X			X	X					X			X		
5	QA08	Feb 09, 2021		Soil	S21-Fe25594	X			X	X					X			X		
6	QA09	Feb 09, 2021		Soil	S21-Fe25595	X			X	X					X			X		
7	QA10	Feb 09, 2021		Soil	S21-Fe25596	X			X	X					X			X		
8	QA11	Feb 09, 2021		Soil	S21-Fe25597	X			X	X					X			X		
9	QA12	Feb 10, 2021		Soil	S21-Fe25598	X			X	X					X			X		

Australia

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Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 773658
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Feb 12, 2021 1:00 PM
Due: Feb 17, 2021
Priority: 3 Day
Contact Name: Stephen Maxwell

Project Name:
Project ID: 318001025-1

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Conductivity (1:5 aqueous extract at 25°C as rec.)	Iron (%)	pH (1:5 Aqueous extract at 25°C as rec.)	pH (1:5 Aqueous extract at 25°C as rec.)	Sulphur	Total Organic Carbon	AUS Leaching Procedure	USA Leaching Procedure	Metals M8	Metals M8 filtered	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness
Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
10	QA13	Feb 10, 2021		Soil	S21-Fe25599		X			X	X				X			X		
11	QA14	Feb 10, 2021		Soil	S21-Fe25600		X			X	X				X			X		
12	QA15	Feb 10, 2021		Soil	S21-Fe25601		X			X	X				X			X		
13	QA16	Feb 10, 2021		Soil	S21-Fe25602		X			X	X				X			X		
14	QA18	Feb 10, 2021		Soil	S21-Fe25603		X			X	X				X			X		
15	QA19	Feb 10, 2021		Soil	S21-Fe25604		X			X	X				X			X		
16	QA20	Feb 10, 2021		Soil	S21-Fe25605		X			X	X				X			X		
17	QA21	Feb 10, 2021		Soil	S21-Fe25606		X			X	X				X			X		
18	QA23	Feb 11, 2021		Soil	S21-Fe25607		X			X	X				X			X		
19	QA24	Feb 11, 2021		Soil	S21-Fe25608		X			X	X				X			X		
20	QA25	Feb 11, 2021		Soil	S21-Fe25609		X			X	X				X			X		

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
21	QA26	Feb 11, 2021		Soil	S21-Fe25610		X			X	X				X			X		
22	QA27	Feb 11, 2021		Soil	S21-Fe25611		X			X	X				X			X		
23	QA28	Feb 11, 2021		Soil	S21-Fe25612		X			X	X				X			X		
24	QA29	Feb 11, 2021		Soil	S21-Fe25613		X			X	X				X			X		
25	QA30	Feb 11, 2021		Soil	S21-Fe25614		X			X	X				X			X		
26	QA31	Feb 11, 2021		Soil	S21-Fe25615		X			X	X				X			X		
27	QA32	Feb 11, 2021		Soil	S21-Fe25616		X			X	X				X			X		
28	QA33	Feb 11, 2021		Soil	S21-Fe25617		X			X	X				X			X		
29	SW01	Feb 10, 2021		Water	S21-Fe25618										X	X				X
30	SW02	Feb 10, 2021		Water	S21-Fe25619										X	X				X
31	SW03	Feb 10, 2021		Water	S21-Fe25620										X	X				X

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
32	SW04	Feb 10, 2021		Water	S21-Fe25621										X	X				X
33	SW05	Feb 10, 2021		Water	S21-Fe25622										X	X				X
34	SW06	Feb 10, 2021		Water	S21-Fe25623										X	X				X
35	QA01_SW	Feb 10, 2021		Water	S21-Fe25624										X	X				X
36	SED01	Feb 10, 2021		Soil	S21-Fe25625										X			X		
37	SED02	Feb 10, 2021		Soil	S21-Fe25626										X			X		
38	SED03	Feb 10, 2021		Soil	S21-Fe25627										X			X		
39	SED04	Feb 10, 2021		Soil	S21-Fe25628										X			X		
40	SED05	Feb 10, 2021		Soil	S21-Fe25629										X			X		
41	SED06	Feb 10, 2021		Soil	S21-Fe25630										X			X		
42	DRAIN01	Feb 10, 2021		Soil	S21-Fe25631										X			X		

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
43	QA01_SED	Feb 10, 2021		Soil	S21-Fe25632										X			X		
44	R01	Feb 10, 2021		Water	S21-Fe25633										X					
45	R02	Feb 10, 2021		Water	S21-Fe25634										X					
46	HA-SMC08_0.1	Feb 11, 2021		Soil	S21-Fe25635	X		X	X			X					X		X	
47	HA-SMC08_0.5	Feb 11, 2021		Soil	S21-Fe25636	X		X	X			X					X		X	
48	QA03	Feb 09, 2021		AUS Leachate	S21-Fe25637								X		X					
49	QA05	Feb 09, 2021		AUS Leachate	S21-Fe25638								X		X					
50	QA18	Feb 10, 2021		AUS Leachate	S21-Fe25639								X		X					
51	QA19	Feb 10, 2021		AUS Leachate	S21-Fe25640								X		X					

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Melbourne Laboratory - NATA Site # 1254 & 14271								X	X		X	X					X	X	X	
Sydney Laboratory - NATA Site # 18217							X			X			X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X														
Perth Laboratory - NATA Site # 23736																				
Mayfield Laboratory																				
External Laboratory																				
52	QA03	Feb 09, 2021		US Leachate	S21-Fe25641									X	X					
53	QA05	Feb 09, 2021		US Leachate	S21-Fe25642									X	X					
54	QA18	Feb 10, 2021		US Leachate	S21-Fe25643									X	X					
55	QA19	Feb 10, 2021		US Leachate	S21-Fe25644									X	X					
Test Counts						2	28	2	30	30	28	2	4	4	53	7	38	38	2	7

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.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	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.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

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. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. 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.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. 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							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	99			80-120	Pass	
Magnesium	%	105			80-120	Pass	
Potassium	%	97			80-120	Pass	
Sodium	%	104			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	96			80-120	Pass	
Arsenic (filtered)	%	89			80-120	Pass	
Cadmium	%	102			80-120	Pass	
Cadmium (filtered)	%	93			80-120	Pass	
Chromium	%	105			80-120	Pass	
Chromium (filtered)	%	91			80-120	Pass	
Copper	%	102			80-120	Pass	
Copper (filtered)	%	90			80-120	Pass	
Lead	%	108			80-120	Pass	
Lead (filtered)	%	91			80-120	Pass	
Mercury	%	118			80-120	Pass	
Mercury (filtered)	%	98			80-120	Pass	
Nickel	%	105			80-120	Pass	
Nickel (filtered)	%	91			80-120	Pass	
Zinc	%	99			80-120	Pass	
Zinc (filtered)	%	117			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	S21-Fe21192	NCP	%	99			75-125	Pass	
Magnesium	S21-Fe21192	NCP	%	97			75-125	Pass	
Potassium	S21-Fe21192	NCP	%	92			75-125	Pass	
Sodium	S21-Fe21192	NCP	%	95			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S21-Fe21192	NCP	%	96			75-125	Pass	
Arsenic (filtered)	S21-Fe20669	NCP	%	87			75-125	Pass	
Cadmium	S21-Fe21192	NCP	%	99			75-125	Pass	
Cadmium (filtered)	S21-Fe20669	NCP	%	87			75-125	Pass	
Chromium	S21-Fe21192	NCP	%	101			75-125	Pass	
Chromium (filtered)	S21-Fe20669	NCP	%	83			75-125	Pass	
Copper	S21-Fe21192	NCP	%	99			75-125	Pass	
Copper (filtered)	S21-Fe20669	NCP	%	81			75-125	Pass	
Lead	S21-Fe21192	NCP	%	103			75-125	Pass	
Lead (filtered)	S21-Fe20669	NCP	%	85			75-125	Pass	
Mercury	S21-Fe21192	NCP	%	115			75-125	Pass	
Mercury (filtered)	S21-Fe20669	NCP	%	88			75-125	Pass	
Nickel	S21-Fe21192	NCP	%	101			75-125	Pass	
Nickel (filtered)	S21-Fe20669	NCP	%	82			75-125	Pass	
Zinc	S21-Fe21192	NCP	%	97			75-125	Pass	
Zinc (filtered)	S21-Fe20669	NCP	%	83			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Hardness mg equivalent CaCO ₃ /L	S21-Fe25848	NCP	mg/L	270	250	6.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	S21-Fe25848	NCP	mg/L	73	64	13	30%	Pass	
Magnesium	S21-Fe25848	NCP	mg/L	21	23	6.0	30%	Pass	
Potassium	S21-Fe25848	NCP	mg/L	73	77	6.0	30%	Pass	
Sodium	S21-Fe25848	NCP	mg/L	dil543	dil582	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe25848	NCP	mg/L	0.002	0.002	10	30%	Pass	
Arsenic (filtered)	S21-Fe30856	NCP	mg/L	0.003	0.003	2.0	30%	Pass	
Cadmium	S21-Fe25848	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S21-Fe30856	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S21-Fe25848	NCP	mg/L	0.001	0.002	7.0	30%	Pass	
Chromium (filtered)	S21-Fe30856	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S21-Fe25848	NCP	mg/L	0.10	0.11	5.0	30%	Pass	
Copper (filtered)	S21-Fe30856	NCP	mg/L	0.003	0.003	2.0	30%	Pass	
Lead	S21-Fe25848	NCP	mg/L	0.002	0.003	2.0	30%	Pass	
Lead (filtered)	S21-Fe30856	NCP	mg/L	0.001	0.002	52	30%	Fail	Q15
Mercury	S21-Fe25848	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	S21-Fe30856	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S21-Fe25848	NCP	mg/L	0.007	0.007	6.0	30%	Pass	
Nickel (filtered)	S21-Fe30856	NCP	mg/L	0.013	0.014	3.0	30%	Pass	
Zinc	S21-Fe25848	NCP	mg/L	0.13	0.15	11	30%	Pass	
Zinc (filtered)	S21-Fe30856	NCP	mg/L	0.025	0.030	15	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
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Andrew Black	Analytical Services Manager
John Nguyen	Senior Analyst-Metal (NSW)



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](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Chain of Custody & Analysis Request Form

Tel: 02 9954 8100 (Ramboll)

Laboratory Details

Tel: 9900 8490

Lab. Name:

Eurofins

Fax:

Lab. Address:

Unit 77 Friesian Close SANDGATE, NSW, 2304

Contact Name:

Final Report by:

Lab. Ref:

Lab Quote No:

Project Name: Stations Masters CottageProject Number: 318001025Site: BratwoodCaptains FlatSample collected by: SASample Results to be returned to: spw@ramboll.com.aujauid@ramboll.comsmaxwell@ramboll.com

Specifications:

1. Urgent TAT required? (Please circle: 24hr 48hr days)

STANDARD

☒ Yes☐ No☐ N/A

2. Fast TAT Guarantee Required? Yes

☐ Yes☐ No☐ N/A

3. Is any sediment layer present in waters to be excluded from extractions?

☐ Yes☐ No☐ N/A

4. Special storage requirements?

☐ Yes☐ No☐ N/A

5. Preservation requirements?

☐ Yes☐ No☐ N/A

6. Other requirements?

☒ Yes☐ No☐ N/A7. Report Format: equls / excel / pdf8. Project Manager: Maxwelltel: 9900 8100

Lab. ID

Sample ID

Sampling Date

Sampling Time

Matrix

Preservation

Container

PFAS Extended Suite - 30 PFAS - Standard Level

XTRH, BTEXN, PAH

Asbestos (presence/absence)

Send to Envirolab

HOLD

Remarks & comments

Relinquished By: Sony AuldDate: 28/10Time: 4pmReceived by: Edmund

Name:

Date: 28/10Time: 4pm

of: Ramboll

of: MaxwellTime: 4pm

Received in good condition?

Yes/No/NA

Method of Shipment

Consignment Note No.

Transport Co:

From: #AU04_Enviro_Sample_NSW <EnviroSampleNSW@eurofins.com>

Sent: Tuesday, 2 November 2021 12:58 PM

To: Andrew Black <AndrewBlack@eurofins.com>

Subject: Fw: Eurofins Sample Receipt Advice - Report 836638 : Site STATIONS MASTERS COTTAGE CAPTAINS FLAT (318001025)

Hi Andrew,

Are we able to do PAH on spike, blank and lab spike?

Kind regards,
Nathan

Sample Receipt Officer

Eurofins | Environment Testing

Unit F3, Parkview Building

16 Mars Road

LANE COVE WEST NSW 2066

AUSTRALIA

Grace Tuckwell

From: Jenny Auld <JAULD@ramboll.com>
Sent: Tuesday, 2 November 2021 7:26 PM
To: #AU04_Enviro_Sample_NSW; Stephen Maxwell
Subject: Re: Eurofins Sample Receipt Advice - Report 836638 : Site STATIONS MASTERS COTTAGE CAPTAINS FLAT (318001025)

Follow Up Flag: Follow up
Flag Status: Flagged

EXTERNAL EMAIL*

Sorry Nathan, just BTEXN and TRH then.

Apologies for the confusion.

Thanks,
Jenny Auld

From: EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>
Sent: Tuesday, November 2, 2021 1:01:21 PM
To: Stephen Maxwell <smaxwell@ramboll.com>
Cc: Jenny Auld <jauld@ramboll.com>
Subject: Eurofins Sample Receipt Advice - Report 836638 : Site STATIONS MASTERS COTTAGE CAPTAINS FLAT (318001025)

Dear Valued Client,

PAH not possible on Spikes and Blanks.

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | Environment Testing Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Nathan Corr
Sample Receipt

Eurofins | Environmental Testing
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone: +61 02 9900 8421
Email: EnviroSampleNSW@eurofins.com
Website: environment.eurofins.com.au

[EnviroNote 1117 - Urban Runoff Mortality Syndrome 6-PPD quinone & HMMM](#)
[EnviroNote 1115 - Eurofins SYDNEY Laboratory is now NATA accredited for PFAS](#)

* WARNING - EXTERNAL: This email originated from outside of Eurofins. Do not click any links or open any attachments unless you trust the sender and know that the content is safe!

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NATA # 2377 Site # 2370

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IANZ # 1327

Christchurch

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

Sample Receipt Advice

Company name: Ramboll Australia Pty Ltd
Contact name: Stephen Maxwell
Project name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025
Turnaround time: 5 Day
Date/Time received: Oct 28, 2021 4:00 PM
Eurofins reference: 836638

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Stephen Maxwell - smaxwell@ramboll.com.

Note: A copy of these results will also be delivered to the general Ramboll Australia Pty Ltd email address.



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

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Order No.:
Report #: 836638
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Oct 28, 2021 4:00 PM
Due: Nov 4, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
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	HA_SMC105_0.1	Oct 27, 2021		Soil	S21-No00326			X	X	X	X		
2	HA_SMC105_0.25	Oct 27, 2021		Soil	S21-No00327		X						
3	HA_SMC105_0.4	Oct 27, 2021		Soil	S21-No00328			X	X	X	X		
4	HA_SMC106_0.1	Oct 27, 2021		Soil	S21-No00329			X	X	X	X		
5	HA_SMC106_0.25	Oct 27, 2021		Soil	S21-No00330		X						
6	HA_SMC106_0.1	Oct 27, 2021		Soil	S21-No00331			X	X	X	X		

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Oct 28, 2021 4:00 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	836638	Due:	Nov 4, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
	0.5												
7	HA_SMC101_0.1	Oct 27, 2021		Soil	S21-No00332			X	X	X	X		
8	HA_SMC101_0.25	Oct 27, 2021		Soil	S21-No00333		X						
9	HA_SMC101_0.5	Oct 27, 2021		Soil	S21-No00334			X	X	X	X		
10	HA_SMC107_0.1	Oct 27, 2021		Soil	S21-No00335			X	X	X	X		
11	HA_SMC107_0.3	Oct 27, 2021		Soil	S21-No00336		X						
12	HA_SMC107_0.6	Oct 27, 2021		Soil	S21-No00337			X	X	X	X		



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Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Order No.:
Report #: 836638
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Oct 28, 2021 4:00 PM
Due: Nov 4, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
13	HA_SMC104_0.1	Oct 27, 2021		Soil	S21-No00338			X	X	X	X		
14	HA_SMC104_0.25	Oct 27, 2021		Soil	S21-No00339		X						
15	HA_SMC104_0.5	Oct 27, 2021		Soil	S21-No00340			X	X	X	X		
16	QC01	Oct 27, 2021		Soil	S21-No00341			X	X	X	X		
17	QC03	Oct 27, 2021		Water	S21-No00342			X	X		X		
18	HA_SMC105	Oct 27, 2021		Soil	S21-No00343	X							
19	HA_SMC106	Oct 27, 2021		Soil	S21-No00344	X							
20	HA_SMC101	Oct 27, 2021		Soil	S21-No00345	X							
21	HA_SMC107	Oct 27, 2021		Soil	S21-No00346	X							



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Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
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NSW 2060

Order No.:
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Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Oct 28, 2021 4:00 PM
Due: Nov 4, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
22	HA_SMC104	Oct 27, 2021		Soil	S21-No00347	X							
23	HA_SMC103	Oct 28, 2021		Soil	S21-No00348	X							
24	HA_SMC102	Oct 28, 2021		Soil	S21-No00349	X							
25	HA_SMC103_0.15	Oct 28, 2021		Soil	S21-No00350			X	X	X	X		
26	HA_SMC103_0.4	Oct 28, 2021		Soil	S21-No00351		X						
27	HA_SMC103_0.55	Oct 27, 2021		Soil	S21-No00352			X	X	X	X		
28	HA_SMC102_0.2	Oct 27, 2021		Soil	S21-No00353			X	X	X	X		
29	HA_SMC102_	Oct 27, 2021		Soil	S21-No00354		X						

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Oct 28, 2021 4:00 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	836638	Due:	Nov 4, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
	0.35												
30	HA_SMC102_0.5	Oct 27, 2021		Soil	S21-No00355			X	X	X	X		
31	QC04	Oct 27, 2021		Water	S21-No00356			X	X		X		
32	TRIP BLANK	Oct 27, 2021		Soil	S21-No00833		X						
33	TRIP SPIKE	Oct 27, 2021		Soil	S21-No00834		X						
34	TRIP SPIKE LAB	Oct 27, 2021		Soil	S21-No00835		X						
35	TRIP BLANK	Oct 27, 2021		Soil	S21-No00836							X	
36	TRIP SPIKE	Oct 27, 2021		Soil	S21-No00837								X
37	TRIP SPIKE LAB	Oct 27, 2021		Soil	S21-No00838								X



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Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Oct 28, 2021 4:00 PM
Due: Nov 4, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Eurofins Analytical Services Manager : Andrew Black

Sample Detail	Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254								
Sydney Laboratory - NATA # 1261 Site # 18217	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794								
Mayfield Laboratory - NATA # 1261 Site # 25079								
Perth Laboratory - NATA # 2377 Site # 2370								
External Laboratory								
Test Counts	7	10	17	17	15	17	1	2

Ramboll Environ Australia Pty Ltd
Level 3/100 Pacific Highway
North Sydney
NSW 2060



NATA Accredited

Accreditation Number 1261

Site Number 18217

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: Stephen Maxwell
Report 836638-AID
Project Name STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID 318001025
Received Date Oct 28, 2021
Date Reported Nov 10, 2021

Methodology:

Asbestos Fibre
 Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.

Unknown Mineral
 Fibres

Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.

NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.

Subsampling Soil
 Samples

The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.

NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.

Bonded asbestos-
 containing material
 (ACM)

The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004.

NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Limit of Reporting

The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w).

The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk).

NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.

Project Name STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID 318001025
Date Sampled Oct 27, 2021 to Oct 28, 2021
Report 836638-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
HA_SMC105	21-No00343	Oct 27, 2021	Approximate Sample 296g Sample consisted of: Brown fine-grained clayey soil and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
HA_SMC106	21-No00344	Oct 27, 2021	Approximate Sample 102g Sample consisted of: Brown fine-grained soil, charcoal and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
HA_SMC101	21-No00345	Oct 27, 2021	Approximate Sample 251g Sample consisted of: Brown fine-grained clayey soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
HA_SMC107	21-No00346	Oct 27, 2021	Approximate Sample 476g Sample consisted of: Brown fine-grained clayey soil, charcoal and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
HA_SMC104	21-No00347	Oct 27, 2021	Approximate Sample 140g Sample consisted of: Brown fine-grained clayey soil and charcoal	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
HA_SMC103	21-No00348	Oct 28, 2021	Approximate Sample 188g Sample consisted of: Brown fine-grained clayey soil, charcoal and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
HA_SMC102	21-No00349	Oct 28, 2021	Approximate Sample 446g Sample consisted of: Brown fine-grained clayey soil and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

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
Asbestos - LTM-ASB-8020	Sydney	Nov 01, 2021	Indefinite

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 836638
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Oct 28, 2021 4:00 PM
Due: Nov 4, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
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	HA_SMC105_0.1	Oct 27, 2021		Soil	S21-No00326			X	X	X	X		
2	HA_SMC105_0.25	Oct 27, 2021		Soil	S21-No00327		X						
3	HA_SMC105_0.4	Oct 27, 2021		Soil	S21-No00328			X	X	X	X		
4	HA_SMC106_0.1	Oct 27, 2021		Soil	S21-No00329			X	X	X	X		
5	HA_SMC106_0.25	Oct 27, 2021		Soil	S21-No00330		X						
6	HA_SMC106_	Oct 27, 2021		Soil	S21-No00331			X	X	X	X		

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Oct 28, 2021 4:00 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	836638	Due:	Nov 4, 2021
Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT	Phone:	02 9954 8118	Priority:	5 Day
Project ID:	318001025	Fax:	02 9954 8150	Contact Name:	Stephen Maxwell

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
	0.5												
7	HA_SMC101_0.1	Oct 27, 2021		Soil	S21-No00332			X	X	X	X		
8	HA_SMC101_0.25	Oct 27, 2021		Soil	S21-No00333		X						
9	HA_SMC101_0.5	Oct 27, 2021		Soil	S21-No00334			X	X	X	X		
10	HA_SMC107_0.1	Oct 27, 2021		Soil	S21-No00335			X	X	X	X		
11	HA_SMC107_0.3	Oct 27, 2021		Soil	S21-No00336		X						
12	HA_SMC107_0.6	Oct 27, 2021		Soil	S21-No00337			X	X	X	X		

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Oct 28, 2021 4:00 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	836638	Due:	Nov 4, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
13	HA_SMC104_0.1	Oct 27, 2021		Soil	S21-No00338			X	X	X	X		
14	HA_SMC104_0.25	Oct 27, 2021		Soil	S21-No00339		X						
15	HA_SMC104_0.5	Oct 27, 2021		Soil	S21-No00340			X	X	X	X		
16	QC01	Oct 27, 2021		Soil	S21-No00341			X	X	X	X		
17	QC03	Oct 27, 2021		Water	S21-No00342			X	X		X		
18	HA_SMC105	Oct 27, 2021		Soil	S21-No00343	X							
19	HA_SMC106	Oct 27, 2021		Soil	S21-No00344	X							
20	HA_SMC101	Oct 27, 2021		Soil	S21-No00345	X							
21	HA_SMC107	Oct 27, 2021		Soil	S21-No00346	X							

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Oct 28, 2021 4:00 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	836638	Due:	Nov 4, 2021
Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT	Phone:	02 9954 8118	Priority:	5 Day
Project ID:	318001025	Fax:	02 9954 8150	Contact Name:	Stephen Maxwell

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
22	HA_SMC104	Oct 27, 2021		Soil	S21-No00347	X							
23	HA_SMC103	Oct 28, 2021		Soil	S21-No00348	X							
24	HA_SMC102	Oct 28, 2021		Soil	S21-No00349	X							
25	HA_SMC103_0.15	Oct 28, 2021		Soil	S21-No00350			X	X	X	X		
26	HA_SMC103_0.4	Oct 28, 2021		Soil	S21-No00351		X						
27	HA_SMC103_0.55	Oct 27, 2021		Soil	S21-No00352			X	X	X	X		
28	HA_SMC102_0.2	Oct 27, 2021		Soil	S21-No00353			X	X	X	X		
29	HA_SMC102_	Oct 27, 2021		Soil	S21-No00354		X						

Company Name: Ramboll Australia Pty Ltd
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NSW 2060

Order No.:
Report #: 836638
Phone: 02 9954 8118
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Received: Oct 28, 2021 4:00 PM
Due: Nov 4, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
	0.35												
30	HA_SMC102_0.5	Oct 27, 2021		Soil	S21-No00355			X	X	X	X		
31	QC04	Oct 27, 2021		Water	S21-No00356			X	X		X		
32	TRIP BLANK	Oct 27, 2021		Soil	S21-No00833		X						
33	TRIP SPIKE	Oct 27, 2021		Soil	S21-No00834		X						
34	TRIP BLANK	Oct 27, 2021		Soil	S21-No00836							X	
35	TRIP SPIKE	Oct 27, 2021		Soil	S21-No00837								X
Test Counts						7	9	17	17	15	17	1	1

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. Information identified on this report with the colour **orange** indicates sections of the report not covered by the laboratory's scope of NATA accreditation.
6. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).

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.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (% w/w)
F/ld	Airborne fibre filter loading as Fibres (N) per Fields counted (n)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (C)
g, kg	Mass, e.g. of whole sample (M) or asbestos-containing find within the sample (m)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (V = r x t)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (r)
min	Time (t), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration:
$$C = \frac{F}{V} \times \frac{L}{n} \times \frac{r}{t} \times \frac{t}{r} = K \times \frac{F}{n} \times \frac{r}{V}$$

Asbestos Content (as asbestos):
$$\% w/w = \frac{(m \times PA)}{M}$$

Weighted Average (of asbestos):
$$\% w = \frac{\sum (m \times PA) \times x}{x}$$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix. May be derived from knowledge or experience of the material, informed by HSG264 <i>Appendix 2</i> , else assumed to be 15% in accordance with WA DOH <i>Appendix 2 (PA)</i> .
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to "non-bonded / friable".
AFM	Airborne Fibre Monitoring, e.g. by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total % w/w asbestos content in asbestos-containing finds in a soil sample (% w/w).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Compliant	Indicates the item has been assessed against the relevant criteria, e.g. NATA SAC_07.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess degree of friability.
HSG248	UK HSE HSG248, <i>Asbestos: The Analysts Guide</i> , 2nd Edition (2021).
HSG264	UK HSE HSG264, <i>Asbestos: The Survey Guide</i> (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (K) as derived from the effective filter area of the given AFM membrane used for collecting the sample (A) and the projected eyepiece graticule area of the specific microscope used for the analysis (a).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, <i>Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres</i> , 2nd Edition [NOHSC:3003(2005)].
N/A	Not Applicable. Indicates a result or assessment is not required or applicable to that item.
NATA	National Association of Testing Authorities, Australia.
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
SAC_07	Specific Accreditation Criteria: ISO/IEC 17025 Application Document, Life Sciences – Annex, Asbestos sampling and testing.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according to the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, <i>Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia</i> (updated 2021), including Appendix Four: <i>Laboratory analysis</i>
Weighted Average	Combined average % w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (%w _{wa}).

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

Asbestos Counter/Identifier:

Bennel Jiri Senior Analyst-Asbestos (NSW)

Authorised by:

Sayeed Abu Senior Analyst-Asbestos (NSW)



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](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Ramboll Environ Australia Pty Ltd
Level 3/100 Pacific Highway
North Sydney
NSW 2060



NATA Accredited
Accreditation Number 1261
Site Number 18217

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: Stephen Maxwell

Report **836638-S**
Project name **STATIONS MASTERS COTTAGE CAPTAINS FLAT**
Project ID **318001025**
Received Date **Oct 28, 2021**

Client Sample ID			HA_SMC105_0 .1	HA_SMC105_0 .4	HA_SMC106_0 .1	HA_SMC106_0 .5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No00326	S21-No00328	S21-No00329	S21-No00331
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	78	< 50	51	< 50
TRH C29-C36	50	mg/kg	54	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	132	< 50	51	< 50
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	160	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	160	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	82	95	80	104
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			HA_SMC105_0 .1	HA_SMC105_0 .4	HA_SMC106_0 .1	HA_SMC106_0 .5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No00326	S21-No00328	S21-No00329	S21-No00331
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	75	76	77	77
p-Terphenyl-d14 (surr.)	1	%	73	81	79	78
% Moisture	1	%	30	13	24	11

Client Sample ID			HA_SMC101_0 .1	HA_SMC101_0 .5	HA_SMC107_0 .1	HA_SMC107_0 .6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No00332	S21-No00334	S21-No00335	S21-No00337
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	56	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	56	< 50
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	106	53	77	102
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			HA_SMC101_0 .1	HA_SMC101_0 .5	HA_SMC107_0 .1	HA_SMC107_0 .6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No00332	S21-No00334	S21-No00335	S21-No00337
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	78	62	74	77
p-Terphenyl-d14 (surr.)	1	%	81	68	78	81
% Moisture	1	%	13	20	14	22

Client Sample ID			HA_SMC104_0 .1	HA_SMC104_0 .5	QC01	HA_SMC103_0 .15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No00338	S21-No00340	S21-No00341	S21-No00350
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 28, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	23	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	74	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	97	< 50	< 50	< 50
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	76	74	83	84

Client Sample ID			HA_SMC104_0.1	HA_SMC104_0.5	QC01	HA_SMC103_0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No00338	S21-No00340	S21-No00341	S21-No00350
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 28, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	114	76	79	75
p-Terphenyl-d14 (surr.)	1	%	98	81	80	79
% Moisture	1	%	5.3	15	21	25

Client Sample ID			HA_SMC103_0.55	HA_SMC102_0.2	HA_SMC102_0.5	TRIP BLANK
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No00352	S21-No00353	S21-No00355	S21-No00836
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	-
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	-

Client Sample ID			HA_SMC103_0.55	HA_SMC102_0.2	HA_SMC102_0.5	TRIP BLANK
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No00352	S21-No00353	S21-No00355	S21-No00836
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	60	52	83	115
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	70	67	82	-
p-Terphenyl-d14 (surr.)	1	%	74	77	85	-
% Moisture	1	%	15	15	28	-

Client Sample ID			TRIP SPIKE
Sample Matrix			Soil
Eurofins Sample No.			S21-No00837
Date Sampled			Oct 27, 2021
Test/Reference	LOR	Unit	
TRH C6-C10	1	%	91
Total Recoverable Hydrocarbons			
Naphthalene	1	%	89
TRH C6-C9	1	%	91

Client Sample ID			TRIP SPIKE
Sample Matrix			Soil
Eurofins Sample No.			S21-No00837
Date Sampled			Oct 27, 2021
Test/Reference	LOR	Unit	
BTEX			
Benzene	1	%	91
Ethylbenzene	1	%	92
m&p-Xylenes	1	%	91
o-Xylene	1	%	92
Toluene	1	%	92
Xylenes - Total	1	%	91
4-Bromofluorobenzene (surr.)	1	%	107

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
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Nov 08, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Nov 08, 2021	14 Days
Total Recoverable Hydrocarbons - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Nov 05, 2021	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Nov 08, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Nov 08, 2021	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Nov 08, 2021	14 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Nov 01, 2021	14 Days

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Oct 28, 2021 4:00 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	836638	Due:	Nov 4, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
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	HA_SMC105_0.1	Oct 27, 2021		Soil	S21-No00326			X	X	X	X		
2	HA_SMC105_0.25	Oct 27, 2021		Soil	S21-No00327		X						
3	HA_SMC105_0.4	Oct 27, 2021		Soil	S21-No00328			X	X	X	X		
4	HA_SMC106_0.1	Oct 27, 2021		Soil	S21-No00329			X	X	X	X		
5	HA_SMC106_0.25	Oct 27, 2021		Soil	S21-No00330		X						
6	HA_SMC106_	Oct 27, 2021		Soil	S21-No00331			X	X	X	X		

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Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
	0.5												
7	HA_SMC101_0.1	Oct 27, 2021		Soil	S21-No00332			X	X	X	X		
8	HA_SMC101_0.25	Oct 27, 2021		Soil	S21-No00333		X						
9	HA_SMC101_0.5	Oct 27, 2021		Soil	S21-No00334			X	X	X	X		
10	HA_SMC107_0.1	Oct 27, 2021		Soil	S21-No00335			X	X	X	X		
11	HA_SMC107_0.3	Oct 27, 2021		Soil	S21-No00336		X						
12	HA_SMC107_0.6	Oct 27, 2021		Soil	S21-No00337			X	X	X	X		

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 836638
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Oct 28, 2021 4:00 PM
Due: Nov 4, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
13	HA_SMC104_0.1	Oct 27, 2021		Soil	S21-No00338			X	X	X	X		
14	HA_SMC104_0.25	Oct 27, 2021		Soil	S21-No00339		X						
15	HA_SMC104_0.5	Oct 27, 2021		Soil	S21-No00340			X	X	X	X		
16	QC01	Oct 27, 2021		Soil	S21-No00341			X	X	X	X		
17	QC03	Oct 27, 2021		Water	S21-No00342			X	X		X		
18	HA_SMC105	Oct 27, 2021		Soil	S21-No00343	X							
19	HA_SMC106	Oct 27, 2021		Soil	S21-No00344	X							
20	HA_SMC101	Oct 27, 2021		Soil	S21-No00345	X							
21	HA_SMC107	Oct 27, 2021		Soil	S21-No00346	X							

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Oct 28, 2021 4:00 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	836638	Due:	Nov 4, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
22	HA_SMC104	Oct 27, 2021		Soil	S21-No00347	X							
23	HA_SMC103	Oct 28, 2021		Soil	S21-No00348	X							
24	HA_SMC102	Oct 28, 2021		Soil	S21-No00349	X							
25	HA_SMC103_0.15	Oct 28, 2021		Soil	S21-No00350			X	X	X	X		
26	HA_SMC103_0.4	Oct 28, 2021		Soil	S21-No00351		X						
27	HA_SMC103_0.55	Oct 27, 2021		Soil	S21-No00352			X	X	X	X		
28	HA_SMC102_0.2	Oct 27, 2021		Soil	S21-No00353			X	X	X	X		
29	HA_SMC102_	Oct 27, 2021		Soil	S21-No00354		X						

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Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT	Phone:	02 9954 8118	Priority:	5 Day
Project ID:	318001025	Fax:	02 9954 8150	Contact Name:	Stephen Maxwell

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
	0.35												
30	HA_SMC102_0.5	Oct 27, 2021		Soil	S21-No00355			X	X	X	X		
31	QC04	Oct 27, 2021		Water	S21-No00356			X	X		X		
32	TRIP BLANK	Oct 27, 2021		Soil	S21-No00833		X						
33	TRIP SPIKE	Oct 27, 2021		Soil	S21-No00834		X						
34	TRIP SPIKE LAB	Oct 27, 2021		Soil	S21-No00835		X						
35	TRIP BLANK	Oct 27, 2021		Soil	S21-No00836							X	
36	TRIP SPIKE	Oct 27, 2021		Soil	S21-No00837								X
37	TRIP SPIKE LAB	Oct 27, 2021		Soil	S21-No00838								X

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 836638
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Oct 28, 2021 4:00 PM
Due: Nov 4, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Eurofins Analytical Services Manager : Andrew Black

Sample Detail	Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254								
Sydney Laboratory - NATA # 1261 Site # 18217	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794								
Mayfield Laboratory - NATA # 1261 Site # 25079								
Perth Laboratory - NATA # 2377 Site # 2370								
External Laboratory								
Test Counts	7	10	17	17	15	17	1	2

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

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version
CP	Client Parent - QC was performed on samples pertaining to this report
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.
TEQ	Toxic Equivalency Quotient
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% Phenols & 50-150% PFASs..

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 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							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	76			70-130	Pass	
TRH C10-C14	%	92			70-130	Pass	
Naphthalene	%	91			70-130	Pass	
TRH C6-C10	%	73			70-130	Pass	
TRH >C10-C16	%	91			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	96			70-130	Pass	
Toluene	%	87			70-130	Pass	
Ethylbenzene	%	87			70-130	Pass	
m&p-Xylenes	%	88			70-130	Pass	
o-Xylene	%	87			70-130	Pass	
Xylenes - Total*	%	88			70-130	Pass	

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery										
Polycyclic Aromatic Hydrocarbons										
Acenaphthene				%	78			70-130	Pass	
Acenaphthylene				%	84			70-130	Pass	
Anthracene				%	73			70-130	Pass	
Benz(a)anthracene				%	73			70-130	Pass	
Benzo(a)pyrene				%	81			70-130	Pass	
Benzo(b&j)fluoranthene				%	82			70-130	Pass	
Benzo(g,h,i)perylene				%	88			70-130	Pass	
Benzo(k)fluoranthene				%	76			70-130	Pass	
Chrysene				%	80			70-130	Pass	
Dibenz(a,h)anthracene				%	84			70-130	Pass	
Fluoranthene				%	74			70-130	Pass	
Fluorene				%	82			70-130	Pass	
Indeno(1,2,3-cd)pyrene				%	125			70-130	Pass	
Naphthalene				%	75			70-130	Pass	
Phenanthrene				%	82			70-130	Pass	
Pyrene				%	75			70-130	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Total Recoverable Hydrocarbons					Result 1					
TRH C10-C14	N21-Oc63421	NCP	%		111			70-130	Pass	
TRH >C10-C16	N21-Oc63421	NCP	%		107			70-130	Pass	
Spike - % Recovery										
Polycyclic Aromatic Hydrocarbons					Result 1					
Acenaphthene	S21-Oc54571	NCP	%		81			70-130	Pass	
Acenaphthylene	S21-Oc54571	NCP	%		85			70-130	Pass	
Benzo(a)pyrene	S21-Oc54571	NCP	%		75			70-130	Pass	
Benzo(g,h,i)perylene	S21-Oc54571	NCP	%		81			70-130	Pass	
Benzo(k)fluoranthene	S21-No05627	NCP	%		85			70-130	Pass	
Chrysene	S21-Oc54571	NCP	%		76			70-130	Pass	
Dibenz(a,h)anthracene	S21-Oc54571	NCP	%		79			70-130	Pass	
Fluoranthene	S21-Oc54571	NCP	%		75			70-130	Pass	
Fluorene	S21-Oc54571	NCP	%		81			70-130	Pass	
Naphthalene	S21-Oc54571	NCP	%		77			70-130	Pass	
Phenanthrene	S21-Oc54571	NCP	%		77			70-130	Pass	
Pyrene	S21-Oc54571	NCP	%		75			70-130	Pass	
Spike - % Recovery										
Total Recoverable Hydrocarbons					Result 1					
TRH C6-C9	S21-No00334	CP	%		87			70-130	Pass	
Naphthalene	S21-No00334	CP	%		106			70-130	Pass	
TRH C6-C10	S21-No00334	CP	%		87			70-130	Pass	
Spike - % Recovery										
BTEX					Result 1					
Benzene	S21-No00334	CP	%		80			70-130	Pass	
Toluene	S21-No00334	CP	%		87			70-130	Pass	
Ethylbenzene	S21-No00334	CP	%		89			70-130	Pass	
m&p-Xylenes	S21-No00334	CP	%		88			70-130	Pass	
o-Xylene	S21-No00334	CP	%		89			70-130	Pass	
Xylenes - Total*	S21-No00334	CP	%		89			70-130	Pass	
Spike - % Recovery										
Polycyclic Aromatic Hydrocarbons					Result 1					
Anthracene	S21-No00334	CP	%		75			70-130	Pass	
Benz(a)anthracene	S21-No00334	CP	%		77			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(b&j)fluoranthene	S21-No00334	CP	%	71			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S21-No00334	CP	%	73			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C10-C14	S21-No08061	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-No08061	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-No08061	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C10-C16	S21-No08061	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-No08061	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-No08061	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-No00328	CP	%	13	13	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S21-No00332	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Naphthalene	S21-No00332	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S21-No00332	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S21-No00332	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S21-No00332	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S21-No00332	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S21-No00332	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S21-No00332	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S21-No00332	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-No00350	CP	%	25	24	3.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S21-No00355	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Naphthalene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S21-No00355	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S21-No00355	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S21-No00355	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S21-No00355	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S21-No00355	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S21-No00355	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S21-No00355	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g,h,i)perylene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Dibenz(a,h)anthracene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1.2.3-cd)pyrene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S21-No00355	CP	mg/kg	< 0.5	< 0.5	<1	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
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Roopesh Rangarajan	Senior Analyst-Volatile (NSW)



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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Ramboll Environ Australia Pty Ltd
Level 3/100 Pacific Highway
North Sydney
NSW 2060



NATA Accredited
Accreditation Number 1261
Site Number 18217

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: **Stephen Maxwell**

Report **836638-W**
Project name **STATIONS MASTERS COTTAGE CAPTAINS FLAT**
Project ID **318001025**
Received Date **Oct 28, 2021**

Client Sample ID			QC03	QC04
Sample Matrix			Water	Water
Eurofins Sample No.			S21-No00342	S21-No00356
Date Sampled			Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons				
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	0.1
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1
BTEX				
Benzene	0.001	mg/L	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	109	107
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.001	mg/L	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001

Client Sample ID			QC03	QC04
Sample Matrix			Water	Water
Eurofins Sample No.			S21-No00342	S21-No00356
Date Sampled			Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Naphthalene	0.001	mg/L	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	75	62
p-Terphenyl-d14 (surr.)	1	%	125	106

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
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Nov 02, 2021	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Nov 01, 2021	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Nov 01, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Nov 02, 2021	7 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Nov 02, 2021	7 Days

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Oct 28, 2021 4:00 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	836638	Due:	Nov 4, 2021
Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT	Phone:	02 9954 8118	Priority:	5 Day
Project ID:	318001025	Fax:	02 9954 8150	Contact Name:	Stephen Maxwell

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
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	HA_SMC105_0.1	Oct 27, 2021		Soil	S21-No00326			X	X	X	X		
2	HA_SMC105_0.25	Oct 27, 2021		Soil	S21-No00327		X						
3	HA_SMC105_0.4	Oct 27, 2021		Soil	S21-No00328			X	X	X	X		
4	HA_SMC106_0.1	Oct 27, 2021		Soil	S21-No00329			X	X	X	X		
5	HA_SMC106_0.25	Oct 27, 2021		Soil	S21-No00330		X						
6	HA_SMC106_	Oct 27, 2021		Soil	S21-No00331			X	X	X	X		

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Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
	0.5												
7	HA_SMC101_0.1	Oct 27, 2021		Soil	S21-No00332			X	X	X	X		
8	HA_SMC101_0.25	Oct 27, 2021		Soil	S21-No00333		X						
9	HA_SMC101_0.5	Oct 27, 2021		Soil	S21-No00334			X	X	X	X		
10	HA_SMC107_0.1	Oct 27, 2021		Soil	S21-No00335			X	X	X	X		
11	HA_SMC107_0.3	Oct 27, 2021		Soil	S21-No00336		X						
12	HA_SMC107_0.6	Oct 27, 2021		Soil	S21-No00337			X	X	X	X		

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NSW 2060

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Contact Name: Stephen Maxwell

Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
13	HA_SMC104_0.1	Oct 27, 2021		Soil	S21-No00338			X	X	X	X		
14	HA_SMC104_0.25	Oct 27, 2021		Soil	S21-No00339		X						
15	HA_SMC104_0.5	Oct 27, 2021		Soil	S21-No00340			X	X	X	X		
16	QC01	Oct 27, 2021		Soil	S21-No00341			X	X	X	X		
17	QC03	Oct 27, 2021		Water	S21-No00342			X	X		X		
18	HA_SMC105	Oct 27, 2021		Soil	S21-No00343	X							
19	HA_SMC106	Oct 27, 2021		Soil	S21-No00344	X							
20	HA_SMC101	Oct 27, 2021		Soil	S21-No00345	X							
21	HA_SMC107	Oct 27, 2021		Soil	S21-No00346	X							

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Project Name: STATIONS MASTERS COTTAGE CAPTAINS FLAT
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Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
22	HA_SMC104	Oct 27, 2021		Soil	S21-No00347	X							
23	HA_SMC103	Oct 28, 2021		Soil	S21-No00348	X							
24	HA_SMC102	Oct 28, 2021		Soil	S21-No00349	X							
25	HA_SMC103_0.15	Oct 28, 2021		Soil	S21-No00350			X	X	X	X		
26	HA_SMC103_0.4	Oct 28, 2021		Soil	S21-No00351		X						
27	HA_SMC103_0.55	Oct 27, 2021		Soil	S21-No00352			X	X	X	X		
28	HA_SMC102_0.2	Oct 27, 2021		Soil	S21-No00353			X	X	X	X		
29	HA_SMC102_	Oct 27, 2021		Soil	S21-No00354		X						

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Project Name:	STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	HOLD	Polycyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
	0.35												
30	HA_SMC102_0.5	Oct 27, 2021		Soil	S21-No00355			X	X	X	X		
31	QC04	Oct 27, 2021		Water	S21-No00356			X	X		X		
32	TRIP BLANK	Oct 27, 2021		Soil	S21-No00833		X						
33	TRIP SPIKE	Oct 27, 2021		Soil	S21-No00834		X						
34	TRIP SPIKE LAB	Oct 27, 2021		Soil	S21-No00835		X						
35	TRIP BLANK	Oct 27, 2021		Soil	S21-No00836							X	
36	TRIP SPIKE	Oct 27, 2021		Soil	S21-No00837								X
37	TRIP SPIKE LAB	Oct 27, 2021		Soil	S21-No00838								X

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Sample Detail	Asbestos - AS4964	HOLD	Polyyclic Aromatic Hydrocarbons	BTEX	Moisture Set	Total Recoverable Hydrocarbons	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA # 1261 Site # 1254								
Sydney Laboratory - NATA # 1261 Site # 18217	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794								
Mayfield Laboratory - NATA # 1261 Site # 25079								
Perth Laboratory - NATA # 2377 Site # 2370								
External Laboratory								
Test Counts	7	10	17	17	15	17	1	2

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

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version
CP	Client Parent - QC was performed on samples pertaining to this report
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.
TEQ	Toxic Equivalency Quotient
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% Phenols & 50-150% PFASs..

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 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							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	82			70-130	Pass	
TRH C10-C14	%	115			70-130	Pass	
Naphthalene	%	94			70-130	Pass	
TRH C6-C10	%	82			70-130	Pass	
TRH >C10-C16	%	111			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	92			70-130	Pass	
Toluene	%	94			70-130	Pass	
Ethylbenzene	%	91			70-130	Pass	
m&p-Xylenes	%	92			70-130	Pass	
o-Xylene	%	91			70-130	Pass	
Xylenes - Total*	%	92			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene			%	86			70-130	Pass	
Acenaphthylene			%	88			70-130	Pass	
Anthracene			%	97			70-130	Pass	
Benz(a)anthracene			%	87			70-130	Pass	
Benzo(a)pyrene			%	86			70-130	Pass	
Benzo(b&j)fluoranthene			%	93			70-130	Pass	
Benzo(g,h,i)perylene			%	81			70-130	Pass	
Benzo(k)fluoranthene			%	83			70-130	Pass	
Chrysene			%	86			70-130	Pass	
Dibenz(a,h)anthracene			%	89			70-130	Pass	
Fluoranthene			%	101			70-130	Pass	
Fluorene			%	90			70-130	Pass	
Indeno(1,2,3-cd)pyrene			%	89			70-130	Pass	
Naphthalene			%	83			70-130	Pass	
Phenanthrene			%	92			70-130	Pass	
Pyrene			%	101			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	S21-Oc61078	NCP	%	92			70-130	Pass	
TRH C10-C14	S21-No02272	NCP	%	74			70-130	Pass	
Naphthalene	S21-Oc61078	NCP	%	90			70-130	Pass	
TRH C6-C10	S21-Oc61078	NCP	%	91			70-130	Pass	
TRH >C10-C16	S21-No02272	NCP	%	86			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S21-Oc61078	NCP	%	92			70-130	Pass	
Toluene	S21-Oc61078	NCP	%	96			70-130	Pass	
Ethylbenzene	S21-Oc61078	NCP	%	97			70-130	Pass	
m&p-Xylenes	S21-Oc61078	NCP	%	99			70-130	Pass	
o-Xylene	S21-Oc61078	NCP	%	98			70-130	Pass	
Xylenes - Total*	S21-Oc61078	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthylene	S21-No02650	NCP	%	72			70-130	Pass	
Anthracene	S21-No02650	NCP	%	76			70-130	Pass	
Fluoranthene	S21-No02650	NCP	%	81			70-130	Pass	
Fluorene	S21-No02650	NCP	%	74			70-130	Pass	
Phenanthrene	S21-No02650	NCP	%	78			70-130	Pass	
Pyrene	S21-No02650	NCP	%	79			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S21-Oc61079	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S21-No02423	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S21-No02423	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S21-No02423	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Naphthalene	S21-Oc61079	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S21-Oc61079	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S21-No02423	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S21-No02423	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S21-No02423	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S21-Oc61079	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	S21-Oc61079	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	S21-Oc61079	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	S21-Oc61079	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	S21-Oc61079	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total*	S21-Oc61079	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Acenaphthylene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Anthracene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benz(a)anthracene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(a)pyrene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(b&j)fluoranthene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(g,h,i)perylene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(k)fluoranthene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chrysene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibenz(a,h)anthracene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluoranthene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluorene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Naphthalene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Phenanthrene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Pyrene	S21-No16558	NCP	mg/L	< 0.001	< 0.001	<1	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
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Roopesh Rangarajan	Senior Analyst-Volatile (NSW)



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](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Chain of Custody & Analysis Request Form

Tel: 02 9954 8100 (Ramboll)

Laboratory Details

Lab. Name: Eurofins
Lab. Address: 6/16 Mars Rd, Lane Cove West NSW 2066
Contact Name:
Lab. Ref:
Tel: 9900 8490
Fax:
Final Report by:
Lab Quote No:

Project Name: Stations Masters Cottage

Project Number: 318001025

Site: (Options HQ)

Sample collected by: JA/SAB

Sample Results to be returned to:

jauid@ramboll.com ; smaxwell@ramboll.com

Specifications:

1. Urgent TAT required? (Please circle: 24hr 48hr days)
2. Fast TAT Guarantee Required? Yes
3. Is any sediment layer present in waters to be excluded from extractions?
4. Special storage requirements?
5. Preservation requirements?
6. Other requirements?

(Tick)

7. Report Format: equis / excel / pdf

8. Project Manager:

Stephen Maxwell

tel:

Lab.

Matrix

Preservation

Container

ID

Sample ID

Sampling Date

Sampling Time

soil

biota

water

other

filled

acid

ice

other

(No. & type)

Container

Send to Envirolab

HOLD

Heavy Metals: As, Ba, Cd, Cr, Cu, Fe, Hg, Pb, Mn, Mo, Ni, Se, Ti, Zn

GM101
GM102
GM103
GM104
GM105
GM106
GM10
POL-GM-2021102
POL-GM-2021102
POL-GM-2021102

2/11

2/11

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne

6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261 Site # 1254

Sydney

Unit F3, Building F
16 Mars Road
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

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

ABN: 91 05 0159 898

Perth

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

Eurofins Environment Testing NZ Limited

NZBN: 9429046024954

Auckland

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

Sample Receipt Advice

Company name: Ramboll Australia Pty Ltd
Contact name: Albert Juhasz (Uni SA)
Project name: CAPTAINS FLAT
Project ID: 318001025
Turnaround time: 5 Day
Date/Time received: Nov 3, 2021 10:20 AM
Eurofins reference: 838109

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Albert Juhasz (Uni SA) - albert.juhasz@unisa.edu.au.

Note: A copy of these results will also be delivered to the general Ramboll Australia Pty Ltd email address.



Environment Testing

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261 Site # 1254

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
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NATA # 1261 Site # 18217

Brisbane
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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: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Project Name: CAPTAINS FLAT
Project ID: 318001025

Order No.:
Report #: 838109
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Nov 3, 2021 10:20 AM
Due: Nov 10, 2021
Priority: 5 Day
Contact Name: Albert Juhasz (Uni SA)

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Barium	Cobalt	Iron	Manganese	Molybdenum	Selenium	Tin	Metals M8
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
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	GW101	Nov 02, 2021		Water	S21-No11241	X	X	X	X	X	X	X	X
2	GW102	Nov 02, 2021		Water	S21-No11242	X	X	X	X	X	X	X	X
3	GW103	Nov 02, 2021		Water	S21-No11243	X	X	X	X	X	X	X	X
4	GW104	Nov 02, 2021		Water	S21-No11244	X	X	X	X	X	X	X	X
5	GW105	Nov 02, 2021		Water	S21-No11245	X	X	X	X	X	X	X	X
6	GW106	Nov 02, 2021		Water	S21-No11246	X	X	X	X	X	X	X	X
7	GW10	Nov 02, 2021		Water	S21-No11247	X	X	X	X	X	X	X	X
8	DO1_GW_20211102	Nov 02, 2021		Water	S21-No11248	X	X	X	X	X	X	X	X



Environment Testing

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne

6 Monterey Road
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Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

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

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060
Project Name: CAPTAINS FLAT
Project ID: 318001025

Order No.:
Report #: 838109
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Nov 3, 2021 10:20 AM
Due: Nov 10, 2021
Priority: 5 Day
Contact Name: Albert Juhasz (Uni SA)

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Barium	Cobalt	Iron	Manganese	Molybdenum	Selenium	Tin	Metals M8
Melbourne Laboratory - NATA # 1261 Site # 1254													
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794													
Mayfield Laboratory - NATA # 1261 Site # 25079													
Perth Laboratory - NATA # 2377 Site # 2370													
External Laboratory													
9	RO1_GW_20211102	Nov 02, 2021		Water	S21-No11249	X	X	X	X	X	X	X	X
Test Counts						9	9	9	9	9	9	9	9

Ramboll Environ Australia Pty Ltd
Level 3/100 Pacific Highway
North Sydney
NSW 2060



NATA Accredited
Accreditation Number 1261
Site Number 18217

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: Stephen Maxwell

Report 838109-W-V2
Project name CAPTAINS FLAT
Project ID 318001025
Received Date Nov 03, 2021

Client Sample ID			GW102 Water	GW103 Water	GW101 Water	GW104 Water
Sample Matrix			S21-No11241	S21-No11242	S21-No11243	S21-No11244
Eurofins Sample No.			Nov 02, 2021	Nov 02, 2021	Nov 02, 2021	Nov 02, 2021
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	0.003	< 0.001
Barium (filtered)	0.02	mg/L	0.03	< 0.02	0.25	0.04
Cadmium (filtered)	0.0002	mg/L	0.017	0.25	0.0062	0.0027
Chromium (filtered)	0.001	mg/L	< 0.001	0.004	0.044	< 0.001
Cobalt (filtered)	0.001	mg/L	0.066	0.49	0.21	0.049
Copper (filtered)	0.001	mg/L	0.012	1.1	0.11	0.002
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	11	0.32
Lead (filtered)	0.001	mg/L	0.61	0.092	0.39	0.002
Manganese (filtered)	0.005	mg/L	0.95	4.1	1.9	0.87
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Nickel (filtered)	0.001	mg/L	0.051	0.59	0.15	0.039
Selenium (filtered)	0.001	mg/L	0.011	0.028	0.017	0.006
Tin (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Titanium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	13	75	2.0	0.47

Client Sample ID			GW105 Water	GW106 Water	GW10 Water	DO1_GW_2021 1102 Water
Sample Matrix			S21-No11245	S21-No11246	S21-No11247	S21-No11248
Eurofins Sample No.			Nov 02, 2021	Nov 02, 2021	Nov 02, 2021	Nov 02, 2021
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Barium (filtered)	0.02	mg/L	0.03	0.04	0.03	< 0.02
Cadmium (filtered)	0.0002	mg/L	< 0.0002	0.0034	0.0044	0.24
Chromium (filtered)	0.001	mg/L	0.031	< 0.001	< 0.001	0.004
Cobalt (filtered)	0.001	mg/L	< 0.001	0.015	0.021	0.48
Copper (filtered)	0.001	mg/L	0.002	0.002	0.002	1.1
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	0.090
Manganese (filtered)	0.005	mg/L	< 0.005	2.8	0.58	4.1
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			GW105	GW106	GW10	DO1_GW_2021
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S21-No11245	S21-No11246	S21-No11247	S21-No11248
Date Sampled			Nov 02, 2021	Nov 02, 2021	Nov 02, 2021	Nov 02, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Molybdenum (filtered)	0.005	mg/L	0.014	< 0.005	< 0.005	< 0.005
Nickel (filtered)	0.001	mg/L	< 0.001	0.032	0.082	0.57
Selenium (filtered)	0.001	mg/L	0.005	0.005	0.002	0.023
Tin (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Titanium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.96	0.64	82

Client Sample ID			RO1_GW_2021
Sample Matrix			Water
Eurofins Sample No.			S21-No11249
Date Sampled			Nov 02, 2021
Test/Reference	LOR	Unit	
Heavy Metals			
Arsenic (filtered)	0.001	mg/L	< 0.001
Barium (filtered)	0.02	mg/L	< 0.02
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Cobalt (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001
Molybdenum (filtered)	0.005	mg/L	< 0.005
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	0.001
Tin (filtered)	0.005	mg/L	< 0.005
Titanium (filtered)	0.005	mg/L	< 0.005
Zinc (filtered)	0.005	mg/L	0.011

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
Metals M8 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Nov 10, 2021	28 Days
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Nov 10, 2021	180 Days

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 3, 2021 10:20 AM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	838109	Due:	Nov 10, 2021
Project Name:	CAPTAINS FLAT	Phone:	02 9954 8118	Priority:	5 Day
Project ID:	318001025	Fax:	02 9954 8150	Contact Name:	Stephen Maxwell

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Barium (filtered)	Cobalt (filtered)	Iron (filtered)	Manganese (filtered)	Molybdenum (filtered)	Selenium (filtered)	Tin (filtered)	Titanium (filtered)	Metals M8 filtered
Melbourne Laboratory - NATA # 1261 Site # 1254														
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794														
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	GW102	Nov 02, 2021		Water	S21-No11241	X	X	X	X	X	X	X	X	X
2	GW103	Nov 02, 2021		Water	S21-No11242	X	X	X	X	X	X	X	X	X
3	GW101	Nov 02, 2021		Water	S21-No11243	X	X	X	X	X	X	X	X	X
4	GW104	Nov 02, 2021		Water	S21-No11244	X	X	X	X	X	X	X	X	X
5	GW105	Nov 02, 2021		Water	S21-No11245	X	X	X	X	X	X	X	X	X
6	GW106	Nov 02, 2021		Water	S21-No11246	X	X	X	X	X	X	X	X	X
7	GW10	Nov 02, 2021		Water	S21-No11247	X	X	X	X	X	X	X	X	X
8	DO1_GW_20211102	Nov 02, 2021		Water	S21-No11248	X	X	X	X	X	X	X	X	X

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Project Name: CAPTAINS FLAT
Project ID: 318001025

Order No.:
Report #: 838109
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Nov 3, 2021 10:20 AM
Due: Nov 10, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Barium (filtered)	Cobalt (filtered)	Iron (filtered)	Manganese (filtered)	Molybdenum (filtered)	Selenium (filtered)	Tin (filtered)	Titanium (filtered)	Metals M8 filtered
Melbourne Laboratory - NATA # 1261 Site # 1254														
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794														
Mayfield Laboratory - NATA # 1261 Site # 25079														
Perth Laboratory - NATA # 2377 Site # 2370														
External Laboratory														
9	RO1_GW_20211102	Nov 02, 2021		Water	S21-No11249	X	X	X	X	X	X	X	X	X
Test Counts						9	9	9	9	9	9	9	9	9

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

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version
CP	Client Parent - QC was performed on samples pertaining to this report
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.
TEQ	Toxic Equivalency Quotient
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% Phenols & 50-150% PFASs..

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 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									
Heavy Metals									
Arsenic (filtered)			mg/L	< 0.001			0.001	Pass	
Barium (filtered)			mg/L	< 0.02			0.02	Pass	
Cadmium (filtered)			mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)			mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)			mg/L	< 0.001			0.001	Pass	
Copper (filtered)			mg/L	< 0.001			0.001	Pass	
Iron (filtered)			mg/L	< 0.05			0.05	Pass	
Lead (filtered)			mg/L	< 0.001			0.001	Pass	
Manganese (filtered)			mg/L	< 0.005			0.005	Pass	
Mercury (filtered)			mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)			mg/L	< 0.005			0.005	Pass	
Nickel (filtered)			mg/L	< 0.001			0.001	Pass	
Selenium (filtered)			mg/L	< 0.001			0.001	Pass	
Tin (filtered)			mg/L	< 0.005			0.005	Pass	
Titanium (filtered)			mg/L	< 0.005			0.005	Pass	
Zinc (filtered)			mg/L	< 0.005			0.005	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic (filtered)			%	105			80-120	Pass	
Barium (filtered)			%	103			80-120	Pass	
Cadmium (filtered)			%	105			80-120	Pass	
Chromium (filtered)			%	108			80-120	Pass	
Cobalt (filtered)			%	106			80-120	Pass	
Copper (filtered)			%	105			80-120	Pass	
Iron (filtered)			%	104			80-120	Pass	
Lead (filtered)			%	104			80-120	Pass	
Manganese (filtered)			%	105			80-120	Pass	
Mercury (filtered)			%	104			80-120	Pass	
Molybdenum (filtered)			%	106			80-120	Pass	
Nickel (filtered)			%	105			80-120	Pass	
Selenium (filtered)			%	103			80-120	Pass	
Tin (filtered)			%	103			80-120	Pass	
Titanium (filtered)			%	107			80-120	Pass	
Zinc (filtered)			%	104			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S21-No11653	NCP	%	100			75-125	Pass	
Barium (filtered)	S21-No11653	NCP	%	95			75-125	Pass	
Cadmium (filtered)	S21-No11653	NCP	%	96			75-125	Pass	
Chromium (filtered)	S21-No11653	NCP	%	97			75-125	Pass	
Cobalt (filtered)	S21-No11653	NCP	%	95			75-125	Pass	
Copper (filtered)	S21-No11653	NCP	%	94			75-125	Pass	
Iron (filtered)	S21-No12726	NCP	%	96			75-125	Pass	
Lead (filtered)	S21-No11653	NCP	%	92			75-125	Pass	
Manganese (filtered)	S21-No11653	NCP	%	88			75-125	Pass	
Mercury (filtered)	S21-No11653	NCP	%	95			75-125	Pass	
Molybdenum (filtered)	S21-No11653	NCP	%	103			75-125	Pass	
Nickel (filtered)	S21-No11653	NCP	%	93			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Selenium (filtered)	S21-No11653	NCP	%	102			75-125	Pass	
Tin (filtered)	S21-No11653	NCP	%	100			75-125	Pass	
Titanium (filtered)	S21-No11653	NCP	%	98			75-125	Pass	
Zinc (filtered)	S21-No11653	NCP	%	92			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S21-No11248	CP	mg/L	0.002	0.002	2.0	30%	Pass	
Barium (filtered)	S21-No11248	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Cadmium (filtered)	S21-No11248	CP	mg/L	0.24	0.25	2.0	30%	Pass	
Chromium (filtered)	S21-No11248	CP	mg/L	0.004	0.004	<1	30%	Pass	
Cobalt (filtered)	S21-No11248	CP	mg/L	0.48	0.48	<1	30%	Pass	
Copper (filtered)	S21-No11248	CP	mg/L	1.1	1.1	1.0	30%	Pass	
Iron (filtered)	S21-No11248	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	S21-No11248	CP	mg/L	0.090	0.091	1.0	30%	Pass	
Manganese (filtered)	S21-No11248	CP	mg/L	4.1	4.1	<1	30%	Pass	
Mercury (filtered)	S21-No11248	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum (filtered)	S21-No11248	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel (filtered)	S21-No11248	CP	mg/L	0.57	0.57	1.0	30%	Pass	
Selenium (filtered)	S21-No11248	CP	mg/L	0.023	0.024	4.0	30%	Pass	
Tin (filtered)	S21-No11248	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Titanium (filtered)	S21-No11248	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	S21-No11248	CP	mg/L	82	80	3.0	30%	Pass	

Comments

V2 - New version created to amend sample IDs for samples S21-No11241 - 243.

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

Authorised by:

Emma Beesley
John Nguyen

Analytical Services Manager
Senior Analyst-Metal (NSW)



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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5 DAY TAT ADDITIONAL ANALYSIS: FW: Eurofins Test Results, Invoice - Report 836638 : Site STATIONS MASTERS COTTAGE CAPTAINS FLAT (318001025)

Andrew Black <AndrewBlack@eurofins.com>

Wed 11/10/2021 3:48 PM

To: #AU04_Enviro_Sample_NSW <EnviroSampleNSW@eurofins.com>

Additional analysis on 5 day TAT thanks team

Andrew Black

Analytical Services Manager

Eurofins | Environment Testing

Unit 7

7 Friesian Close

SANDGATE, NSW, 2304

AUSTRALIA

Phone: +61 2 9900 8490

Mobile: +61 410 220 750

For sample receipt enquiries (eg. SRAs, changes to analysis) please contact EnviroSampleNSW@eurofins.com or 02 9900 8421 (7am – 9pm).

For despatch enquiries (eg. courier bookings, bottle orders) please contact AU04_Despatch_SYD@eurofins.com or 0488 400 929 (8am – 4pm).

Email: AndrewBlack@eurofins.com

Website: eurofins.com.au/environmental-testing

From: Stephen Maxwell <SMAXWELL@ramboll.com>

Sent: Wednesday, 10 November 2021 3:44 PM

To: Andrew Black <AndrewBlack@eurofins.com>

Cc: Jenny Auld <JAULD@ramboll.com>

Subject: RE: Eurofins Test Results, Invoice - Report 836638 : Site STATIONS MASTERS COTTAGE CAPTAINS FLAT (318001025)

EXTERNAL EMAIL*

Thanks Andrew

Can we additionally analyse OCP and OPP on all samples (except the spike and blank) under this work order?

Kind regards

Stephen Maxwell

Lead Consultant

D +61 478658194

M +61 478658194

smaxwell@ramboll.com

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ACN 095 437 442

ABN 49 095 437 442

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Sample Receipt Advice

Company name: Ramboll Australia Pty Ltd
Contact name: Stephen Maxwell
Project name: ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025
Turnaround time: 5 Day
Date/Time received: Nov 10, 2021 3:44 PM
Eurofins reference: 841026

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Stephen Maxwell - smaxwell@ramboll.com.

Note: A copy of these results will also be delivered to the general Ramboll Australia Pty Ltd email address.

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 10, 2021 3:44 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	841026	Due:	Nov 17, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				
Eurofins Analytical Services Manager : Andrew Black					

Sample Detail						Suite B14: OCP/OPP	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
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	HA_SMC105_0.1	Oct 27, 2021		Soil	S21-No33631	X	X
2	HA_SMC105_0.25	Oct 27, 2021		Soil	S21-No33632	X	X
3	HA_SMC105_0.4	Oct 27, 2021		Soil	S21-No33633	X	X
4	HA_SMC106_0.1	Oct 27, 2021		Soil	S21-No33634	X	X
5	HA_SMC106_0.25	Oct 27, 2021		Soil	S21-No33635	X	X
6	HA_SMC106_	Oct 27, 2021		Soil	S21-No33636	X	X



Environment Testing

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IANZ # 1290

web: www.eurofins.com.au

email: EnviroSales@eurofins.com

Company Name: Ramboll Australia Pty Ltd
Address: Level 3/100 Pacific Highway
North Sydney
NSW 2060

Order No.:
Report #: 841026
Phone: 02 9954 8118
Fax: 02 9954 8150

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Priority: 5 Day
Contact Name: Stephen Maxwell

Project Name: ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Eurofins Analytical Services Manager : Andrew Black

Sample Detail

Suite B14: OCP/OPP

Moisture Set

Melbourne Laboratory - NATA # 1261 Site # 1254

Sydney Laboratory - NATA # 1261 Site # 18217

Brisbane Laboratory - NATA # 1261 Site # 20794

Mayfield Laboratory - NATA # 1261 Site # 25079

Perth Laboratory - NATA # 2377 Site # 2370

External Laboratory

	0.5						
7	HA_SMC101_0.1	Oct 27, 2021		Soil	S21-No33637	x	x
8	HA_SMC101_0.25	Oct 27, 2021		Soil	S21-No33638	x	x
9	HA_SMC101_0.5	Oct 27, 2021		Soil	S21-No33639	x	x
10	HA_SMC107_0.1	Oct 27, 2021		Soil	S21-No33640	x	x
11	HA_SMC107_0.3	Oct 27, 2021		Soil	S21-No33641	x	x
12	HA_SMC107_0.6	Oct 27, 2021		Soil	S21-No33642	x	x



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Order No.:
Report #: 841026
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Due: Nov 17, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Project Name: ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Eurofins Analytical Services Manager : Andrew Black

Sample Detail

Suite B14: OCP/OPP

Moisture Set

Melbourne Laboratory - NATA # 1261 Site # 1254

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Perth Laboratory - NATA # 2377 Site # 2370

External Laboratory

13	HA_SMC104_0.1	Oct 27, 2021		Soil	S21-No33643	X	X
14	HA_SMC104_0.25	Oct 27, 2021		Soil	S21-No33644	X	X
15	HA_SMC104_0.5	Oct 27, 2021		Soil	S21-No33645	X	X
16	QC01	Oct 27, 2021		Soil	S21-No33646	X	X
17	QC03	Oct 27, 2021		Water	S21-No33647	X	
18	HA_SMC103_0.15	Oct 27, 2021		Soil	S21-No33655	X	X
19	HA_SMC103_0.4	Oct 27, 2021		Soil	S21-No33656	X	X



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NSW 2060

Project Name: ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT
Project ID: 318001025

Order No.:
Report #: 841026
Phone: 02 9954 8118
Fax: 02 9954 8150

Received: Nov 10, 2021 3:44 PM
Due: Nov 17, 2021
Priority: 5 Day
Contact Name: Stephen Maxwell

Eurofins Analytical Services Manager : Andrew Black

Sample Detail

Suite B14: OCP/OPP

Moisture Set

Melbourne Laboratory - NATA # 1261 Site # 1254

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Perth Laboratory - NATA # 2377 Site # 2370

External Laboratory

20	HA_SMC103_0.55	Oct 27, 2021		Soil	S21-No33657	X	X
21	HA_SMC102_0.2	Oct 27, 2021		Soil	S21-No33658	X	X
22	HA_SMC102_0.35	Oct 27, 2021		Soil	S21-No33659	X	X
23	HA_SMC102_0.5	Oct 27, 2021		Soil	S21-No33660	X	X
24	QC04	Oct 27, 2021		Water	S21-No33661	X	
Test Counts						24	22

Ramboll Environ Australia Pty Ltd
Level 3/100 Pacific Highway
North Sydney
NSW 2060



NATA Accredited
Accreditation Number 1261
Site Number 18217

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: **Stephen Maxwell**

Report **841026-S**
Project name **ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT**
Project ID **318001025**
Received Date **Nov 10, 2021**

Client Sample ID			HA_SMC105_0 .1	HA_SMC105_0 .25	HA_SMC105_0 .4	HA_SMC106_0 .1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33631	S21-No33632	S21-No33633	S21-No33634
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	0.06	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	1.2	< 0.05	< 0.05	0.15
4,4'-DDT	0.05	mg/kg	0.51	< 0.05	< 0.05	0.06
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	1.77	< 0.05	< 0.05	0.21
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	1.77	< 0.1	< 0.1	0.21
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchloroendate (surr.)	1	%	94	103	113	90
Tetrachloro-m-xylene (surr.)	1	%	90	97	97	101
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			HA_SMC105_0 .1	HA_SMC105_0 .25	HA_SMC105_0 .4	HA_SMC106_0 .1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33631	S21-No33632	S21-No33633	S21-No33634
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	91	93	95	85
% Moisture	1	%	22	18	13	14

Client Sample ID			HA_SMC106_0 .25	HA_SMC106_0 .5	HA_SMC101_0 .1	HA_SMC101_0 .25
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33635	S21-No33636	S21-No33637	S21-No33638
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			HA_SMC106_0 .25	HA_SMC106_0 .5	HA_SMC101_0 .1	HA_SMC101_0 .25
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33635	S21-No33636	S21-No33637	S21-No33638
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	130	112	104	108
Tetrachloro-m-xylene (surr.)	1	%	98	95	94	97
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			HA_SMC106_0.25	HA_SMC106_0.5	HA_SMC101_0.1	HA_SMC101_0.25
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33635	S21-No33636	S21-No33637	S21-No33638
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	107	97	96	97
% Moisture	1	%	6.7	11	12	23

Client Sample ID			HA_SMC101_0.5	HA_SMC107_0.1	HA_SMC107_0.3	HA_SMC107_0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33639	S21-No33640	S21-No33641	S21-No33642
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.2	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.2	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.2	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchloredate (surr.)	1	%	112	137	110	72
Tetrachloro-m-xylene (surr.)	1	%	101	104	98	73
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2

Client Sample ID			HA_SMC101_0 .5	HA_SMC107_0 .1	HA_SMC107_0 .3	HA_SMC107_0 .6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33639	S21-No33640	S21-No33641	S21-No33642
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	119	136	92	76
% Moisture	1	%	20	-	3.8	23

Client Sample ID			HA_SMC104_0 .1	HA_SMC104_0 .25	HA_SMC104_0 .5	QC01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33643	S21-No33644	S21-No33645	S21-No33646
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			HA_SMC104_0 .1	HA_SMC104_0 .25	HA_SMC104_0 .5	QC01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33643	S21-No33644	S21-No33645	S21-No33646
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	82	106	103	110
Tetrachloro-m-xylene (surr.)	1	%	112	104	95	97
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			HA_SMC104_0.1	HA_SMC104_0.25	HA_SMC104_0.5	QC01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33643	S21-No33644	S21-No33645	S21-No33646
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	85	111	90	98
% Moisture	1	%	6.3	27	6.7	21

Client Sample ID			HA_SMC103_0.15	HA_SMC103_0.4	HA_SMC103_0.55	HA_SMC102_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33655	S21-No33656	S21-No33657	S21-No33658
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchloredate (surr.)	1	%	122	100	105	134
Tetrachloro-m-xylene (surr.)	1	%	96	96	95	103
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			HA_SMC103_0 .15	HA_SMC103_0 .4	HA_SMC103_0 .55	HA_SMC102_0 .2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-No33655	S21-No33656	S21-No33657	S21-No33658
Date Sampled			Oct 27, 2021	Oct 27, 2021	Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Coumaphos	2	mg/kg	< 2	< 2	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	105	102	92	122
% Moisture	1	%	20	6.0	4.0	3.1

Client Sample ID			HA_SMC102_0 .35	HA_SMC102_0 .5
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-No33659	S21-No33660
Date Sampled			Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit		
Organochlorine Pesticides				
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05

Client Sample ID			HA_SMC102_0 .35	HA_SMC102_0 .5
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-No33659	S21-No33660
Date Sampled			Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit		
Organochlorine Pesticides				
Dieldrin	0.05	mg/kg	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.2	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.1
Dibutylchloredate (surr.)	1	%	99	117
Tetrachloro-m-xylene (surr.)	1	%	85	100
Organophosphorus Pesticides				
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	< 2
Naled	0.2	mg/kg	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2

Client Sample ID			HA_SMC102_0.35	HA_SMC102_0.5
Sample Matrix			Soil	Soil
Eurofins Sample No.			S21-No33659	S21-No33660
Date Sampled			Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit		
Organophosphorus Pesticides				
Ronnel	0.2	mg/kg	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	89	99
% Moisture	1	%	6.5	17

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
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Nov 18, 2021	14 Days
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Sydney	Nov 18, 2021	14 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Nov 15, 2021	14 Days

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 10, 2021 3:44 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	841026	Due:	Nov 17, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Suite B14: OCP/OPP	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
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	HA_SMC105_0.1	Oct 27, 2021		Soil	S21-No33631	X	X
2	HA_SMC105_0.25	Oct 27, 2021		Soil	S21-No33632	X	X
3	HA_SMC105_0.4	Oct 27, 2021		Soil	S21-No33633	X	X
4	HA_SMC106_0.1	Oct 27, 2021		Soil	S21-No33634	X	X
5	HA_SMC106_0.25	Oct 27, 2021		Soil	S21-No33635	X	X
6	HA_SMC106_	Oct 27, 2021		Soil	S21-No33636	X	X

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 10, 2021 3:44 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	841026	Due:	Nov 17, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Suite B14: OCP/OPP	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
	0.5						
7	HA_SMC101_0.1	Oct 27, 2021		Soil	S21-No33637	X	X
8	HA_SMC101_0.25	Oct 27, 2021		Soil	S21-No33638	X	X
9	HA_SMC101_0.5	Oct 27, 2021		Soil	S21-No33639	X	X
10	HA_SMC107_0.1	Oct 27, 2021		Soil	S21-No33640	X	X
11	HA_SMC107_0.3	Oct 27, 2021		Soil	S21-No33641	X	X
12	HA_SMC107_0.6	Oct 27, 2021		Soil	S21-No33642	X	X

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 10, 2021 3:44 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	841026	Due:	Nov 17, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				
Eurofins Analytical Services Manager : Andrew Black					

Sample Detail						Suite B14: OCP/OPP	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
13	HA_SMC104_0.1	Oct 27, 2021		Soil	S21-No33643	X	X
14	HA_SMC104_0.25	Oct 27, 2021		Soil	S21-No33644	X	X
15	HA_SMC104_0.5	Oct 27, 2021		Soil	S21-No33645	X	X
16	QC01	Oct 27, 2021		Soil	S21-No33646	X	X
17	QC03	Oct 27, 2021		Water	S21-No33647	X	
18	HA_SMC103_0.15	Oct 27, 2021		Soil	S21-No33655	X	X
19	HA_SMC103_0.4	Oct 27, 2021		Soil	S21-No33656	X	X

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 10, 2021 3:44 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	841026	Due:	Nov 17, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Suite B14: OCP/OPP	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
20	HA_SMC103_0.55	Oct 27, 2021		Soil	S21-No33657	X	X
21	HA_SMC102_0.2	Oct 27, 2021		Soil	S21-No33658	X	X
22	HA_SMC102_0.35	Oct 27, 2021		Soil	S21-No33659	X	X
23	HA_SMC102_0.5	Oct 27, 2021		Soil	S21-No33660	X	X
24	QC04	Oct 27, 2021		Water	S21-No33661	X	
Test Counts						24	22

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

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version
CP	Client Parent - QC was performed on samples pertaining to this report
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.
TEQ	Toxic Equivalency Quotient
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% Phenols & 50-150% PFASs..

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 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							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Pirimiphos-methyl			mg/kg	< 0.2			0.2	Pass	
Pyrazophos			mg/kg	< 0.2			0.2	Pass	
Ronnel			mg/kg	< 0.2			0.2	Pass	
Terbufos			mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos			mg/kg	< 0.2			0.2	Pass	
Tokuthion			mg/kg	< 0.2			0.2	Pass	
Trichloronate			mg/kg	< 0.2			0.2	Pass	
LCS - % Recovery									
Organochlorine Pesticides									
Chlordanes - Total			%	107			70-130	Pass	
4.4'-DDD			%	98			70-130	Pass	
4.4'-DDE			%	112			70-130	Pass	
4.4'-DDT			%	85			70-130	Pass	
a-HCH			%	96			70-130	Pass	
Aldrin			%	107			70-130	Pass	
b-HCH			%	100			70-130	Pass	
d-HCH			%	98			70-130	Pass	
Dieldrin			%	108			70-130	Pass	
Endosulfan I			%	104			70-130	Pass	
Endosulfan II			%	92			70-130	Pass	
Endosulfan sulphate			%	92			70-130	Pass	
Endrin			%	108			70-130	Pass	
Endrin aldehyde			%	95			70-130	Pass	
Endrin ketone			%	91			70-130	Pass	
g-HCH (Lindane)			%	104			70-130	Pass	
Heptachlor			%	103			70-130	Pass	
Heptachlor epoxide			%	105			70-130	Pass	
Hexachlorobenzene			%	105			70-130	Pass	
Methoxychlor			%	83			70-130	Pass	
LCS - % Recovery									
Organophosphorus Pesticides									
Diazinon			%	112			70-130	Pass	
Dimethoate			%	86			70-130	Pass	
Ethion			%	99			70-130	Pass	
Fenitrothion			%	108			70-130	Pass	
Methyl parathion			%	114			70-130	Pass	
Mevinphos			%	103			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Heptachlor	S21-No26992	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Endrin aldehyde	S21-No24117	NCP	%	71			70-130	Pass	
Methoxychlor	S21-No20287	NCP	%	80			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Dimethoate	S21-No24117	NCP	%	88			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S21-No33660	CP	%	98			70-130	Pass	
4.4'-DDD	S21-No33660	CP	%	113			70-130	Pass	
4.4'-DDE	S21-No33660	CP	%	103			70-130	Pass	
4.4'-DDT	S21-No33660	CP	%	117			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
a-HCH	S21-No33660	CP	%	92			70-130	Pass	
Aldrin	S21-No33660	CP	%	95			70-130	Pass	
b-HCH	S21-No33660	CP	%	95			70-130	Pass	
d-HCH	S21-No33660	CP	%	91			70-130	Pass	
Dieldrin	S21-No33660	CP	%	97			70-130	Pass	
Endosulfan I	S21-No33660	CP	%	93			70-130	Pass	
Endosulfan II	S21-No33660	CP	%	92			70-130	Pass	
Endosulfan sulphate	S21-No33660	CP	%	76			70-130	Pass	
Endrin	S21-No33660	CP	%	90			70-130	Pass	
Endrin ketone	S21-No33660	CP	%	90			70-130	Pass	
g-HCH (Lindane)	S21-No33660	CP	%	94			70-130	Pass	
Heptachlor epoxide	S21-No33660	CP	%	101			70-130	Pass	
Hexachlorobenzene	S21-No33660	CP	%	100			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Diazinon	S21-No33660	CP	%	83			70-130	Pass	
Ethion	S21-No33660	CP	%	130			70-130	Pass	
Fenitrothion	S21-No33660	CP	%	115			70-130	Pass	
Methyl parathion	S21-No33660	CP	%	128			70-130	Pass	
Mevinphos	S21-No33660	CP	%	101			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S21-No26993	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4,4'-DDD	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDE	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4,4'-DDT	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S21-No26993	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	S21-No26993	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Bolstar	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorfenvinphos	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos-methyl	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Coumaphos	S21-No26993	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Demeton-S	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Diazinon	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfthion	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	S21-No26993	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	S21-No26993	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tokuthion	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	S21-No26993	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S21-No33631	CP	%	22	20	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S21-No33641	CP	%	3.8	2.8	29	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S21-No33659	CP	%	6.5	5.5	17	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

Authorised by:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)



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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Ramboll Environ Australia Pty Ltd
Level 3/100 Pacific Highway
North Sydney
NSW 2060



NATA Accredited
Accreditation Number 1261
Site Number 18217

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: **Stephen Maxwell**

Report **841026-W**
Project name **ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT**
Project ID **318001025**
Received Date **Nov 10, 2021**

Client Sample ID			QC03	QC04
Sample Matrix			Water	Water
Eurofins Sample No.			S21-No33647	S21-No33661
Date Sampled			Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit		
Organochlorine Pesticides				
Chlordanes - Total	0.002	mg/L	< 0.002	< 0.002
4,4'-DDD	0.0002	mg/L	< 0.0002	< 0.0002
4,4'-DDE	0.0002	mg/L	< 0.0002	< 0.0002
4,4'-DDT	0.0002	mg/L	< 0.0002	< 0.0002
a-HCH	0.0002	mg/L	< 0.0002	< 0.0002
Aldrin	0.0002	mg/L	< 0.0002	< 0.0002
b-HCH	0.0002	mg/L	< 0.0002	< 0.0002
d-HCH	0.0002	mg/L	< 0.0002	< 0.0002
Dieldrin	0.0002	mg/L	< 0.0002	< 0.0002
Endosulfan I	0.0002	mg/L	< 0.0002	< 0.0002
Endosulfan II	0.0002	mg/L	< 0.0002	< 0.0002
Endosulfan sulphate	0.0002	mg/L	< 0.0002	< 0.0002
Endrin	0.0002	mg/L	< 0.0002	< 0.0002
Endrin aldehyde	0.0002	mg/L	< 0.0002	< 0.0002
Endrin ketone	0.0002	mg/L	< 0.0002	< 0.0002
g-HCH (Lindane)	0.0002	mg/L	< 0.0002	< 0.0002
Heptachlor	0.0002	mg/L	< 0.0002	< 0.0002
Heptachlor epoxide	0.0002	mg/L	< 0.0002	< 0.0002
Hexachlorobenzene	0.0002	mg/L	< 0.0002	< 0.0002
Methoxychlor	0.0002	mg/L	< 0.0002	< 0.0002
Toxaphene	0.005	mg/L	< 0.005	< 0.005
Aldrin and Dieldrin (Total)*	0.0002	mg/L	< 0.0002	< 0.0002
DDT + DDE + DDD (Total)*	0.0002	mg/L	< 0.0002	< 0.0002
Vic EPA IWRG 621 OCP (Total)*	0.002	mg/L	< 0.002	< 0.002
Vic EPA IWRG 621 Other OCP (Total)*	0.002	mg/L	< 0.002	< 0.002
Dibutylchloroendate (surr.)	1	%	Q09INT	Q09INT
Tetrachloro-m-xylene (surr.)	1	%	94	105
Organophosphorus Pesticides				
Azinphos-methyl	0.002	mg/L	< 0.002	< 0.002
Bolstar	0.002	mg/L	< 0.002	< 0.002
Chlorfenvinphos	0.02	mg/L	< 0.02	< 0.02
Chlorpyrifos	0.002	mg/L	< 0.002	< 0.002
Chlorpyrifos-methyl	0.002	mg/L	< 0.002	< 0.002
Coumaphos	0.02	mg/L	< 0.02	< 0.02
Demeton-S	0.002	mg/L	< 0.002	< 0.002

Client Sample ID			QC03	QC04
Sample Matrix			Water	Water
Eurofins Sample No.			S21-No33647	S21-No33661
Date Sampled			Oct 27, 2021	Oct 27, 2021
Test/Reference	LOR	Unit		
Organophosphorus Pesticides				
Demeton-O	0.002	mg/L	< 0.002	< 0.002
Diazinon	0.002	mg/L	< 0.002	< 0.002
Dichlorvos	0.002	mg/L	< 0.002	< 0.002
Dimethoate	0.002	mg/L	< 0.002	< 0.002
Disulfoton	0.002	mg/L	< 0.002	< 0.002
EPN	0.002	mg/L	< 0.002	< 0.002
Ethion	0.002	mg/L	< 0.002	< 0.002
Ethoprop	0.002	mg/L	< 0.002	< 0.002
Ethyl parathion	0.002	mg/L	< 0.002	< 0.002
Fenitrothion	0.002	mg/L	< 0.002	< 0.002
Fensulfothion	0.002	mg/L	< 0.002	< 0.002
Fenthion	0.002	mg/L	< 0.002	< 0.002
Malathion	0.002	mg/L	< 0.002	< 0.002
Merphos	0.002	mg/L	< 0.002	< 0.002
Methyl parathion	0.002	mg/L	< 0.002	< 0.002
Mevinphos	0.002	mg/L	< 0.002	< 0.002
Monocrotophos	0.002	mg/L	< 0.002	< 0.002
Naled	0.002	mg/L	< 0.002	< 0.002
Omethoate	0.02	mg/L	< 0.02	< 0.02
Phorate	0.002	mg/L	< 0.002	< 0.002
Pirimiphos-methyl	0.02	mg/L	< 0.02	< 0.02
Pyrazophos	0.002	mg/L	< 0.002	< 0.002
Ronnel	0.002	mg/L	< 0.002	< 0.002
Terbufos	0.002	mg/L	< 0.002	< 0.002
Tetrachlorvinphos	0.002	mg/L	< 0.002	< 0.002
Tokuthion	0.002	mg/L	< 0.002	< 0.002
Trichloronate	0.002	mg/L	< 0.002	< 0.002
Triphenylphosphate (surr.)	1	%	Q09 ^{INT}	Q09 ^{INT}

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

Organochlorine Pesticides

- Method: LTM-ORG-2220 OCP & PCB in Soil and Water

Organophosphorus Pesticides

- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS

Testing Site

Sydney

Sydney

Extracted

Nov 18, 2021

Nov 18, 2021

Holding Time

7 Days

7 Days

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 10, 2021 3:44 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	841026	Due:	Nov 17, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Suite B14: OCP/OPP	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
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	HA_SMC105_0.1	Oct 27, 2021		Soil	S21-No33631	X	X
2	HA_SMC105_0.25	Oct 27, 2021		Soil	S21-No33632	X	X
3	HA_SMC105_0.4	Oct 27, 2021		Soil	S21-No33633	X	X
4	HA_SMC106_0.1	Oct 27, 2021		Soil	S21-No33634	X	X
5	HA_SMC106_0.25	Oct 27, 2021		Soil	S21-No33635	X	X
6	HA_SMC106_	Oct 27, 2021		Soil	S21-No33636	X	X

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 10, 2021 3:44 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	841026	Due:	Nov 17, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Suite B14: OCP/OPP	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
	0.5						
7	HA_SMC101_0.1	Oct 27, 2021		Soil	S21-No33637	X	X
8	HA_SMC101_0.25	Oct 27, 2021		Soil	S21-No33638	X	X
9	HA_SMC101_0.5	Oct 27, 2021		Soil	S21-No33639	X	X
10	HA_SMC107_0.1	Oct 27, 2021		Soil	S21-No33640	X	X
11	HA_SMC107_0.3	Oct 27, 2021		Soil	S21-No33641	X	X
12	HA_SMC107_0.6	Oct 27, 2021		Soil	S21-No33642	X	X

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 10, 2021 3:44 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	841026	Due:	Nov 17, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				
Eurofins Analytical Services Manager : Andrew Black					

Sample Detail						Suite B14: OCP/OPP	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
13	HA_SMC104_0.1	Oct 27, 2021		Soil	S21-No33643	X	X
14	HA_SMC104_0.25	Oct 27, 2021		Soil	S21-No33644	X	X
15	HA_SMC104_0.5	Oct 27, 2021		Soil	S21-No33645	X	X
16	QC01	Oct 27, 2021		Soil	S21-No33646	X	X
17	QC03	Oct 27, 2021		Water	S21-No33647	X	
18	HA_SMC103_0.15	Oct 27, 2021		Soil	S21-No33655	X	X
19	HA_SMC103_0.4	Oct 27, 2021		Soil	S21-No33656	X	X

Company Name:	Ramboll Australia Pty Ltd	Order No.:		Received:	Nov 10, 2021 3:44 PM
Address:	Level 3/100 Pacific Highway North Sydney NSW 2060	Report #:	841026	Due:	Nov 17, 2021
		Phone:	02 9954 8118	Priority:	5 Day
		Fax:	02 9954 8150	Contact Name:	Stephen Maxwell
Project Name:	ADDITIONAL: STATIONS MASTERS COTTAGE CAPTAINS FLAT				
Project ID:	318001025				

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Suite B14: OCP/OPP	Moisture Set
Melbourne Laboratory - NATA # 1261 Site # 1254							
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
Brisbane Laboratory - NATA # 1261 Site # 20794							
Mayfield Laboratory - NATA # 1261 Site # 25079							
Perth Laboratory - NATA # 2377 Site # 2370							
External Laboratory							
20	HA_SMC103_0.55	Oct 27, 2021		Soil	S21-No33657	X	X
21	HA_SMC102_0.2	Oct 27, 2021		Soil	S21-No33658	X	X
22	HA_SMC102_0.35	Oct 27, 2021		Soil	S21-No33659	X	X
23	HA_SMC102_0.5	Oct 27, 2021		Soil	S21-No33660	X	X
24	QC04	Oct 27, 2021		Water	S21-No33661	X	
Test Counts						24	22

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	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - 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.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version
CP	Client Parent - QC was performed on samples pertaining to this report
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.
TEQ	Toxic Equivalency Quotient
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% Phenols & 50-150% PFASs..

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 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							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.002			0.002	Pass	
4,4'-DDD	mg/L	< 0.0002			0.0002	Pass	
4,4'-DDE	mg/L	< 0.0002			0.0002	Pass	
4,4'-DDT	mg/L	< 0.0002			0.0002	Pass	
a-HCH	mg/L	< 0.0002			0.0002	Pass	
Aldrin	mg/L	< 0.0002			0.0002	Pass	
b-HCH	mg/L	< 0.0002			0.0002	Pass	
d-HCH	mg/L	< 0.0002			0.0002	Pass	
Dieldrin	mg/L	< 0.0002			0.0002	Pass	
Endosulfan I	mg/L	< 0.0002			0.0002	Pass	
Endosulfan II	mg/L	< 0.0002			0.0002	Pass	
Endosulfan sulphate	mg/L	< 0.0002			0.0002	Pass	
Endrin	mg/L	< 0.0002			0.0002	Pass	
Endrin aldehyde	mg/L	< 0.0002			0.0002	Pass	
Endrin ketone	mg/L	< 0.0002			0.0002	Pass	
g-HCH (Lindane)	mg/L	< 0.0002			0.0002	Pass	
Heptachlor	mg/L	< 0.0002			0.0002	Pass	
Heptachlor epoxide	mg/L	< 0.0002			0.0002	Pass	
Hexachlorobenzene	mg/L	< 0.0002			0.0002	Pass	
Methoxychlor	mg/L	< 0.0002			0.0002	Pass	
Toxaphene	mg/L	< 0.005			0.005	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/L	< 0.002			0.002	Pass	
Bolstar	mg/L	< 0.002			0.002	Pass	
Chlorfenvinphos	mg/L	< 0.02			0.02	Pass	
Chlorpyrifos	mg/L	< 0.002			0.002	Pass	
Chlorpyrifos-methyl	mg/L	< 0.002			0.002	Pass	
Coumaphos	mg/L	< 0.02			0.02	Pass	
Demeton-S	mg/L	< 0.002			0.002	Pass	
Demeton-O	mg/L	< 0.002			0.002	Pass	
Diazinon	mg/L	< 0.002			0.002	Pass	
Dichlorvos	mg/L	< 0.002			0.002	Pass	
Dimethoate	mg/L	< 0.002			0.002	Pass	
Disulfoton	mg/L	< 0.002			0.002	Pass	
EPN	mg/L	< 0.002			0.002	Pass	
Ethion	mg/L	< 0.002			0.002	Pass	
Ethoprop	mg/L	< 0.002			0.002	Pass	
Ethyl parathion	mg/L	< 0.002			0.002	Pass	
Fenitrothion	mg/L	< 0.002			0.002	Pass	
Fensulfothion	mg/L	< 0.002			0.002	Pass	
Fenthion	mg/L	< 0.002			0.002	Pass	
Malathion	mg/L	< 0.002			0.002	Pass	
Merphos	mg/L	< 0.002			0.002	Pass	
Methyl parathion	mg/L	< 0.002			0.002	Pass	
Mevinphos	mg/L	< 0.002			0.002	Pass	
Monocrotophos	mg/L	< 0.002			0.002	Pass	
Naled	mg/L	< 0.002			0.002	Pass	
Omethoate	mg/L	< 0.02			0.02	Pass	
Phorate	mg/L	< 0.002			0.002	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Pirimiphos-methyl			mg/L	< 0.02			0.02	Pass	
Pyrazophos			mg/L	< 0.002			0.002	Pass	
Ronnel			mg/L	< 0.002			0.002	Pass	
Terbufos			mg/L	< 0.002			0.002	Pass	
Tetrachlorvinphos			mg/L	< 0.002			0.002	Pass	
Tokuthion			mg/L	< 0.002			0.002	Pass	
Trichloronate			mg/L	< 0.002			0.002	Pass	
LCS - % Recovery									
Organochlorine Pesticides									
Chlordanes - Total			%	84			70-130	Pass	
4.4'-DDD			%	87			70-130	Pass	
4.4'-DDE			%	83			70-130	Pass	
4.4'-DDT			%	106			70-130	Pass	
a-HCH			%	77			70-130	Pass	
Aldrin			%	80			70-130	Pass	
b-HCH			%	87			70-130	Pass	
d-HCH			%	78			70-130	Pass	
Dieldrin			%	85			70-130	Pass	
Endosulfan I			%	82			70-130	Pass	
Endosulfan II			%	84			70-130	Pass	
Endosulfan sulphate			%	93			70-130	Pass	
Endrin			%	119			70-130	Pass	
Endrin aldehyde			%	93			70-130	Pass	
Endrin ketone			%	93			70-130	Pass	
g-HCH (Lindane)			%	87			70-130	Pass	
Heptachlor			%	97			70-130	Pass	
Heptachlor epoxide			%	86			70-130	Pass	
Hexachlorobenzene			%	74			70-130	Pass	
Methoxychlor			%	111			70-130	Pass	
LCS - % Recovery									
Organophosphorus Pesticides									
Diazinon			%	89			70-130	Pass	
Dimethoate			%	95			70-130	Pass	
Ethion			%	111			70-130	Pass	
Fenitrothion			%	99			70-130	Pass	
Methyl parathion			%	108			70-130	Pass	
Mevinphos			%	107			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
4.4'-DDD	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
4.4'-DDE	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
4.4'-DDT	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
a-HCH	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Aldrin	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
b-HCH	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
d-HCH	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Dieldrin	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Endosulfan I	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Endosulfan II	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Endosulfan sulphate	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Endrin	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Endrin aldehyde	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Endrin ketone	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
g-HCH (Lindane)	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Heptachlor	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Heptachlor epoxide	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Hexachlorobenzene	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Methoxychlor	S21-No44834	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Bolstar	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Chlorfenvinphos	S21-No44834	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Chlorpyrifos	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Chlorpyrifos-methyl	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Coumaphos	S21-No44834	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Demeton-S	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Demeton-O	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Diazinon	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Dichlorvos	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Dimethoate	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Disulfoton	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
EPN	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Ethion	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Ethoprop	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Ethyl parathion	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Fenitrothion	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Fensulfotiothion	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Fenthion	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Malathion	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Merphos	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Methyl parathion	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Mevinphos	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Monocrotophos	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Naled	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Omethoate	S21-No44834	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phorate	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Pirimiphos-methyl	S21-No44834	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Pyrazophos	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Ronnel	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Terbufos	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Tetrachlorvinphos	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Tokuthion	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Trichloronate	S21-No44834	NCP	mg/L	< 0.002	< 0.002	<1	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
Q09	The Surrogate recovery is outside of the recommended acceptance criteria due to matrix interference. Acceptance criteria were met for all other QC

Authorised by:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)



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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APPENDIX 7

BORE LOGS



CLIENT John Holland Rail

PROJECT NAME Captains Flat

PROJECT NUMBER 318001025

PROJECT LOCATION Station Masters Cottage

DATE STARTED 27-10-21 COMPLETED 27-10-21

R.L. SURFACE _____ DATUM _____

DRILLING CONTRACTOR Stratacore

SLOPE 90° BEARING 90°

EQUIPMENT SFA

HOLE LOCATION _____

HOLE SIZE 100mm

LOGGED BY JA CHECKED BY _____

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
SFA					FILL	TOPSOIL w/ grass on surface		NOC
					FILL	GRAVELLY CLAY, brown, dry, soft-firm, coarse grained gravels, moderate plasticity, rootlets	HA_SMC101_0.1	NOC
							HA_SMC101_0.25	
			0.5		NAT	GRAVELLY CLAY, brown-orange w/ minor grey mottles, dry, firm-hard, coarse grained gravels (~10mm), high plasticity	HA_SMC101_0.5 QC01, QC02	NOC
			1.0			Borehole HA_SMC101 terminated at 0.7m		



CLIENT

John Holland Rail

PROJECT NAME

Captains Flat

PROJECT NUMBER

318001025

PROJECT LOCATION

Station Masters Cottage

DATE STARTED

28-10-21

COMPLETED

28-10-21

R.L. SURFACE

DATUM

DRILLING CONTRACTOR

SLOPE

90°

BEARING

90°

EQUIPMENT

HA

HOLE LOCATION

HOLE SIZE

100mm

LOGGED BY

JA

CHECKED BY

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
HA					FILL	TOPSOIL w/ grass on surface		NOC
					FILL	GRAVELLY CLAY, brown, dry, soft, coarse grained gravels (20-50mm), low plasticity, rootlets	HA_SMC102_0.2	NOC
					FILL	GRAVELLY CLAY, brown/orange, dry, moderate plasticity, firm, rootlets, coarse-medium grained	HA_SMC102_0.35	NOC
			0.5		NAT	CLAY, orange, slightly moist, high plasticity, hard, w/ quartz gravels (~10-60mm), fine grained, more consistent	HA_SMC102_0.5	NOC
						Borehole HA_SMC102 terminated at 0.75m		
			1.0					



CLIENT John Holland Rail

PROJECT NAME Captains Flat

PROJECT NUMBER 318001025

PROJECT LOCATION Station Masters Cottage

DATE STARTED 28-10-21 COMPLETED 28-10-21

R.L. SURFACE _____ DATUM _____

DRILLING CONTRACTOR _____ SLOPE 90° BEARING 90°



EQUIPMENT HA

HOLE LOCATION _____

HOLE SIZE 100mm

LOGGED BY JA CHECKED BY _____

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
HA					FILL	TOPSOIL w/ grass on surface		NOC
					FILL	GRAVELLY CLAY, brown, slightly moist, moderate plasticity, soft-firm, coarse grained gravels (20-30mm), rootlets	HA_SMC103_0.15	NOC
			0.5		FILL	GRAVELLY CLAY, grey/light brown, dry, firm, large gravels (60-70mm), moderate plasticity, rootlets	HA_SMC103_0.4	Organic odour
					NAT	CLAY, orange/grey, fine grained, minor gravels (10-20mm), high plasticity, slightly moist, firm-hard, rootlets	HA_SMC103_0.55	NOC
			1.0			Borehole HA_SMC103 terminated at 0.9m		



CLIENT

John Holland Rail

PROJECT NAME

Captains Flat

PROJECT NUMBER

318001025

PROJECT LOCATION

Station Masters Cottage

DATE STARTED

27-10-21

COMPLETED

27-10-21

R.L. SURFACE

DATUM

DRILLING CONTRACTOR

SLOPE

90°

BEARING

90°

EQUIPMENT

HA

HOLE LOCATION

HOLE SIZE

100mm

LOGGED BY

JA

CHECKED BY

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
HA					FILL	TOPSOIL w/ grass on surface	HA_SMC104_0.1	NOC
					FILL	GRAVELLY CLAY, brown, dry, rootlets, coarse grained gravels (~10-20mm), low-moderate plasticity, rootlets, firm	HA_SMC104_0.25	NOC
			0.5		FILL	GRAVELLY CLAY, brown/grey, dry, coarse-medium grained gravels, low-medium plasticity, rootlets, firm	HA_SMC104_0.5	NOC
					NAT	CLAY, light grey w/ minor orange mottles, more consistent, fine grained, dry, firm-hard, high plasticity		NOC
			1.0			Borehole HA_SMC104 terminated at 0.8m		



CLIENT John Holland Rail

PROJECT NAME Captains Flat

PROJECT NUMBER 318001025

PROJECT LOCATION Station Masters Cottage

DATE STARTED 27-10-21 COMPLETED 27-10-21




R.L. SURFACE _____ DATUM _____

DRILLING CONTRACTOR _____ SLOPE 90° BEARING 90°

EQUIPMENT HA HOLE LOCATION _____

HOLE SIZE 100mm LOGGED BY JA CHECKED BY _____

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
HA					FILL	TOPSOIL w/ grass on surface	HA_SMC105_0.1	NOC
					FILL	GRAVELLY SANDY CLAY, BROWN/GREY, coarse grained, dry, moderate plasticity, rootlets, soft	HA_SMC105_0.25	NOC
			0.5		NAT	CLAY, grey/orange, dry, firm-hard, fine grained, rootlets, high plasticity, minor gravels (~10mm) at 0.7m becoming more orange, firm, medium plasticity	HA_SMC105_0.4	NOC
			1.0			Borehole HA_SMC105 terminated at 0.8m		



CLIENT John Holland Rail

PROJECT NAME Captains Flat

PROJECT NUMBER 318001025

PROJECT LOCATION Station Masters Cottage

DATE STARTED 27-10-21 COMPLETED 27-10-21 R.L. SURFACE _____ DATUM _____

DRILLING CONTRACTOR _____ SLOPE 90° BEARING 90°

EQUIPMENT HA HOLE LOCATION _____

HOLE SIZE 100mm LOGGED BY JA CHECKED BY _____

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
HA					FILL	TOPSOIL w/ grass on surface	HA_SMC106_0.1	NOC
					FILL	GRAVELLY CLAY, brown, dry, rootlets, coarse grained gravels (~10-20mm), low-moderate plasticity, rootlets, firm	HA_SMC106_0.25	NOC
					FILL	GRAVELLY CLAY, brown/grey, dry, coarse-medium grained gravels, low-medium plasticity, rootlets, firm		NOC
			0.5		NAT	CLAY, light grey w/ minor orange mottles, more consistent, fine grained, dry, firm-hard, high plasticity	HA_SMC106_0.5	NOC
			1.0			Borehole HA_SMC106 terminated at 0.7m		



CLIENT

John Holland Rail

PROJECT NAME

Captains Flat

PROJECT NUMBER

318001025

PROJECT LOCATION

Station Masters Cottage

DATE STARTED

27-10-21

COMPLETED

27-10-21

R.L. SURFACE

DATUM

DRILLING CONTRACTOR

SLOPE

90°

BEARING

90°

EQUIPMENT

HA

HOLE LOCATION

HOLE SIZE

100mm

LOGGED BY

JA

CHECKED BY

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
HA					FILL	TOPSOIL w/ grass on surface	HA_SMC107_0.1	NOC
					FILL	GRAVELLY CLAY, brown/grey, dry, low-moderate plasticity, rootlets, rubbish (porcelain fragments), coarse grained gravels, soft-firm	HA_SMC107_0.3	NOC
			0.5		NAT	CLAY, brown/light grey, dry, moderate plasticity, firm, rootlets, minor medium grained gravels at 0.65m becoming orange, high plasticity, firm-hard, slightly moist, more consistent	HA_SMC107_0.6	NOC
			1.0			Borehole HA_SMC107 terminated at 0.85m		



CLIENT	John Holland Rail	PROJECT NAME	Captains Flat Rail Corridor Investigation
PROJECT NUMBER	318001025	PROJECT LOCATION	Rail Corridor
DATE STARTED	27-10-21	COMPLETED	27-10-21
DRILLING CONTRACTOR	Stratacore	R.L. SURFACE	
EQUIPMENT	SFA	SLOPE	90°
HOLE SIZE		BEARING	90°
LOGGED BY	SC	HOLE LOCATION	
CHECKED BY	NM		
NOTES			

Method	Water	Well Details	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
SFA						FILL	SILTY CLAY, brown, becoming red-brown, moist		NOC
				1		NAT	CLAY, Residual, red-brown and brown, medium plasticity, rock fragments, moist		
				2			harder drilling 1.5-2.0 mbgl		
				3		NAT	EXTREMELY WEATHERED DACITE, yellow/tan, some quartz fragments, moist, rock fragments, brown, very fine grained, crystalline, non laminar, some quartz, dry		
				4					
				5					
				6			harder drilling at 6 mbgl		
				7					
				8					
				9			very hard at 9.5 mbgl		
				10					



CLIENT John Holland Rail

PROJECT NAME Captains Flat Rail Corridor Investigation

PROJECT NUMBER 318001025

PROJECT LOCATION Rail Corridor

DATE STARTED 27-10-21 COMPLETED 27-10-21 R.L. SURFACE _____ DATUM _____

DRILLING CONTRACTOR Stratacore SLOPE 90° BEARING 90°

EQUIPMENT SFA HOLE LOCATION _____

HOLE SIZE _____ LOGGED BY SC CHECKED BY NM

NOTES _____

Method	Water	Well Details	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
SFA				11	X	NAT	EXTREMELY WEATHERED DACITE (continued)		
					X				
					X				
					X				
					X				
					X				
					X				
					X				
					X				
					X				
					X				
					X				
					X				
				12	X		Borehole GW101 terminated at 13.5 mbgl		
					X				
					X				
					X				
					X				
					X				
					X				
					X				
				13	X				
					X		Borehole GW101 terminated at 13.5 mbgl		
					X				
					X				
					X				
					X				
					X				
					X				
					X				
				14					
							Borehole GW101 terminated at 13.5 mbgl		
				15					
							Borehole GW101 terminated at 13.5 mbgl		
				16					
							Borehole GW101 terminated at 13.5 mbgl		
				17					
							Borehole GW101 terminated at 13.5 mbgl		
				18					
							Borehole GW101 terminated at 13.5 mbgl		
				19					
							Borehole GW101 terminated at 13.5 mbgl		
				20					

CLIENT John Holland Rail PROJECT NAME Captains Flat Rail Corridor Investigation

PROJECT NUMBER 318001025 PROJECT LOCATION Rail Corridor

DATE STARTED 26-10-21 COMPLETED 26-10-21 R.L. SURFACE _____ DATUM _____

DRILLING CONTRACTOR _____ SLOPE 90° BEARING 90°

EQUIPMENT SFA, AH HOLE LOCATION _____

HOLE SIZE _____ LOGGED BY SC CHECKED BY NM

NOTES _____

Method	Water	Well Details	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
SFA				1		FILL	GRAVELLY SAND CLAY, red-brown, low plasticity, rock fragments, fine sand, dry-moist		NOC
						NAT	CLAY, red brown, medium plasticity, some rock fragments (quartz), moist, shaley		
AH				2		NAT	EXTREMELY WEATHERED SHALE, hard layer at 1.5m, red brown, fragments of shale (green-grey), fine grained laminate Auger refusal at 2.3 mbgl		
						NAT	Quartz chips at 3 mbgl		
				3					
				4					
				5		NAT	EXTREMELY-HIGHLY WEATHERED SHALE, with fine sandstone interbeds and quartz veins, dry, some clay		
				6					
				7			becoming moist at 6.5 mbgl making water below ~7 mbgl		
				8					
				9					
				10			Borehole GW103 terminated at 9.7 mbgl		

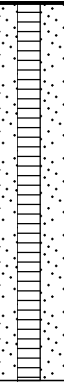
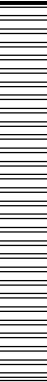
CLIENT Department of Regional NSW **PROJECT NAME** Captains Flat Lead Management Plan
PROJECT NUMBER 318001193 **PROJECT LOCATION** Captains Flat, NSW
DATE STARTED 9/6/21 **COMPLETED** 9/6/21 **R.L. SURFACE** 865.981 **DATUM** m mAHD
DRILLING CONTRACTOR Stratacore Pty Ltd **SLOPE** 90° **BEARING** ---
EQUIPMENT Hand Auger, Solid Flight Auger **HOLE LOCATION** 720896.58E,6058791.96N
HOLE SIZE 0.1m **LOGGED BY** TJF **CHECKED BY** SM

NOTES

Method	Water	Well Details	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			865	1			FILL; gravelly CLAY, dark brown, high palsticity, soft, moist, medium grained sand, gravels Sandy CLAY; natural, brown, high plasticity, moist, medium grained sands, minor gravels, firm	GW10_0.0, XRF 1468ppm GW10_0.1, XRF 21ppm GW10_0.2, XRF 28ppm GW10_0.3, XRF 27ppm GW10_0.4, XRF 21ppm GW10_0.5, XRF 27ppm GW10_1.0, XRF 23ppm	
			864	2			CLAY; natural, red-brown, high plasticity, firm, moist, minor gravels and sands	GW10_2.0, XRF 27ppm	
			863	3			BEDROCK; natural, red-brown, conglomerate		
			862	4			SHALE; natural, grey	GW10_4.0, XRF 184ppm	
			861	5					
			860	6					
			859	7					
			858	8					

CLIENT Department of Regional NSW **PROJECT NAME** Captains Flat Lead Management Plan
PROJECT NUMBER 318001193 **PROJECT LOCATION** Captains Flat, NSW
DATE STARTED 9/6/21 **COMPLETED** 9/6/21 **R.L. SURFACE** 865.981 **DATUM** m mAHD
DRILLING CONTRACTOR Stratacore Pty Ltd **SLOPE** 90° **BEARING** ---
EQUIPMENT Hand Auger, Solid Flight Auger **HOLE LOCATION** 720896.58E,6058791.96N
HOLE SIZE 0.1m **LOGGED BY** TJF **CHECKED BY** SM

NOTES

Method	Water	Well Details	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			857	9			SHALE; natural, grey (<i>continued</i>)		
			856	10			Borehole GW10 terminated at 10m		
			855	11					
			854	12					
			853	13					
			852	14					
			851	15					
			850	16					