APPENDIX I – Environmental Impact Statement

Excavated rock management strategy

Prepared for Lake Lyell Project Pty Ltd

Lake Lyell Pumped Hydro Energy Storage Project

Excavated rock management strategy

Lake Lyell Project Pty Ltd

E221111 RP#24

November 2025

Version	Date	Prepared by	Reviewed by	Comments
V1	21 August 2025	Chris Kuczera	Christopher Holloway	Draft
V2	15 September 2025	Chris Kuczera	Christopher Holloway	Draft
V3	11 November 2025	Chris Kuczera	Christopher Holloway	Draft
V4	28 November 2025	Chris Kuczera	Christopher Holloway	Final

Approved by

Chris Kuczera
Associate Water Resources Engineer
28 November 2025

Level 3 175 Scott Street
Newcastle NSW 2300
ABN: 28 141 736 558

Executive Summary

ES1 Introduction and background

EnergyAustralia Portfolio Holdings Pty Ltd (EnergyAustralia) in partnership with EDF power solutions Australia (EDFA), referred to as Lake Lyell Project Pty Ltd (LLP) as trustee, is developing the Lake Lyell Pumped Hydro Energy Storage (PHES) Project (the project). The construction of surface and subsurface infrastructure for the project will require the excavation of significant quantities of rock. LLP propose to beneficially use most excavated rock to construct the upper reservoir embankment, construction pads and access roads. Due to potential water quality risks associated with excavated rock emplacements, the upper reservoir, access road landforms and construction pads are described as being permanent spoil emplacements (PSEs) in this report.

ES2 Report purpose

This report is an excavated rock management strategy. It includes the following information:

- a description of excavated rock sources and proposed PSEs
- a description of the geochemical characteristics of the excavated material and the potential water quality risks from excavated rock emplacements
- design principles and concepts for each PSE.

ES3 Water quality risks

Water quality risks of excavated rock are a function of the rock geochemistry and excavation methods. These risks are described in Chapter 4 of this report and are summarised below.

ES3.1 Rock geochemistry

LLP commissioned a geochemistry characterisation study to identify and characterise rock geochemistry and associated water quality risks. The study utilised rock samples from geotechnical and hydrogeological drilling programs that were undertaken to inform the project's concept design and EIS and is documented in the Geochemical Characterisation Report (provided as Annexure A).

The study results indicate that the excavated rock will:

- not pose a significant acid metalliferous drainage risk
- not pose a significant saline drainage risk
- large-scale mobilisation of metals and metalloids other than aluminium is unlikely if acidification risks can be managed
- there is a low likelihood of excavated rock containing naturally occurring asbestos (within the range of lithologies and depths investigated).

ES3.2 Construction related

Due to rock conditions, drill and blast methods will be required to construct most of the proposed subsurface and major surface and excavations. The use of ammonium nitrate fuel oil explosives is a known source of nitrogen contamination of water in construction areas where blasting is used and seepage from stockpiles of drill and blast generated material. The release of nitrogen can occur due to:

- leaching from explosives prior to detonation
- leaching from undetonated explosives after detonation
- nitrogen residue in blasted material after detonation.

Nitrogen residual in blasted material is bound to the surface of rock fragments. Given that nitrogen compounds including ammonium and nitrate are highly soluble, leaching of residual nitrogen is expected to occur in the short to medium term following blasting. The timeframes for leaching are expected to be variable based on a range of factors including PSE construction timeframes, blasting intensity, types of explosives used, exposure of blasted material to weather and water prior to placement, the design of PSEs and water exposure of the material following placement. It is anticipated that the leaching rate can be accelerated by irrigating excavated rock during construction of emplacements.

For the purposes of this excavated rock management strategy, it is assumed that drill and blast generated material may leach nitrogen at concentrations that are elevated relative to the receiving waters. The rate of leaching will be highest immediately after placement (which could occur for several years for some PSEs) and will decline overtime.

Nitrogen leaching will be managed via the following methods:

- source controls to minimise the release of nitrogen due to the use of explosives
- during construction nitrogen laden runoff and seepage will be treated and managed in the construction water system
- some excavated rock will be washed prior to placement to mitigate the risk of nitrogen leaching.

ES4 Preferred excavated rock management strategy

Most excavated rock will be beneficially used to construct the upper reservoir embankment, construction pads and roads. Due to potential water quality risks associated with excavated rock emplacements, the upper reservoir, access road landforms and construction pads are described as being PSEs in this report. Six PSEs are proposed. These PSEs are divided into the following categories:

- **Embankment constructed using excavated rock** – PSE 1 will be the embankment for the proposed upper reservoir.
- **In-reservoir PSEs** - PSE 2 and 3 will be partially below the Lake Lyell full supply level (FSL).
- **Land-based PSEs** - PSE 4, 5 and 6 will be land-based emplacements.

Chapter 5 describes how each PSE will interact with the water cycle (i.e. surface and groundwater) and proposed measures that will be implemented to manage water quality risks during construction and operations. The proposed measures will be applied to the detailed design of each PSE, which will be completed post approval. Key information from the detailed design of each PSE will be provided in the excavated rock management plan(s) that will also be prepared post approval.

Residual impacts to the surface and groundwater environment are addressed separately in the Surface Water Assessment (EMM 2025a) and Groundwater Assessment (EMM 2025b) respectively, using information from Chapter 5.

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1 Introduction

1.1 Background

EnergyAustralia Portfolio Holdings Pty Ltd (EnergyAustralia) in partnership with EDF power solutions Australia (EDFA), referred to as Lake Lyell Project Pty Ltd (LLP) as trustee, is developing the Lake Lyell Pumped Hydro Energy Storage (PHES) Project (the project). The project that will have the capacity to store up to 3,080 megawatt hours (MWh) of energy and generate at 385 megawatts (MW) for 8 hours or generate up to around 440 MW for a shorter period. At a basic level, it will consist of upper and lower water reservoirs, a pipeline connecting them, and a hydro-electric power station connected to the national energy grid that can generate or consume electricity.

The project is located approximately 5 kilometres (km) west of Lithgow and 110 km west of the Sydney central business district, shown in Figure 1.1 and Figure 1.2. The project takes advantage of existing infrastructure (i.e. Lake Lyell) associated with Mt Piper power station which will be decommissioned in the coming decades and allows Lake Lyell to continue to serve a specific purpose in electricity generation (consistent with its existing use).

In June 2024, the Minister for Planning and Public Spaces declared the project to be critical State significant infrastructure (CSSI). Accordingly, approval for the project is required under Part 5, Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This requires the preparation of an environmental impact statement (EIS) for the project in accordance with Secretary's environmental assessment requirements (SEARs) and the approval of the Minister. EMM Consulting Pty Limited (EMM) has been engaged by LLP to prepare the EIS.

1.2 Assessment guidelines and requirements

The construction of surface and subsurface infrastructure for the project will require the excavation of significant quantities of rock. LLP propose to beneficially use most excavated rock to construct the upper reservoir embankment, construction pads and access roads. Due to potential water quality risks associated with excavated rock emplacements, the upper reservoir, access road landforms and construction pads are described as being permanent spoil emplacements (PSEs) in this report.

This report includes the following information:

- a description of excavated rock sources and proposed PSEs (refer to Chapter 3)
- a description of the geochemical characteristics of the excavated material and the potential water quality risks from excavated rock emplacements (refer to Chapter 4)
- design principles and concepts for each PSE (refer to Chapter 5).

An initial (Phase 1) geochemistry assessment is provided in Annexure A and is summarised in Chapter 3.

This report references the following technical reports that also support the EIS for the project:

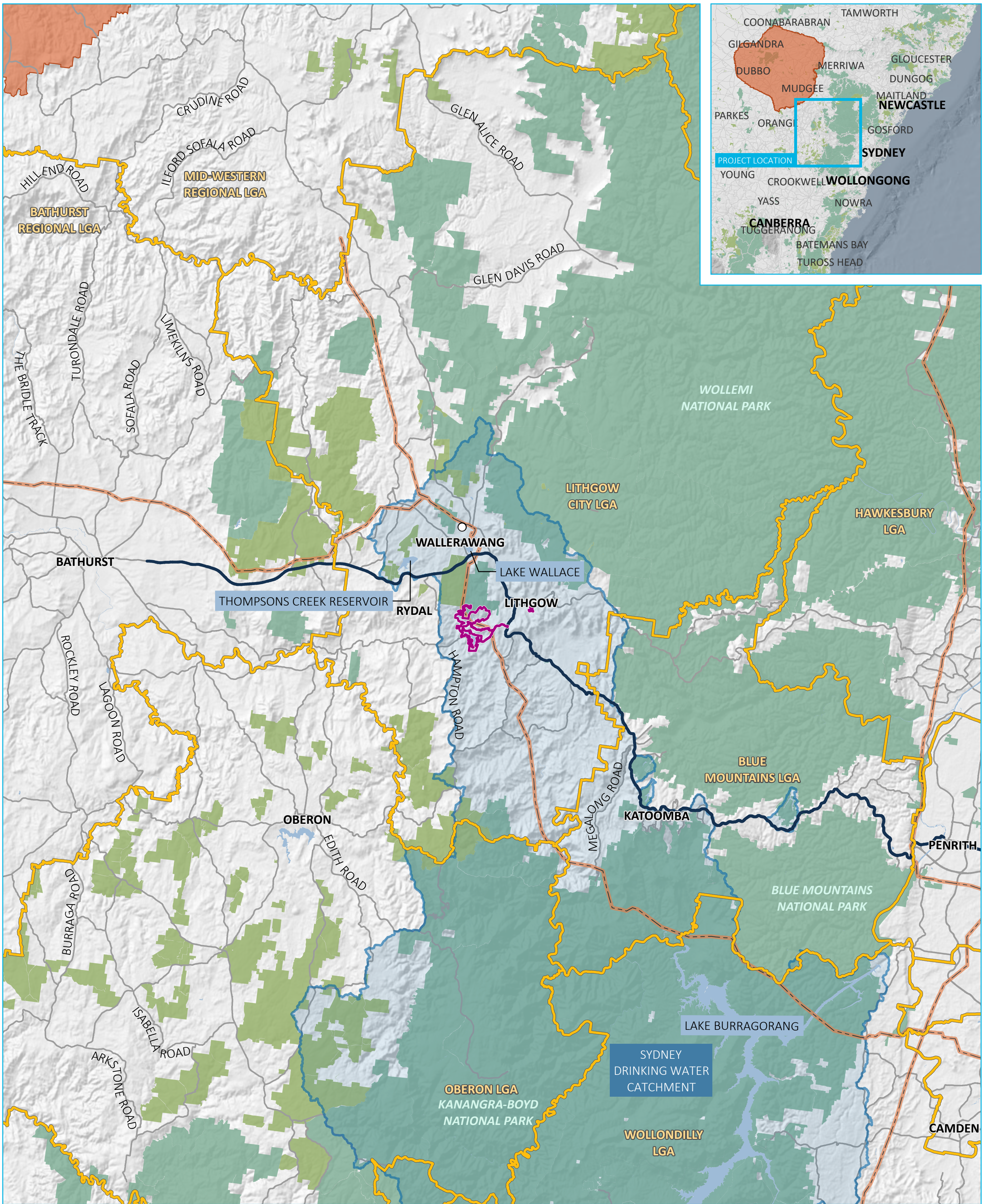
- Surface water assessment (EMM 2025a) – this report describes the existing surface water environment, the water management approach for construction and operation of the project and residual impacts.
- Groundwater assessment (EMM 2025b) – this report describes the existing groundwater environment and groundwater impacts during construction and operation of the project.
- Soil, land use and rehabilitation assessment (Minesoils 2025) – this report describes the existing soil characteristics and a rehabilitation strategy.

1.2.1 SEARs

This preferred excavated rock management strategy has been prepared in accordance with the requirements of the NSW Department of Planning, Housing and Infrastructure (DPHI) and relevant agencies, which are set out in the SEARs for the project, issued on 17 November 2025. The SEARs identify matters which must be addressed in the EIS. Individual requirements relevant to this preferred excavated rock management strategy and where they are addressed in this report are listed in Table 1.1.

Table 1.1 Excavated rock management related SEARs

Requirements	Section addressed
Water and soils - including	
• a strategy to manage spoil and enhance any new landforms created.	This report
An assessment of the impacts of the project must: • identify, assess and describe any potential risks relating to all known and potential contaminants of concern (CoC) including nitrate that may be associated with any proposed blasting • describe mitigation and management options that will be used to prevent identified soil and water impacts associated with blasting. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented and any associated impacts of these measures.	This report (as relevant to excavated rock) and the Surface Water Assessment (EMM 2025a).



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Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); ABS (2021); DCSSS (2024); GA (2009); ESRI (2025)

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KEY

- Project area
- Existing environment
- Mt Piper Power Station
- Major road
- Great Western Highway
- 330 kV transmission line
- Named waterbody
- NPWS reserve
- State forest
- Local government area
- Sydney Drinking Water Catchment
- Central West Orana Renewable Energy Zone

INSET KEY

- Major road
- NPWS reserve
- State forest
- Central West Orana Renewable Energy Zone

Regional context

Lake Lyell PHES
Excavated Rock Management Strategy
Figure 1.1

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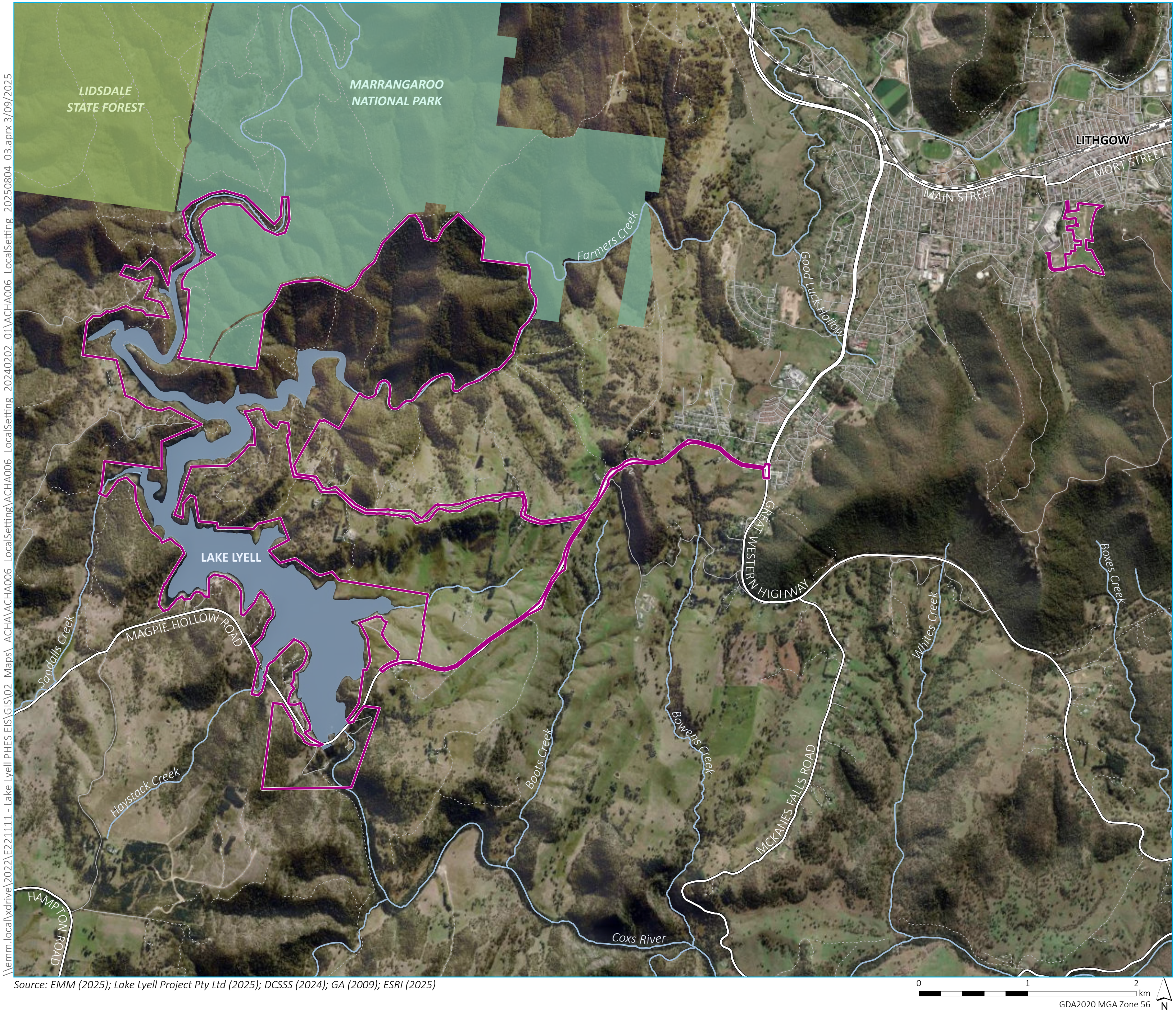


KEY

- Project area

Existing environment

- Rail line
- Major road
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); ESRI (2025)

Local context

Lake Lyell PHES
Excavated Rock Management Strategy
Figure 1.2

EMM creating opportunities

2 Description of the project

A detailed description of the project, including an overview of its design, construction and operation is provided in the project's EIS. The EIS (specifically Chapter 3 and Appendix B) should be read in conjunction with this report. A summary of the project's key elements is provided below.

The project design, as shown in Figure 2.1, can be broadly categorised into:

- pumped hydro generation components – including a 5.3 gigalitre (GL) upper reservoir to be constructed behind the southern ridge of Mount Walker, a 33.5 GL lower reservoir (existing Lake Lyell), inlet/outlet structures, and an underground powerhouse, surge shaft and waterway tunnels

- transmission connection components – including a new high voltage switchyard and connection to the existing 330 kilovolt (kV) transmission line that runs through the site

- site access and ancillary facilities – including upgrade of existing and construction of new access roads and bridges, a diversion and infill of a section of Lake Lyell, administration and utilities

- other construction components or works – including geotechnical investigations, temporary workforce accommodation, site work pads, laydown areas and facilities, and spoil management.

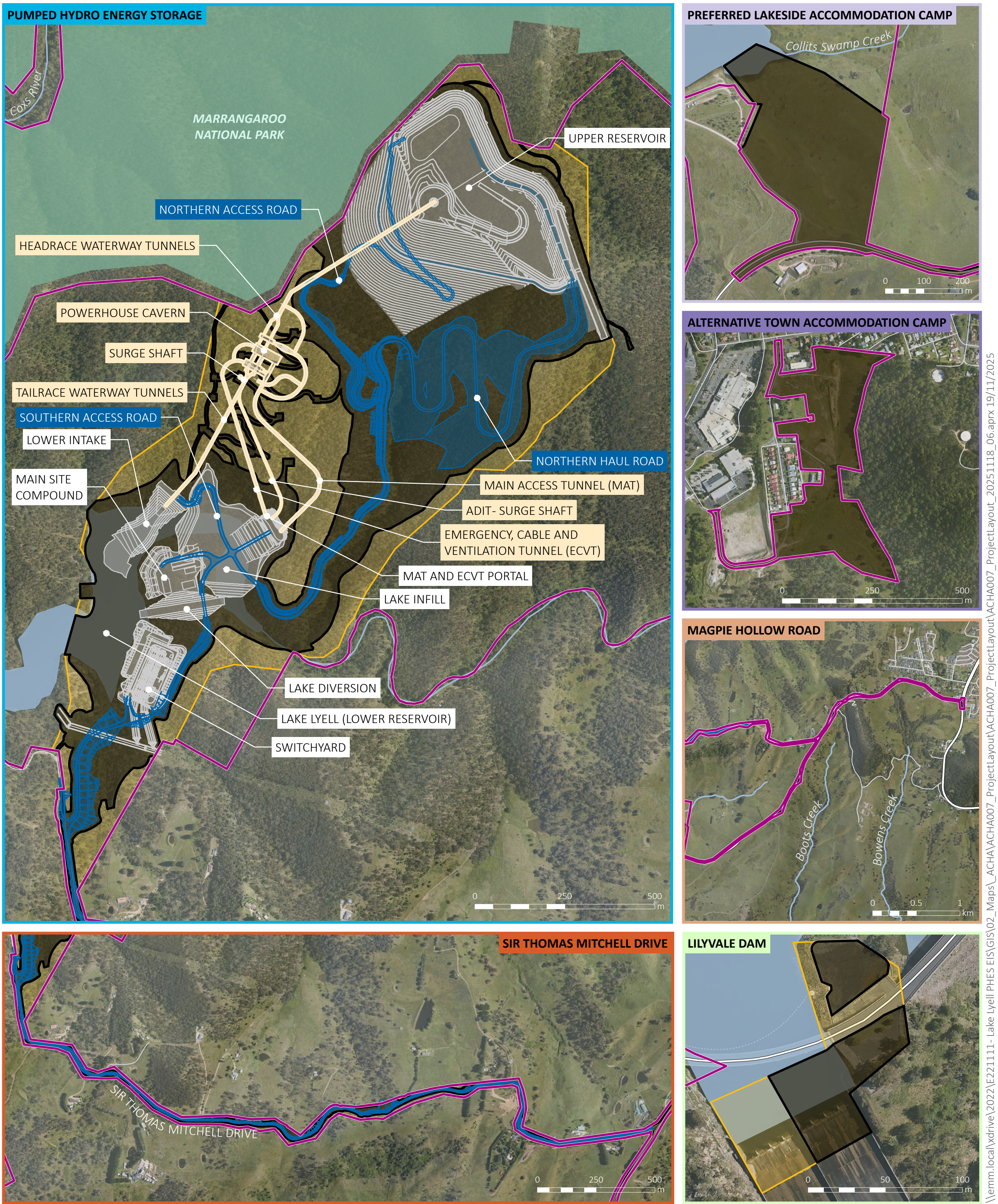
Construction will be completed in stages, including:

- pre-construction / enabling works – consisting of initial access works (internal and external roads), geotechnical investigations, site establishment and preparation of the worker's accommodation camp

- main works – consisting of all other construction activities needed to enable operation of the project.

During operation, the project will act as an electrical energy storage system through the conversion of electrical to kinetic energy to gravitational energy and back via water as it is transferred from the elevated upper reservoir to a lower reservoir. The project will provide services to the wholesale 'spot' market on the National Electricity Market (NEM), and support ancillary services used to manage the power system reliably.

After the 80 to 100-year design life of the project, the asset may remain viable for a plant refurbishment and extension of life as has been seen for other older assets globally. Following the plants final refurbishment or once it has reached the end of its serviceable life then the project would look to return the site to a more natural state and encourage community beneficial use.



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)

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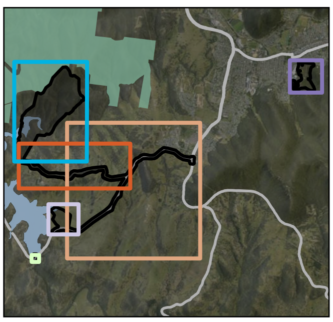

KEY

- Project area
- Permanent road
- Above ground design
- Underground design
- Construction envelope
- Disturbance footprint

Existing environment

- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve

Project overview

Lake Lyell PHES
Excavated Rock Management Strategy
Figure 2.1

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3 Excavated rock sources and emplacements

This chapter describes what excavated rock is, sources of excavated rock, the excavated rock management approach and proposed PSEs.

3.1 Terminology

3.1.1 Excavated rock

For the purposes of this report excavated rock is:

- material produced from subsurface excavations via either drill and blast (D&B) or raised bore methods
- material produced from major surface excavations using either D&B or heavy rip methods.

Sources of excavated rock are described in Section 3.3.

Material produced from earthworks that are not major surface excavations is not considered to be excavated rock as it will typically comprise a mixture of soil and weathered rock that is excavated without the use of explosives and has a lower water quality risk than excavated rock. Water management for areas where earthworks will occur is addressed in the Surface Water Assessment (EMM 2025a).

3.1.2 Rock volumes

This report refers to bank, loose and placed rock volumes. Table 3.1 describes each of these terms and conversion factors that are used in this report.

Table 3.1 Terminology used to describe rock volumes

Terminology	Description	Conversion factor (relative to BCM)
Bank cubic metres (BCM)	Refers to the volume of rock prior to excavation.	1.00
Loose cubic metres (LCM)	Refers to the volume of rock stockpiled after excavation.	1.60
Placed cubic metres (PCM)	Refers to the volume of rock placed in a PSE and accounts for compaction that is undertaken during placement to offset bulking and minimise long term consolidation.	1.26

Source: Conversion factors provided by LLP

3.2 Excavated rock categories

For the purposes of this report excavated rock is categorised based on environmental risks. This means that all rock in a category has a similar environmental risk and can be managed using a common approach that is based on risks. The following excavated rock categories are described in this report:

- **Type 1** – refers to material excavated using D&B methods.
- **Type 1 (washed)** – refers to Type 1 material that is washed prior to placement to remove nitrogen and fines. The washing process is described in Section 4.2.1.
- **Type 2** – refers to material excavated using non-D&B methods such as raised bore and heavy rip.

Water quality risks associated with Type 1, Type 1 (washed) and Type 2 material are described in Chapter 4.

3.3 Sources of excavated rock

Excavated rock will be produced by subsurface excavations and several major surface excavations. Table 3.2 provides the following information for each source of excavated rock:

- volume of rock
- excavation method
- geological unit
- excavated rock category.

Figure 3.1 shows the approximate location and footprint of each source.

Table 3.2 Sources of excavated rock

Source	Volume (million BCM)[1]	Excavation method	Geological unit[2]	Rock category
Subsurface excavations				
Tunnels, powerhouse and caverns and surge shafts	0.59	D&B	Dlay & Dlag	Type 1
	0.01	raised bore	Dlay & Dlag	Type 2
Major surface excavations				
Upper Reservoir	5.22	D&B	Dlay & Dlag	Type 1
Lake Diversion	0.23	D&B	Dlay & Dlag	Type 1
Northen access road	0.80	D&B	Dlay & Dlag	Type 1
Inlet outlet structure (includes Inlet / outlet and channel and Portal Pad)	0.27	D&B	Dlay, Dlag & lake sediments	Type 1
	0.13	Heavy rip		Type 2
Switchyard	0.04	D&B	Dlay, Dlag & lake sediments	Type 1
	0.03	Heavy rip		Type 2
Site compound	0.03	Heavy rip	Dlay & Dlag	Type 2
Totals				
Type 1	7.15	D&B	Dla	Type 1
Type 2	0.20	Heavy rip, raised bore	Dla	Type 2
All types	7.35	varies	Dla	Type 1 & 2

Notes: 1. All volumes are rounded to 0.01 million m^3 (and may not add up)
2. Geological Units:
Dlay: Rydal Formation: Massive, red-grey cleaved mudstone and shale interbedded with medium-to thick-bedded, lithic to quartz-rich, fine-to medium-grained sandstone with common cross bedding (Colquhoun, et al., 2022)
Dlag: Gibbons Creek Sandstone: Fossiliferous quartz arenite, siltstone, mudstone (Colquhoun, et al., 2022)
Lake sediments – alluvial material on the bed of Lake Lyell

Source: Volumes, excavation method and geological unit provided by LLP

Source: EMM (2025); EnergyAustralia (2025); DCSSS (2023); MetroMap (2025); GA (2009)

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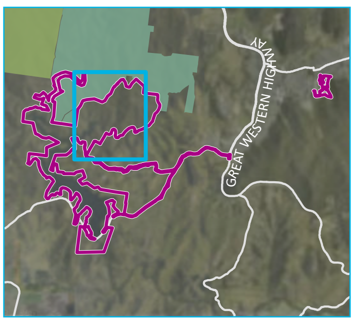

KEY
- Project area
- Disturbance footprint
- Site layout

Source of excavated rock
- Subsurface excavation
- Major surfce excavation

Existing environment
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve

INSET KEY
- Major road
- NPWS reserve
- State forest

Sources of excavated rock

Lake Lyell PHES
Excavated Rock Management Strategy
Figure 3.1

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3.4 Excavated rock management

Most excavated rock will be beneficially used to construct the upper reservoir embankment, construction pads and roads. Due to the potential water quality risks associated with excavated rock emplacements, the upper reservoir and construction pads are described as being PSEs in this report. LLP propose to transport surplus excavated rock offsite to an appropriate facility.

Table 3.3 provides a summary of estimated rock volumes that will be beneficially used in construction and transported offsite. The volumes are provided as BCM, LCM and PCM (refer to Table 3.1). It is noted that BCM, LCM and PCM volumes for each item in the table relate to the same mass of rock (i.e. the variation in volume is due to the variable density).

Table 3.3 Excavated rock management summary

	Rock volume		
	million BCM	million LCM	million PCM
Beneficially used in construction (in PSEs)			
Type 1	6.92	11.07	8.72
Type 2	0.19	0.30	0.24
Total	**7.11**	**11.36**	**8.95**
Exported offsite to an appropriate facility			
Type 1	0.24	0.37	0.29
Type 2	0.00	0.00	0.00
Total	**0.24**	**0.37**	**0.29**
Overall total	**7.35**	**11.73**	**9.24**

Note: All volumes are rounded to 0.01 million m^3 (and may not add up)

3.5 Permanent spoil emplacements

As noted in Section 3.4, most excavated rock will be beneficially used to construct the upper reservoir embankment, construction pads and roads. Due to the potential water quality risks associated with excavated rock emplacements, the upper reservoir and construction pads are described as being PSEs in this report.

Six PSEs are proposed. Table 3.4 provides the name, ID, volume and proposed rock categories for each PSE. An indicative footprint of each PSE is shown in Figure 3.2. Conceptual design information for each PSE is provided in Chapter 5.

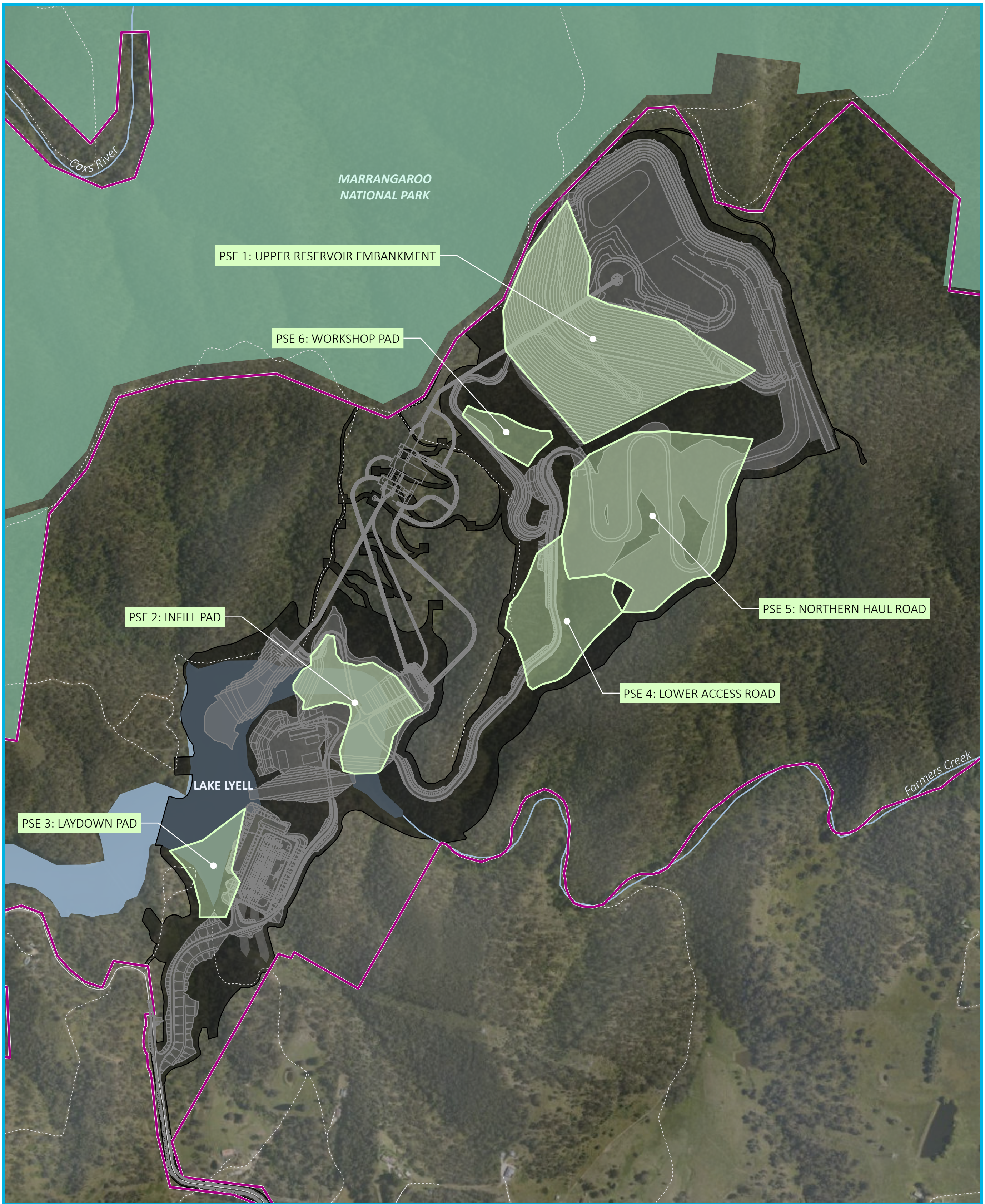
Table 3.4 Proposed PSEs

PSE name / ID	Rock volume		Proposed rock categories
	million BCM	million PCM	
Upper reservoir embankment (PSE 1)	5.20	6.55	Type 1 & Type 2
Infill Pad (PSE 2)	0.64	0.81	Type 1[1] & Type 2
Laydown Pad (PSE 3)	0.13	0.16	Type 1[1] & Type 2
Lower access road (PSE 4)	1.01	1.27	Type 1 & Type 2
Northern haul road (PSE 5)	0.08	0.10	Type 1 & Type 2
Workshop Pad (PSE 6)	0.05	0.06	Type 1 & Type 2
Total	**7.11**	**8.95**	

General Note: All volumes are rounded to 0.01 million m^3 (and may not add up)

Note 1: Some Type 1 material will be washed (i.e. Type 1 (washed)). See concepts in Chapter 5

Source: Rock volumes provided by LLP



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); MetroMap (2025); GA (2009)

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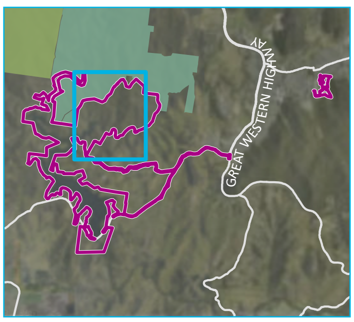

KEY

- Project area
- Disturbance footprint
- Site layout
- Permanent spoil emplacement

Existing environment

- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve

INSET KEY

- Major road
- NPWS reserve
- State forest

Excavated rock emplacements

Lake Lyell PHES
Excavated Rock Management Strategy
Figure 3.2

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4 Water quality risks

This chapter describes water quality risks associated with rock geochemistry and proposed excavation methods that are relevant to the concept design of the PSEs. Section 4.1 describes risks associated with rock geochemistry and Section 4.2 describes risks associated with the use of explosives in construction. A summary of risks for Type 1, Type 1 (washed) and Type 2 excavated rock categories is provided in Section 4.4.

4.1 Rock geochemistry

The key geochemistry related risks associated with the handling and placement of excavated rock are:

- excavated rock has potential to generate acidic, saline and metalliferous drainage following placement
- the presence of naturally occurring asbestos (NOA) would require appropriate handling procedures during construction and fit-for-purpose containment cells in PSEs.

LLP commissioned a geochemistry study to identify and characterise these risks. The study utilised rock samples from geotechnical and hydrogeological drilling programs that were undertaken to inform the project's concept design and EIS and is documented in the Geochemical Characterisation Report (provided as Annexure A).

This section describes the geochemistry characterisation study and the key results.

4.1.1 Geochemistry characterisation study

i Available rock samples

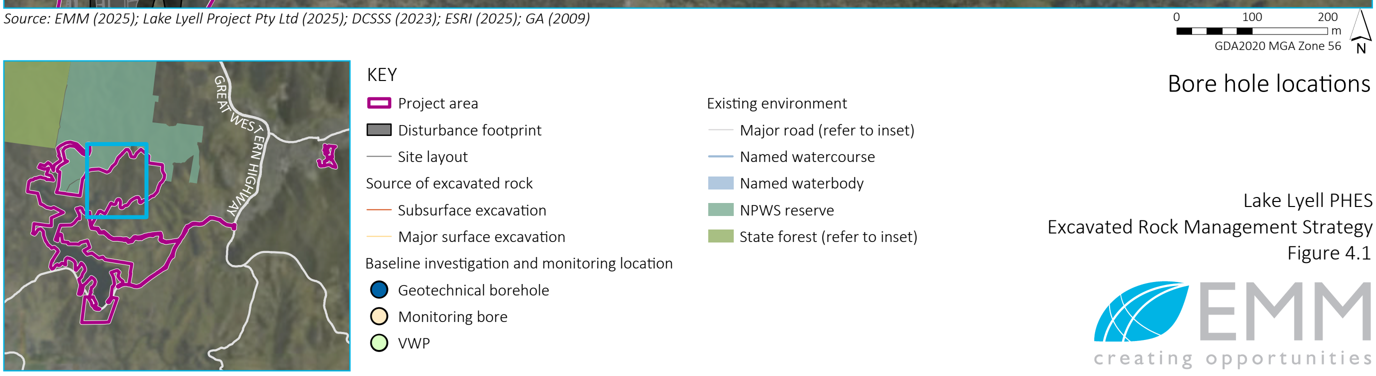
The rock samples available to inform the geochemistry study are summarised below:

- Core and chip samples for geochemical analysis were selected from material obtained from 24 boreholes that were drilled as part of geotechnical and hydrogeological programs undertaken to inform the project's concept design and EIS. Bore hole locations and IDs are shown in Figure 4.1.
- A total of 175 samples were collected at approximately 20-meters intervals within each borehole, with spacing adjusted as necessary to ensure representative coverage of lithological variability. The number of samples selected for laboratory analysis is consistent with the approach recommended in regulator guidelines (refer to Annexure A).
- Geological logging found that quartzite is the dominant lithology, with sample collection representing a total of 149 quartzite, 17 hornfels, 2 shale, 2 sandstone and 1 sample each of breccia, basalt, andesite, tuff and wollastonite.

Overall, the samples include rock that is within or near the proposed subsurface excavations and the upper reservoir surface major surface excavation (refer to Section 3.3). This collectively accounts for 5.82 million BCM or 79% of the total rock proposed to be excavated. LLP have advised that rock lithologies in the other major surface excavations (refer to Section 3.3) are similar to the lithologies encountered in the 24 boreholes. Therefore, the available rock samples may also be representative of rock that will be excavated from these major surface excavations, which will produce approximately 1.53 million BCM or 21% of the total rock that is proposed to be excavated.

Further information on available rock samples is provided in the Geochemical Characterisation Report (refer to Annexure A).

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); ESRI (2025); GA (2009)



KEY

Project area
Disturbance footprint
Site layout
Source of excavated rock
Subsurface excavation
Major surface excavation
Baseline investigation and monitoring location
Geotechnical borehole
Monitoring bore
VWP

Existing environment
Major road (refer to inset)
Named watercourse
Named waterbody
NPWS reserve
State forest (refer to inset)

Bore hole locations

Lake Lyell PHES
Excavated Rock Management Strategy
Figure 4.1

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ii Geochemistry study scope

A geochemistry study that included two stages of laboratory analysis was undertaken by EMM and is documented in the Geochemistry Characterisation Report (Annexure A of this report).

The Stage 1 program included laboratory analysis of all 175 samples for pH, electrical conductivity, acid-base characteristics and whole-rock metal/metalloid concentrations. The results were used to:

- evaluate the potential for rock to generate acid, saline and metalliferous drainage following placement
- inform the scope of the Stage 2 program.

The Stage 2 program included the following further testing of select rock samples:

- net acid generation and sulfur speciation testing to better understand the acid generation potential of samples
- titratable actual acidity testing to understand the acid load of weathered or oxidised materials
- acid buffering characteristics testing to understand the buffering performance of the material
- deionised water and acetate buffer leach testing to assess the real-world leachability of metals and metalloids from samples under neutral and acidic conditions
- nutrient testing to establish baseline concentrations of nitrate, nitrite and ammonia prior to construction activities
- polarised light microscopy including dispersion staining to assess the presence or absence of NOA.

4.1.2 Summary of relevant information

Key findings from the geochemistry study are summarised in this section. Further information is provided in the Geochemical Characterisation Report (refer to Annexure A).

i Geology

Available geological information indicates that quartzite is the dominant lithology, with minor instances of hornfels, sandstone, phyllite, breccia, and andesite also encountered. The logs noted numerous instances of pyrite disseminated throughout the quartzite.

ii Acid generating potential

Of the 175 samples analysed during Stage 1:

- 76 samples were classified as non-acid forming (NAF) (neutralisation potential ratio (NPR) >2)
- 11 samples were classified as uncertain (NPR = 1 to 2)
- 8 samples recorded as potentially acid forming (PAF) (NPR <1)
- 80 samples had unknown acid-forming potential. Samples receiving the unknown classification either had both sulfur and acid neutralisation capacity measurements below the laboratory limit of reporting, or there was insufficient sample mass to perform testing.

From the 95 samples analysed, 80% were classified as NAF, 12% as uncertain and only 8% as PAF. The samples have a large acid-buffering capacity, with the median NPR being 11.9, indicating that the median acid neutralisation capacity is 11.9 times the maximum potential acidity. These results indicate that the rock analysed is largely NAF and unlikely to pose a significant acid and metalliferous drainage (AMD) risk.

The rock lithology appears to have no significant influence on the classification, with six of the PAF samples being quartzite and two being hornfels.

Similarly, there is no correlation between sample depth and classification, with the PAF samples being collected from depths between 10 and 290 m. Four of the PAF samples identified were collected from depths of 50 m or less and were found to have acidic 1:5 pH values below 6, which suggests the presence of acid forming materials. Conversely, the other four PAF samples were collected from depths of 150 m or more and had alkaline 1:5 pH values of greater than 9, indicating an overestimation of their acidity or sufficient buffering capacity to prevent acidification during testing.

It is noted that all of the PAF samples came from BH204, BH108, BH105 and BH104, which are not within the proposed upper reservoir excavation extent (refer to Figure 4.1).

The Stage 2 testing included net acid generation (NAG), sulfur speciation and existing acidity testing on select samples. The Stage 2 tests supported the Stage 1 findings.

Overall, the testing indicates that excavated rock will not pose a significant AMD drainage risk and any PAF material can be managed by blending with NAF material to neutralise the acidity risks.

iii Saline drainage

Electrical conductivity testing returned values ranging between 8 to 1,050 microsiemens per centimetre (µS/cm), with a median value of 59 µS/cm. The higher values were from shallow quartzite and hornfels samples and indicate the presence of zones of enhanced mineral weathering or oxidation.

Deionised water leach testing was undertaken during Stage 2 to further assess saline drainage risks. The deionised water leachates were typically alkaline (pH 8 to 10) with low electrical conductivity (<200 µS/cm), confirming strong inherent buffering and minimal release of soluble salts under neutral conditions.

Overall, the results indicate a low potential for saline drainage from the excavated rock.

iv Nutrient content

Whole-rock nutrient testing was undertaken to assess the concentrations of ammonia, nitrite and nitrate in 24 representative samples. This testing was included for samples undergoing leach testing to establish a baseline understanding of nutrient concentrations in the host materials, as nitrogen has been identified as a contaminant of potential concern due to the proposed use of explosives during construction.

Overall, the data indicates that whole-rock nitrogen concentrations are very low and dominated by nitrate. These results suggest that parent material is unlikely to be a material source of nitrogen (due to geochemical processes) in PSE seepage.

Nitrogen loading due to explosives use is described separately in Section 4.2.

v Metal and metalloid leachability

Metal and metalloid analysis of rock samples indicated that arsenic, bismuth, cobalt, copper, molybdenum, sulfur, antimony, selenium and tin are naturally enriched in some of the samples and therefore may be at risk of leaching. However, while elevated concentrations of these metals are present in the rock, they are not necessarily leachable under real-world environmental conditions.

Leachate testing was undertaken as part of Stage 2 using deionised water and acetate buffered (i.e. weak acid) solutions to provide further insight into element mobility.

The deionised water leachate results identified that aluminium may leach from rock emplacements at concentrations that are elevated relative to ambient surface and groundwater. Most other trace metals that were tested leached at concentrations that were generally below or similar to ambient surface and groundwater. However, concentrations of arsenic, chromium, manganese, nickel and zinc exceeded the maximum ambient surface water concentration range in some samples, indicating potential for mobilisation of these metals from some excavated rock.

The acetate-buffered (pH 5.0) leachates consistently returned concentrations of aluminium, manganese and chromium that were elevated relative to ambient surface and groundwater, indicating that these metals may leach if acidification occurs in the rock emplacements.

Overall, the results indicate that large-scale mobilisation of metals and metalloids other than aluminium is unlikely in PSE seepage if acidification risks can be managed.

vi Naturally occurring asbestos

The potential presence of NOA was investigated through polarised light microscopy with dispersion staining analyses on select rock samples. A total of eight samples were analysed, representing quartzite and hornfels material from a range of locations and depths. No asbestos fibres were detected in any of the samples tested. These results indicate that, within the range of lithologies and depths investigated, there is a low likelihood of excavated rock containing NOA.

4.2 Explosives residue

As described in Section 3.3, due to rock conditions, drill and blast methods will be required to construct most of the proposed subsurface and major surface and excavations. The use of Ammonium Nitrate Fuel Oil (ANFO) explosives is a known source of nitrogen contamination of water in construction areas where blasting is used and seepage from stockpiles of drill and blast generated material. The release of nitrogen can occur due to:

- leaching from explosives prior to detonation
- leaching from undetonated explosives after detonation
- nitrogen residue in blasted material after detonation.

Nitrogen residual in blasted material is bound to the surface of rock fragments. Given that nitrogen compounds including ammonium and nitrate are highly soluble, leaching of residual nitrogen is expected to occur in the short to medium term following blasting. The timeframes for leaching are expected to be variable based on a range of factors including PSE construction timeframes, blasting intensity, types of explosives used, exposure of blasted material to weather and water prior to placement, the design of PSEs and water exposure of the material following placement. It is anticipated that the leaching rate can be accelerated by irrigating excavated rock during construction of emplacements.

For the purposes of this excavated rock management strategy, it is assumed that drill and blast generated material (i.e. Type 1 excavated rock) may leach nitrogen at concentrations that are elevated relative to the receiving waters. The rate of leaching will be highest immediately after placement (which could occur for several years for some PSEs) and will decline overtime.

Nitrogen leaching from Type 1 material will be managed by collecting and treating seepage from PSEs. As noted above, it is anticipated that the leaching rate can be accelerated by irrigating excavated rock during construction of emplacements to reduce the time that leachate requires treatment.

The Surface Water Assessment (EMM 2025a) describes:

- measures to minimise the release of nitrogen due to the use of explosives
- measures to manage nitrogen laden surface water runoff from drill and blast construction areas and nitrogen laden seepage from PSEs during and after construction.

4.2.1 Rock washing

As nitrogen in Type 1 rock is highly soluble and bound to rock fragments, the nitrogen risk can also be managed by washing rock prior to placement. LLP propose to selectively use pre-placement washing to manage nitrogen risks for some rock emplacements. The washing process would also remove most fines. The washing method will be established at detailed design and its efficacy in removing nitrogen from excavated rock will be validated before and during its use. Water used for washing would likely have high nitrogen concentrations and would be managed in the contaminated water system, which is described in the Surface Water Assessment (EMM 2025a).

Type 1 rock that is washed prior to placement is referred to as Type 1 Rock (washed). The proposed use of Type 1 rock (washed) is described in the PSE concepts in Chapter 5.

4.3 Fines

All excavated rock has potential to contain fine material (fines) that could be mobilised by water moving through an emplacement. Following construction, the in-reservoir emplacements (PSE 2 and 3) will be hydraulically connected to Lake Lyell. This means that there is potential for fines to be mobilised by water moving into and out of the emplacements as lake levels change. The rock washing process (refer to Section 4.2.1) will remove most of the fines and the associated water quality risk. Fines management is described in the PSE concepts in Chapter 5.

4.4 Summary of water quality risks

Table 4.1 provides a summary of water quality risks for Type 1, Type 1 (washed) and Type 2 excavated rock.

Table 4.1 Summary of water quality risks

Environmental risks	Type 1 rock (D&B generated material)		Type 2 (non-D&B generated material)
	Type 1	Type 1 (washed)	
Geochemistry related			
Acid generation potential	Geochemical testing indicates that the excavated rock will not pose a significant AMD drainage risk and any PAF material can be managed by blending with NAF material to neutralise acidification risks.		
Saline drainage potential	Geochemical testing indicates that the excavated rock has a low potential for saline drainage.		
Metalliferous drainage potential	Geochemical testing indicates that for neutral drainage conditions, seepage from the PSEs may contain aluminium concentrations that are elevated relative to ambient surface and groundwater. There is also potential for elevated concentrations of arsenic, chromium, manganese, nickel and zinc to occur from some rock lithologies. If acidic conditions occur there is potential for seepage from the PSEs to contain concentrations of aluminium, manganese and chromium that are elevated relative to ambient surface and groundwater. Overall, large-scale mobilisation of metals and metalloids other than aluminium is unlikely if acidification risks can be managed.		
Presence of NOA	The potential presence of NOA was investigated through polarised light microscopy with dispersion staining analyses on select rock samples. A total of eight samples were analysed, representing quartzite and hornfels material from a range of locations and depths. No asbestos fibres were detected in any of the samples tested. These results indicate that, within the range of lithologies and depths investigated, there is a low likelihood of excavated rock containing NOA.		
Construction related			
Explosives residual (nitrogen)	Drill and blast generated material may leach nitrogen at concentrations that are elevated relative to receiving waters. The rate of leaching will be highest immediately after placement (which could occur over several years for some PSEs) and will decline over time.	Minimal risks as the washing process will remove most nitrogen (which is soluble) prior to placement.	No risks as explosives will not be used.
Fines	Drill and blast material may contain fines that could be mobilised by water movement through an emplacement.	The washing process will remove most fines prior to placement.	Non drill and blast generated material may contain fines that could be mobilised by water movement through an emplacement.

5 PSE design principles and concepts

Most excavated rock will be beneficially used to construct the upper reservoir embankment, construction pads and roads. Due to potential water quality risks associated with excavated rock emplacements, the upper reservoir, access road landforms and construction pads are described as being PSEs in this report. As discussed in Section 3.5, six PSEs are proposed. These PSEs are divided into the following categories:

- **Embankment constructed using excavated rock** – PSE 1 will be the embankment for the proposed upper reservoir.
- **In-reservoir PSEs** - PSE 2 and 3 will be partially below the Lake Lyell full supply level (FSL).
- **Land-based PSEs** - PSE 4, 5 and 6 will be land-based emplacements.

This chapter describes how each PSE will interact with the water cycle (i.e. surface and groundwater) and proposed measures that will be implemented to manage water quality risks during construction and operations. It is structured based on the above categories. The proposed measures will be applied to the detailed design of each PSE, which will be completed post approval. Key information from the detailed design of each PSE will be provided in the Excavated Rock Management Plan(s) that will also be prepared post approval.

The management of runoff and seepage from PSEs during construction and operations is addressed separately in the Surface Water Assessment (EMM 2025a). Residual impacts to the surface and groundwater environment are also addressed separately in the Surface Water Assessment (EMM 2025a) and Groundwater Assessment (EMM 2025b) respectively, using information from this chapter.

5.1 Terminology

Table 5.1 explains terminology used in this chapter to describe water quality categories and water management systems. Water quality categories and water management systems are explained further in the Surface Water Assessment (EMM 2025a).

Table 5.1 Terminology

Term	Description
Water quality categories	
Clean water	The term clean water is used to describe surface and groundwater that is not impacted by the project. The following types of clean water are described in this chapter: • surface water runoff from upgradient areas • water in Lake Lyell or the upper reservoir • groundwater that is upgradient of PSEs.
Groundwater	Refers to groundwater in the regional and shallow groundwater systems that are near the project. Groundwater systems and quality are described in the Groundwater Assessment (EMM 2025b).
Stormwater	Refers to stormwater runoff from areas disturbed by construction or operational activities. Stormwater may have elevated suspended solids concentrations and turbidity levels but is otherwise expected to have water quality that is similar to ambient water quality in Farmers Creek. Stormwater will be managed in the stormwater system, which is described in the Surface Water Assessment (EMM 2025a).
Potentially contaminated water	In the Surface Water Assessment (EMM 2025a), potentially contaminated water refers to water produced by construction or operational activities that may have concentrations of nutrients, metals or other pollutants that exceed ambient concentrations in Farmers Creek. Potentially contaminated water will be managed in the contaminated water system, which is described in the Surface Water Assessment (EMM 2025a). Based on the water quality risks described in Table 4.1, seepage from PSEs is potentially contaminated water.

Term	Description
Water management systems	
Stormwater system	The stormwater system will manage surface water runoff that is not potentially contaminated water from areas disturbed by construction or operations. Where practical, the stormwater system will be separated from the contaminated water system. The stormwater system is described in the Surface Water Assessment (EMM 2025a).
Contaminated water system	The contaminated water system will manage potentially contaminated water generated from construction and operational activities to minimise pollution of the stormwater system and receiving surface and groundwater systems. The contaminated water system is described in the Surface Water Assessment (EMM 2025a).

5.2 Embankment constructed using excavated rock (PSE 1)

The upper reservoir embankment (PSE 1) will be constructed using approximately 6.55 million PCM of excavated rock, which is equivalent to 73% of the estimated total excavated rock volume (8.95 million PCM) in the six PSEs – see Table 3.4. This section describes the embankment design concept, water cycle interactions and proposed measures that will be implemented to manage water quality risks during construction and operations. Potential impacts to the receiving surface and groundwater systems are described in Section 5.6.

5.2.1 Embankment design overview

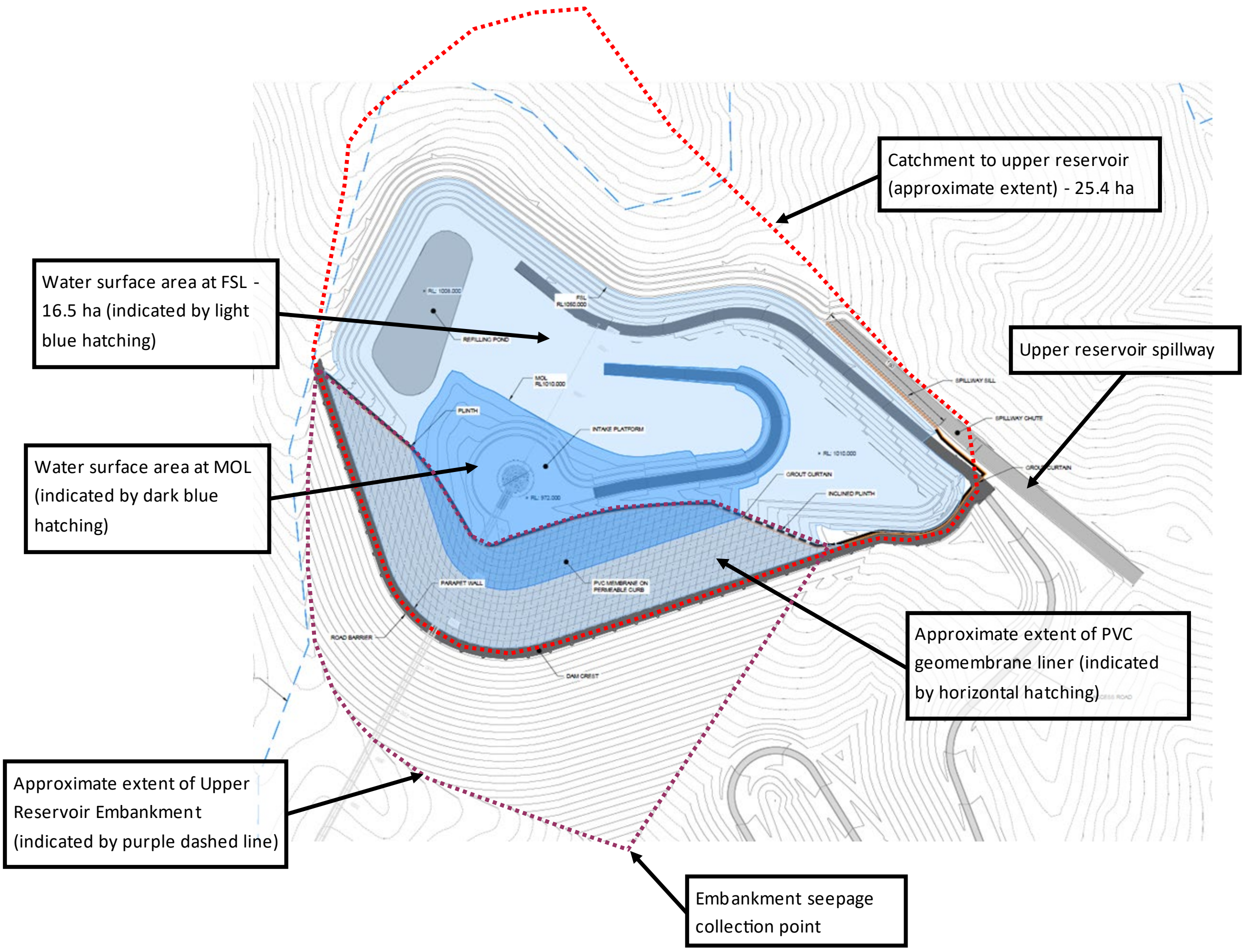
The upper reservoir embankment will be a rock-fill embankment constructed using excavated rock that will be sourced predominantly from the upper reservoir major surface excavation (refer to Table 3.2). The rock-fill embankment will have the following key features:

- The upstream face of the embankment will be lined with a polyvinyl chloride (PVC) geomembrane liner to minimise water seepage from the reservoir into the embankment.
- A grout curtain will be constructed under the upstream toe of the embankment to minimise horizontal seepage of water from the reservoir to the embankment foundation.
- The main body of the embankment will be constructed using graded excavated rock. The rock will be compacted but will have high vertical and horizontal permeability.
- The downstream face of the embankment will be lined with rip rap, which will be free draining.
- The embankment foundation will be graded crushed rock that has high permeability and will act as a filter drain (the foundation filter drain). This drain will collect seepage from the embankment and will drain towards drainage lines or low-points in the pre-disturbance terrain that will ultimately drain via subsurface flow to the embankment toe.

The embankment will be constructed in stages over several years. Once operational the upper reservoir will be used to temporarily store up to 6.3 GL of water. The minimum operating level (MOL) will be 1,010 m AHD and the FSL will be 1,050 m AHD, resulting in a 40 m operating water level range. Water levels in the upper reservoir will fluctuate daily due to PHES operations. The upper reservoir will have a contributing catchment area of approximately 25.4 hectares (ha), which includes 16.5 ha of water surface area at FSL.

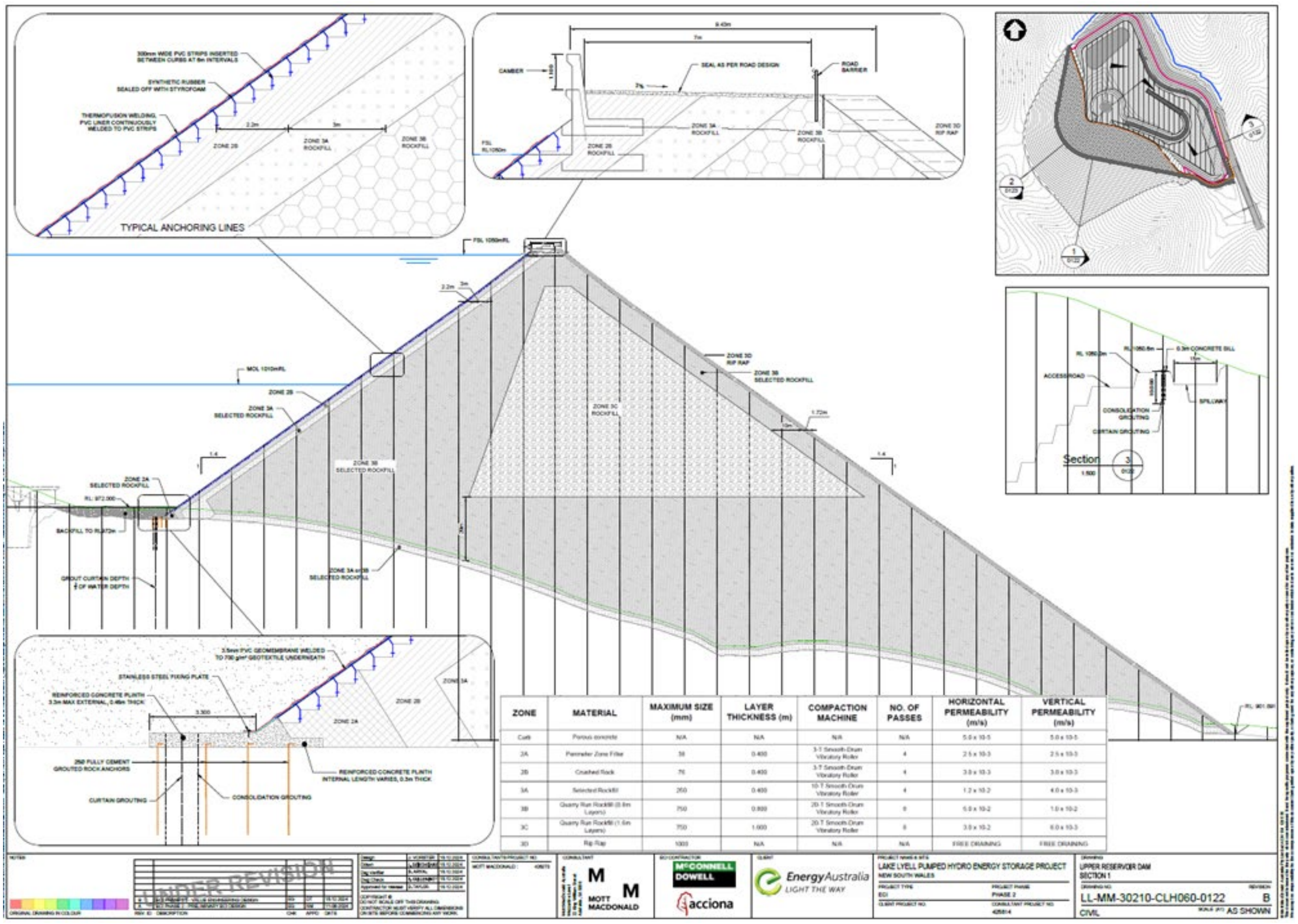
The upper reservoir will have an emergency spillway that will be engaged if the water level in the reservoir reaches 0.8 m above FSL. The spillway will be separate to the embankment.

Concept design sketches of the embankment are shown in Figure 5.1 (plan view) and Figure 5.2 (typical section). These sketches show the upper reservoir spillway, contributing catchment area, MOL and FSL for context.



Source: image provided by EnergyAustralia

Figure 5.1 Upper reservoir design concept – plan view



Source: image provided by EnergyAustralia

Figure 5.2 Upper reservoir design concept – typical section

5.2.2 Water quality management during construction

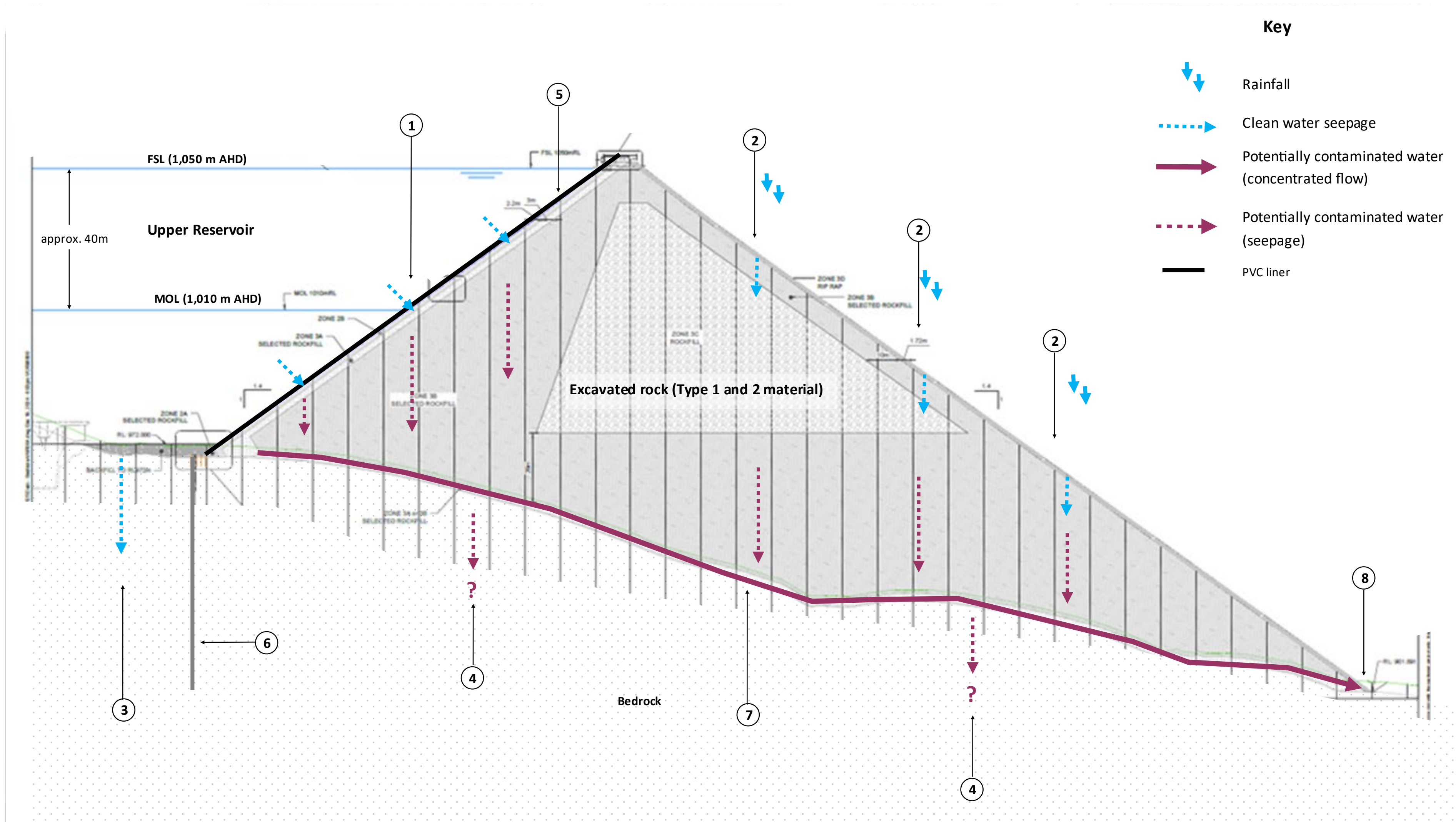
During construction, all collected runoff and seepage from the upper reservoir excavation and upper reservoir embankment will be managed in the contaminated water system that is described separately in the Surface Water Assessment (EMM 2025a).

5.2.3 Water quality management for the final landform

Once constructed, PSE 1 will be the embankment for the upper reservoir. Figure 5.3 is a diagram that shows key water cycle processes and proposed controls to manage water quality. Figure 5.3 should be read in conjunction with Table 5.2 which describes the key processes and controls that are noted in the figure.

Table 5.2 Water cycle interfaces and proposed controls – PSE 1

ID	Description
Water cycle processes	
1	Some seepage of clean water from the upper reservoir may occur through the PVC geomembrane liner. Any seepage will flow vertically through the embankment and will be exposed to excavated rock. Therefore, the water quality risks described in Table 4.1 for Type 1 rock would apply to this water. Seepage will be collected in the foundation filter drain (ID 7).
2	Direct rainfall onto the unlined portion of the embankment that exceeds evaporation losses will percolate vertically through the rock-fill embankment and will be collected in the foundation filter drains (ID 7). These drains will collect seepage from the embankment and will drain towards drainage lines or low-points in the pre-disturbance terrain that will ultimately drain via subsurface flow to the embankment toe. The seepage collection point is indicated in Figure 5.1. Water that infiltrates vertically through the embankment will be exposed to excavated rock. Therefore, the water quality risks described in Table 4.1 for Type 1 rock would apply to this water.
3	Some seepage of clean water through the floor of the upper reservoir is expected. A grout curtain will be constructed under the upstream toe of the embankment to minimise horizontal seepage of water from the reservoir (ID 6). However, some water from the reservoir can seep through the grout curtain and can come out below the dam and be exposed to excavated rock when flowing down to the seepage collection point.
4	The embankment will be constructed on the parent bed rock, which has a low permeability. Any fractures identified during construction will be grouted to minimise vertical permeability (ID 7). Notwithstanding, there is potential for some seepage from the foundation filter drains into the underlying groundwater system to occur.
Water quality control measures	
5	The upstream face of the embankment will be lined with a PVC geomembrane liner to minimise water seepage from the reservoir into the embankment. This will also minimise the volume of seepage that needs to be managed in the surface water system (ID 8).
6	A grout curtain will be constructed under the upstream toe of the embankment to minimise horizontal seepage of water from the reservoir to the embankment foundation. This will also minimise the volume of seepage that needs to be managed in the surface water system (ID 8).
7	The foundation filter drains will collect rainfall that percolates through the embankment and any seepage from the upper reservoir that may occur. The foundation filter drains will comprise graded crushed rock that has high permeability. Any fractures in the underlying parent rock identified during construction will be grouted to minimise vertical permeability.
8	Collected seepage will drain via surface and subsurface drainage to the water management dams located in the bottom of the Watercourse 3 catchment (described in Section 5.5.1). Captured water will be managed in the contaminated water system, which is described in the Surface Water Assessment (EMM 2025a).



Source: background image provided by EnergyAustralia

Figure 5.3 PSE 1 concept

5.3 In-reservoir PSEs

The infill pad (PSE 2) and laydown pad (PSE 3) will be constructed within the existing Lake Lyell extent. This section describes the Lake Lyell water level regime and design concepts, water cycle interactions and proposed measures for both PSEs that will be implemented to manage water quality risks during and post construction. Potential impacts to the receiving surface and groundwater systems are described in Section 5.6.

5.3.1 Lake Lyell water level regime

The Lake Lyell water level regime during construction and PHES operations is described in the Surface Water Assessment (EMM 2025a). A summary of key information is provided in Table 5.3.

Table 5.3 Lake Lyell water level regime during construction and PHES operation

	Lake Lyell water level regime
During construction	
Description	During construction EnergyAustralia will regulate lake levels using riparian releases from the dam and pumping to Thompsons Creek Reservoir. One or more fusegates on the Lilyvale Dam spillway will also be temporarily removed to lower the FSL by 3.2 to 782.3 m AHD (the construction phase FSL). Removal of the fusegates would result in lower reservoir flood levels as the spillway would be engaged once lake levels exceed the construction phase FSL. The revised flood levels have not been calculated as part of this EIS. The fusegates will be restored at the end of construction. During the initial construction period lake levels will be reduced to and maintained at around 772 m AHD to enable construction of the coffer dam and other in lake works. Once these initial works are completed the lake levels will be allowed to rise to the construction phase FSL. Higher water levels may occur for short periods during high lake inflow events.
Typical water level range	• During the initial construction period – 772 m AHD • Remainder of construction period - construction phase FSL (782.3 m AHD)
Flood levels	• 1% Annual Exceedance Probability (AEP) level – 788.4 m AHD • 0.05% AEP level – 789.8 m AHD • Probable Maximum Flood (PMF) level – 795.8 m AHD Note: these flood levels are for the existing lake and do not take into account any potential reduction associated with relocating one or more fusegates.
During operation of the PHES	
Description	Lake Lyell will generally be maintained within the target PHES operating range (781.0 to 784.5 m AHD and will occasionally be within the maximum PHES operating range (780.0 to 786.0 m AHD). Higher water levels may occur for short periods of time during high lake inflow events and lower levels may occur during droughts.
Typical water level range	In this report the typical water level range is between the lower level in the maximum PHES operation range (780.0 m ADH) and FSL (785.5 m AHD). The median operational water level is approximately 783.0 m AHD.
Flood levels	• 1% AEP level – 788.4 m AHD • 0.05% AEP level – 789.8 m AHD • PMF level – 795.8 m AHD

5.3.2 PSE 2 – Infill Pad

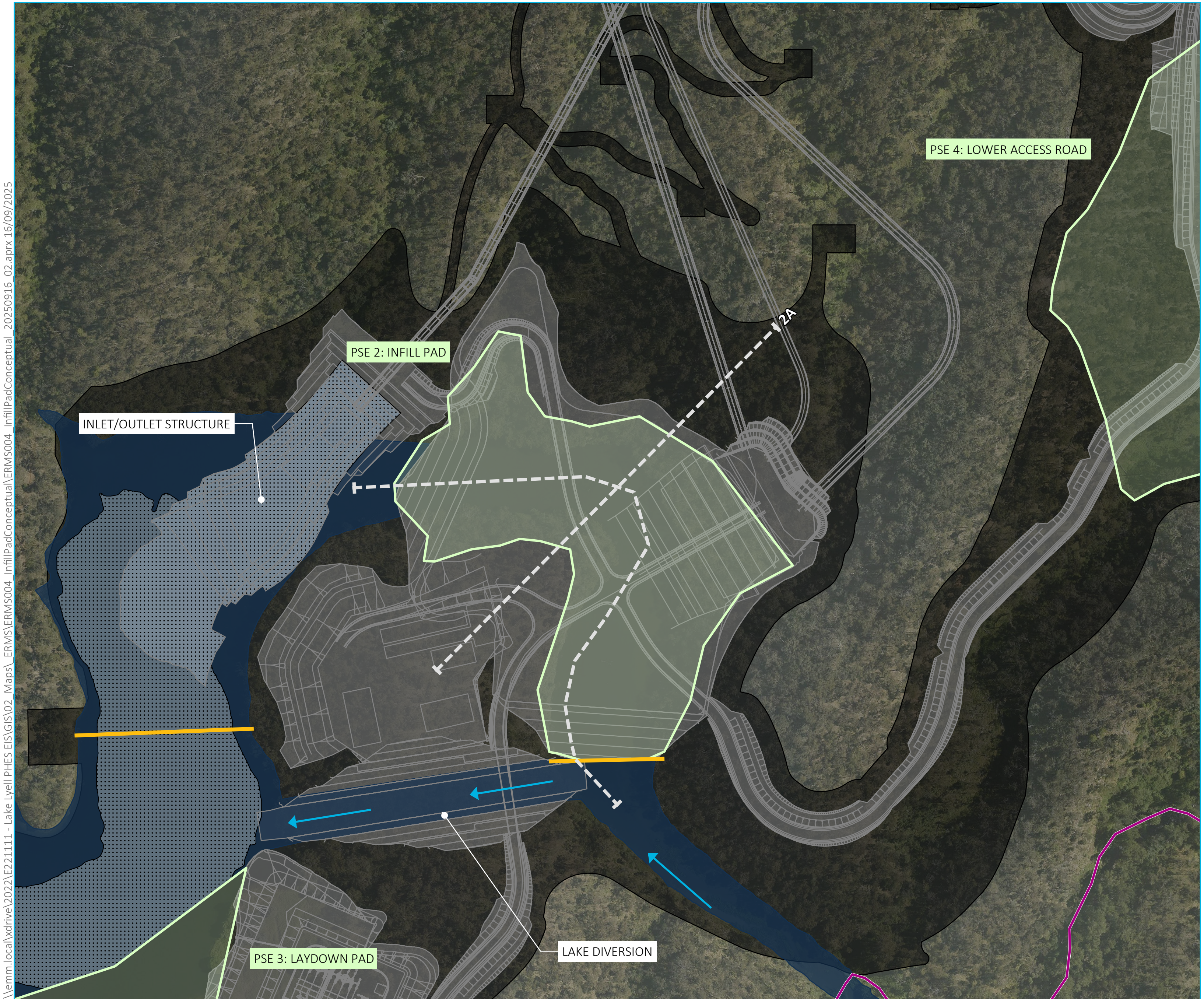
The infill pad (PSE 2) will be constructed within the Farmers Creek arm of Lake Lyell, upstream of the inlet / outlet structure. The pad will be approximately 30 m high and will be constructed using approximately 0.81 million PCM of Type 1, Type 1 (washed) and Type 2 excavated rock (refer to Table 3.4). The following works will be undertaken prior to its construction:

- Lake Lyell will be lowered to around 772 m AHD via riparian releases.
- The lake diversion will be constructed to permanently divert Farmers Creek flows around the inlet / outlet structure and PSE 2.
- Coffer dams will be installed upstream of PSE 2 and downstream of the inlet / outlet structure.

Further information on the lake diversion and coffer dams is provided in the Surface Water Assessment (EMM 2025a).

Once constructed, the pad will be part of the final landform and will be used to support construction activities (during the construction phase) and operational activities (during PHES operations).

Figure 5.4 shows a conceptual layout of PSE 2 which locates the above-mentioned features. The alignment of conceptual cross-sections that are presented in Figure 5.5 and Figure 5.6 are also shown.



KEY

- Project area
- Cross section
- Farmers creek flow direction
- Site layout
- Coffer Dam (construction phase only)
- Permanent spoil emplacement
- Disturbance footprint
- Lake inundation extent at minimum PHES operating level (780.0 m AHD)
- PHES operating range to FSL (780.0 to 785.5 m AHD)

Existing environment

- NPWS reserve
- State forest

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)

Infill pad (PSE 2) – conceptual layout

Lake Lyell PHES
Excavated Rock Management Strategy
Figure 5.4

EMM
creating opportunities

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ERMS\ERMS004_InfillPadConceptual\ERMS004_InfillPadConceptual_20250916_02.aprx 16/09/2025

i Water quality management during construction

During construction, PSE 2 will be separated from Lake Lyell by the coffer dams. All runoff and seepage from the PSE 2 construction area will be managed in the contaminated water system that is described separately in the Surface Water Assessment (EMM 2025a). The following construction methods will be applied to mitigate water quality risk for the final landform:

- Type 1 (washed) material will be used to construct the lower portion of the emplacement (up to the FSL).

- Type 1 and Type 2 material will be used to construct the upper portion of the emplacement (above FSL). Type 1 material will be irrigated after placement to accelerate the leaching of nitrogen (which is finite and soluble). The nitrogen mobilised by irrigation (and rainfall) will be in seepage from the PSE which will be collected at the toe of the western portion of the emplacement and managed in the contaminated water system (EMM 2025a). The irrigation methods and efficacy will be validated during construction by monitoring seepage water quality.

Near the end of the project's construction phase, the lower coffer dam will be removed. This will result in lake water inundating the lower portion of the PSE.

ii Water quality management for the final landform

Figure 5.5 and Figure 5.6 are diagrams that shows key water cycle processes and proposed controls to manage water quality. These figures should be read in conjunction with Table 5.4 which describes the key processes and controls that are noted in the figures.

Table 5.4 Water cycle interfaces and proposed controls – PSE 2

ID	Description
Water cycle processes	
1	Stormwater runoff will occur from building roof areas and hardstand. Stormwater runoff will be managed in a stormwater system that will be designed to meet the stormwater management standard described in the Surface Water Assessment EMM (2025a). No specific requirements to minimise infiltration are proposed given that the water quality risks associated with excavated rock will be managed by the construction approach (see Section 5.3.2i). Overflows from the stormwater system will drain to Lake Lyell.
2	Clean surface water runoff and interflow from upgradient areas will drain towards the pad. A clean water drainage system will be constructed around the perimeter of the pad at hillslope interface locations to intercept runoff and shallow interflow (ID 6).
3	The regional shallow groundwater system drains towards Lake Lyell (EMM 2025b). Some clean groundwater inflow from upgradient areas into the emplacement is expected.
4	Water in Lake Lyell will interface with the southern and western batters (refer to Figure 5.4). Lake Lyell will generally be maintained within the target PHES operating range (781.0 to 784.5 m AHD) and will occasionally be within the maximum PHES operating range (780.0 to 786.0 m AHD). Higher water levels may occur for short periods of time during high lake inflow events and lower levels may occur during droughts. The typical water level range and the 1% AEP level are indicated in Figure 5.6.
5	The coffer dam installed during construction will be maintained on the southern batter (ID 8), this will minimise water exchange between the emplacement and Lake Lyell via the southern batter. The western batter of the PSE will be hydraulically connected with Lake Lyell, therefore the water level within the PSE will be similar to the lake level and will be expected to rise and fall due to PHES operations. Water will flow into the emplacement when the lake level rises and flow out of the emplacement when the lake level recedes.

ID	Description
Water quality control measures	
6	Clean surface water runoff and interflow from upgradient areas will drain towards the pad. A clean water drainage system will be constructed around the perimeter of the pad at hillslope interface locations. The drains will be free draining to Lake Lyell.
7	Water quality risks due to excavated rock will be managed using the following construction methods: • Only Type 1 (washed) material will be used below the FSL. The washing process will remove most nitrogen and fines that could be mobilised by water movement through the emplacement. The efficacy of the washing process will be validated prior to and during its implementation (refer to Section 4.2.1). • Type 1 and Type 2 material will be used above the FSL. Any Type 1 material will be irrigated following placement to accelerate nitrogen leaching during construction. Once most of the nitrogen has leached from the rock, the nitrogen risk would be similar to Type 1 (washed) material. Measures such as geofabric will be used to mitigate the vertical movement of fines from any Type 1 or 2 material placed above FSL. As water in the emplacement will be exposed to excavated rock the water quality risks described in Table 4.1 for Type 1 (washed) and Type 2 rock would apply to this water. During PHES operations the water in the emplacement will be diluted by lake water that will move into and out of the emplacement daily. This will mitigate water quality risks associated with potential aluminium leaching from the excavated rock.
8	The coffer dam installed during construction will be maintained on the southern batter to minimise water exchange between the emplacement and Lake Lyell via the southern batter.
9	Rock armouring on the lake side batters will be designed to be resilient to the flows in the Farmers Creek arm of Lake Lyell that will occur during PHES operations and a Farmers Creek flood event. Information on these flows is provided in the Surface Water Assessment EMM (2025a).

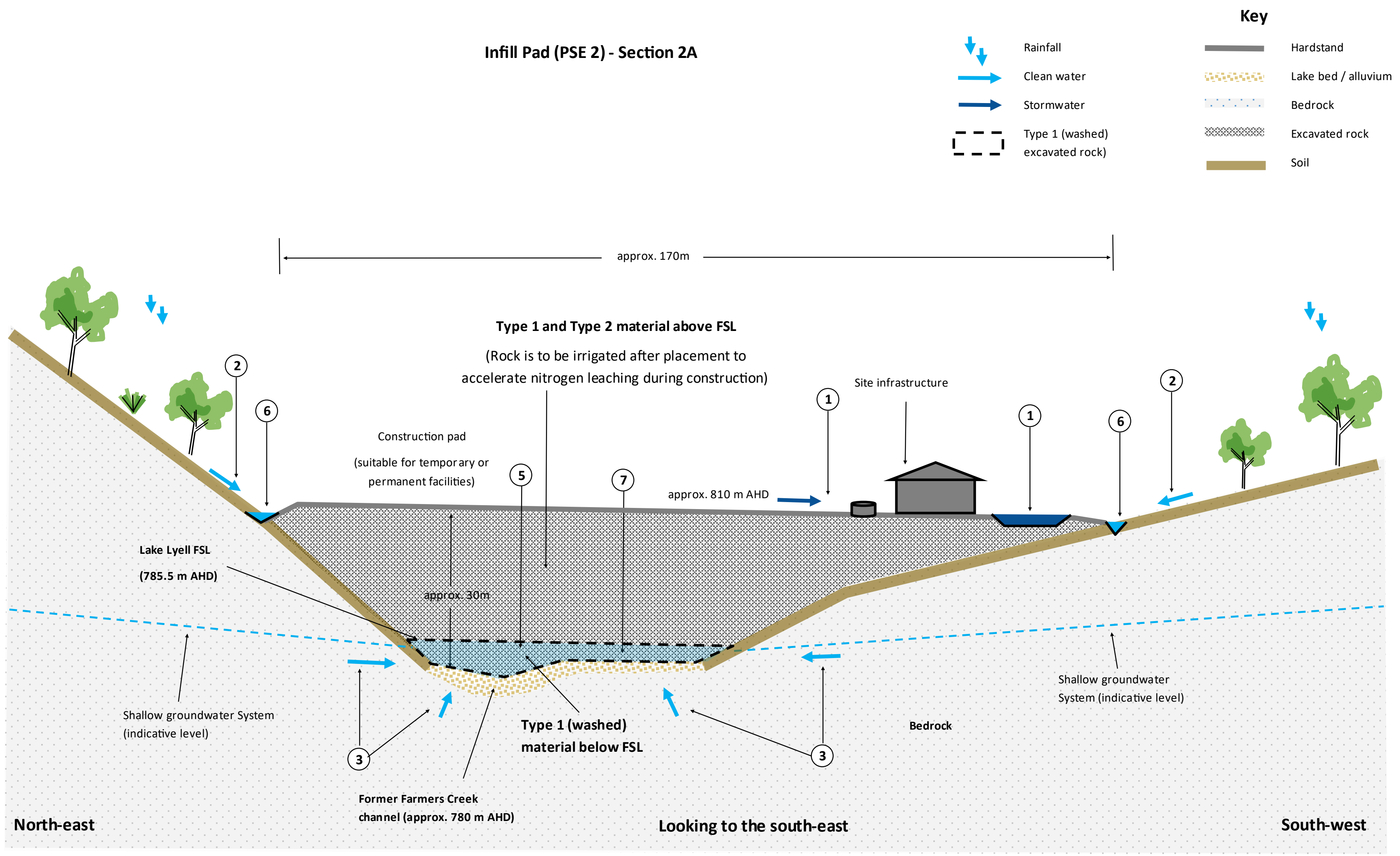


Figure 5.5 PSE 2 concept – Section 2A

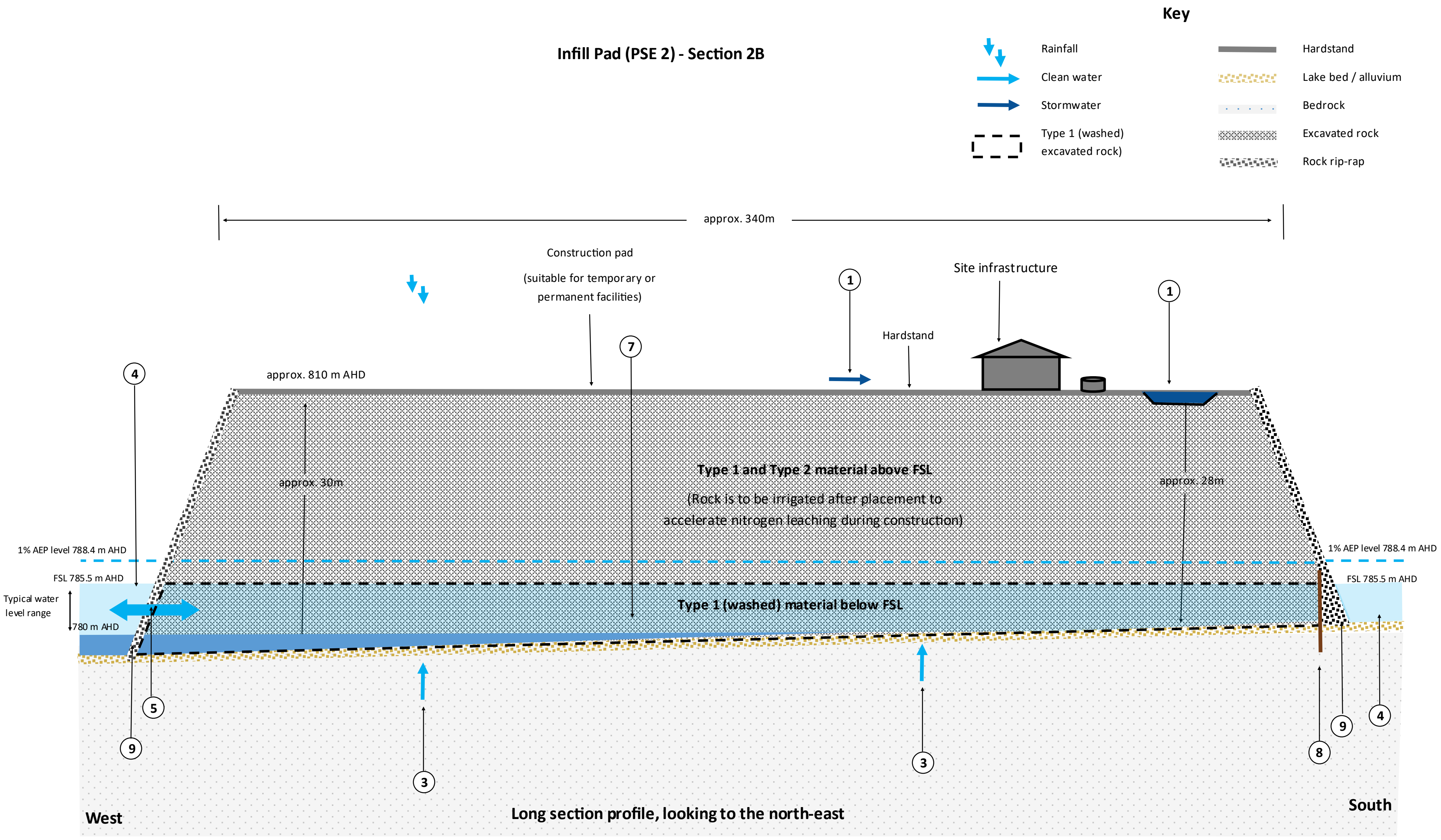


Figure 5.6 PSE 2 concept – Section 2B

5.4 PSE 3 – Laydown pad

The laydown pad (PSE 3) will be constructed within the Farmers Creek arm of Lake Lyell, downstream of the inlet / outlet structure and the Lake Diversion. The pad will be approximately 20 to 24 m high and will be constructed using approximately 0.16 million PCM of Type 1 (washed) and Type 2 excavated rock (Table 3.4). Prior to its construction, Lake Lyell will be lowered to around 772 m AHD, below the construction footprint.

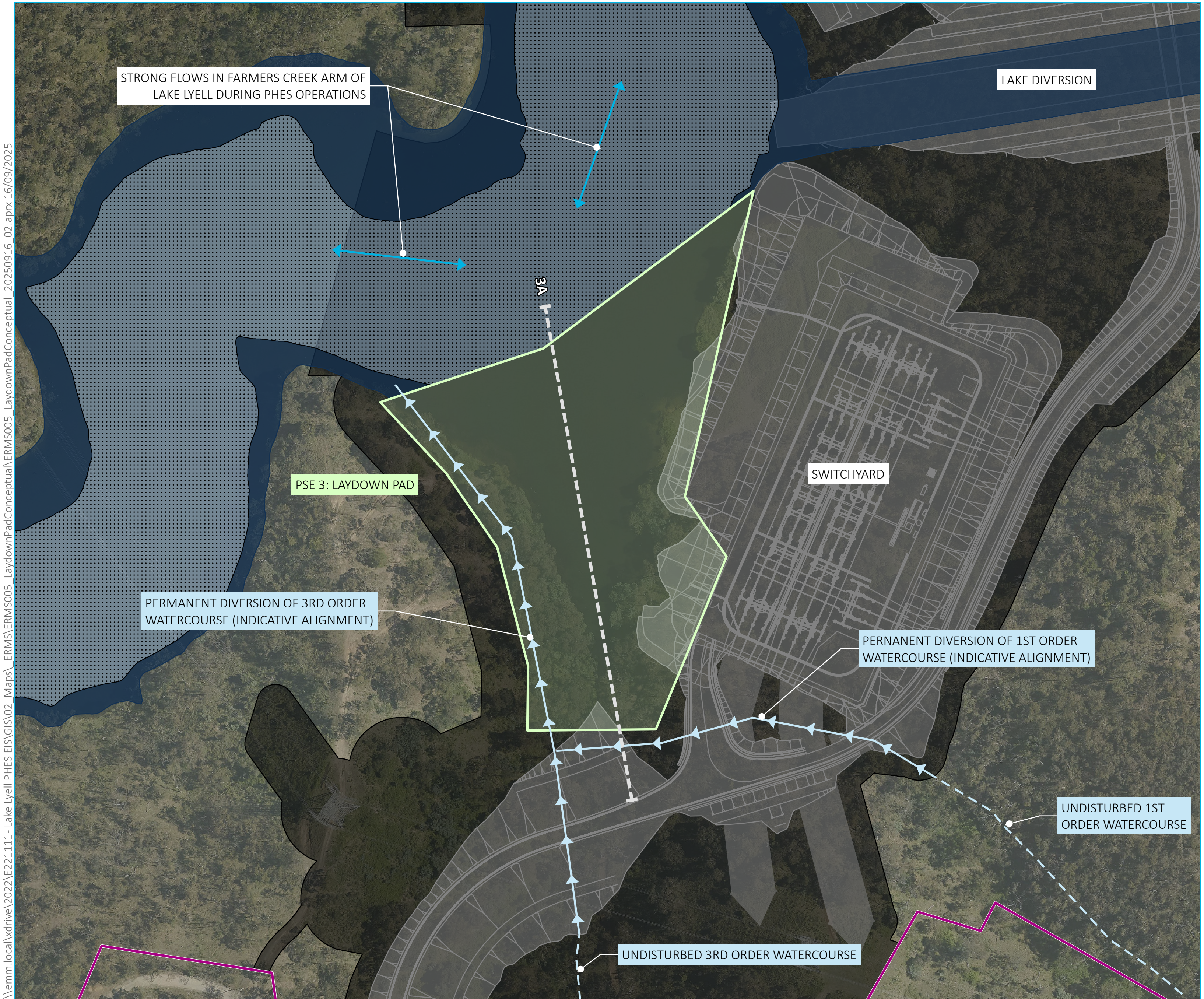
Once constructed the pad will be part of the final landform and will be used to support construction activities (during the construction phase) and operational activities (during the PHES operations). The pad will be integrated with the switch yard, access road and two permanent watercourse diversions that convey clean water runoff from a catchment area to the south of the pad into Lake Lyell.

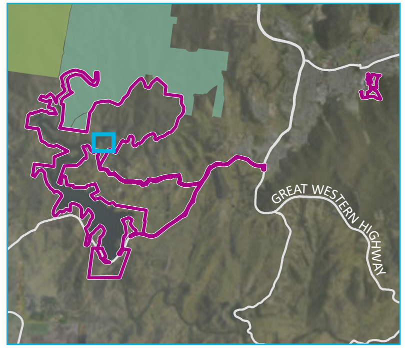
Figure 5.7 shows a conceptual layout of PSE 3 which locates the above-mentioned features. The alignment of conceptual cross-section that is presented in Figure 5.8 is also shown.

i Water quality management during construction

During the initial construction phase, the Lake Lyell level will be reduced to around 772 m AHD (below the PSE 3 footprint) to enable construction of PSE 3 and other in lake works (Table 5.3). Runoff and seepage from the PSE 3 construction area will be managed in the construction water system that is described separately in the Surface Water Assessment (EMM 2025a). It is noted that due to the proposed construction method (described below) runoff and seepage from PSE 3 will likely be categorised as stormwater. However, this will be validated using the water categorisation approach that is described in the Surface Water Assessment (EMM 2025a).

Once PSE 3 is constructed, Lake Lyell will be allowed to fill to the construction phase FSL (782.3 m AHD), which will inundate the lower portion of the emplacement.





\\emm.local\xdrive\2022\E221111- Lake Lyell PHES EIS\GIS\02 Maps\ ERMS\ERMS005 LaydownPadConceptual\ERMS005 LaydownPadConceptual 20250916 02.aprx 16/09/2025

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)

KEY

- Project area
- Disturbance footprint
- Site layout
- Cross Section
- Flow direction
- Permanent watercourse diversion
- Undisturbed watercourse
- Permanent spoil emplacement
- Lake inundation extent at minimum PHES operating level (780.0 m AHD)
- PHES operating range to FSL (780.0 to 785.5 m AHD)

Existing environment

- NPWS reserve
- State forest

The conceptual water system layout will be further developed at detailed design and may vary from the layout shown.

Laydown pad (PSE 3) – conceptual layout

Lake Lyell PHES
Excavated Rock Management Strategy
Figure 5.7

EMM
creating opportunities

ii Water quality management for the final landform

PSE 3 will be constructed within the Farmers Creek arm of Lake Lyell which means it will be hydraulically connected to the lake. To manage water quality risks associated with excavated rock, only Type 1 (washed) and Type 2 material will be used to construct the emplacement. Figure 5.8 is a diagram that shows key water cycle processes and proposed controls to manage water quality. This figure should be read in conjunction with Table 5.5 which describes the key processes and controls that are noted in the figure.

Table 5.5 Water cycle interfaces and proposed controls – PSE 3

ID	Description
Water cycle processes	
1	Stormwater runoff will occur from building roof areas and hardstand. Stormwater runoff will be managed in a stormwater system that will be designed to meet the stormwater management standard described in the Surface Water Assessment EMM (2025a). No specific requirements to minimise infiltration are proposed given only Type 1 (washed) and Type 2 material will be used in PSE 3. Overflows from the stormwater system will drain to Lake Lyell.
2	Permanent watercourse diversions will be constructed around the southern and western edges of the PSE (refer to Figure 5.7) to convey runoff from upgradient areas around the PSE, into Lake Lyell. These watercourses will be free draining systems (ID 7).
3	The regional groundwater system generally drains towards Lake Lyell (EMM 2025b). Some clean groundwater inflow from upgradient areas into the emplacement is expected.
4	Water in Lake Lyell will interface with the northern batter (refer to Figure 5.7 and Figure 5.8). The lake will generally be maintained within the target PHES operating range (781.0 to 784.5 m AHD) and will occasionally be within the maximum PHES operating range (780.0 to 786.0 m AHD). Higher water levels may occur for short periods of time during high lake inflow events and lower levels may occur during droughts. The typical water level range and 1% AEP level are indicated in Figure 5.8.
5	The PSE will be hydraulically connected with Lake Lyell, therefore the water level within the PSE will be similar to the lake level and will be expected to rise and fall due to PHES operations. Water will flow into the emplacement when the lake level rises and flow out of the emplacement when the lake level recedes.
Water quality control measures	
6	Water quality risks due to excavated rock will be managed using the following construction methods: • Only Type 1 (washed) material will be used below the FSL. The washing process will remove most nitrogen and fines that could be mobilised by water movement through the emplacement. The efficacy of the washing process will be validated prior to and during its implementation (refer to Section 4.2.1). • Type 1 (washed) and Type 2 material will be used above FSL. Type 1 material (which is expected to be short to medium term source of nitrogen) will not be used. Measures such as geofabric will be used to mitigate the vertical movement of fines from any Type 2 material. As water in the emplacement will be exposed to excavated rock the water quality risks described in Table 4.1 for Type 1 (washed) and Type 2 rock would apply to this water. During PHES operations the water in the emplacement will be diluted by lake water that will move into and out of the emplacement daily. This will mitigate water quality risks associated with potential aluminium leaching from the excavated rock.
7	Permanent watercourse diversions will be constructed around the southern and western edges of the PSE (refer to Figure 5.7) to convey runoff from upgradient areas around the PSE, into Lake Lyell. These watercourse reaches will be: • either piped or surface drainage systems • meet the standard for permanent watercourse diversions that is described in the Surface Water Assessment (EMM 2025a) • be free draining systems.
8	Rock armouring on the lake side batter will be designed to be resilient to the flows in the Farmers Creek arm of Lake Lyell that will occur during PHES operations. Information on these flows is provided in the Surface Water Assessment EMM (2025a).

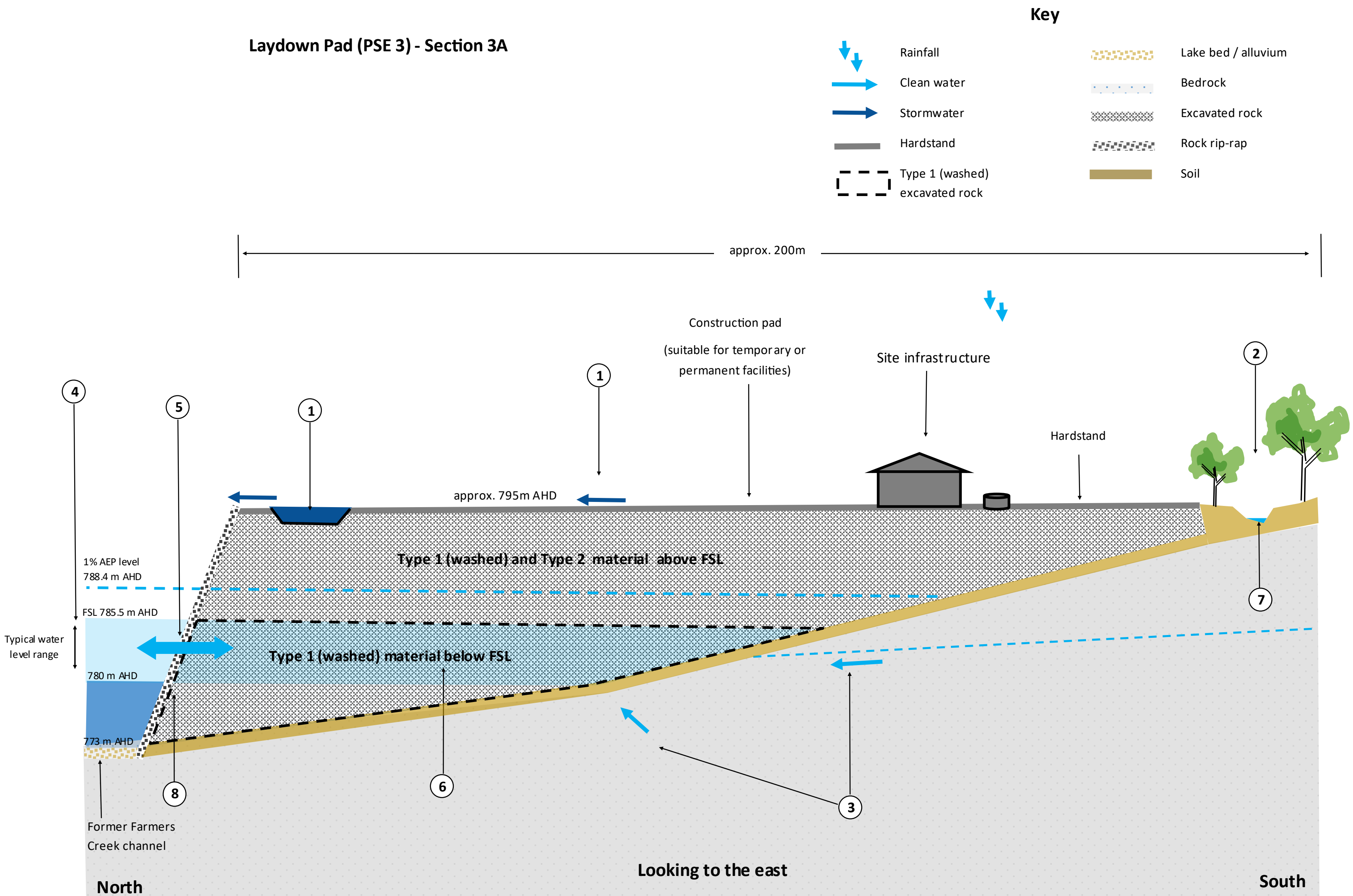


Figure 5.8 PSE 3 concept – Section 3A

5.5 Land-based PSEs

The lower access road (PSE 4), northern haul road (PSE 5) and workshop pad (PSE 6) are land-based PSEs that will be constructed within the gully that is downgradient of the upper reservoir. This gully drains to the south into the upper portion of the Farmers Creek arm of Lake Lyell and contains a 2nd order watercourse and several 1st order watercourses that are tributaries to the 2nd order watercourse. The 2nd order watercourse is referred to as Watercourse 3 in the Surface Water Assessment (EMM 2025a).

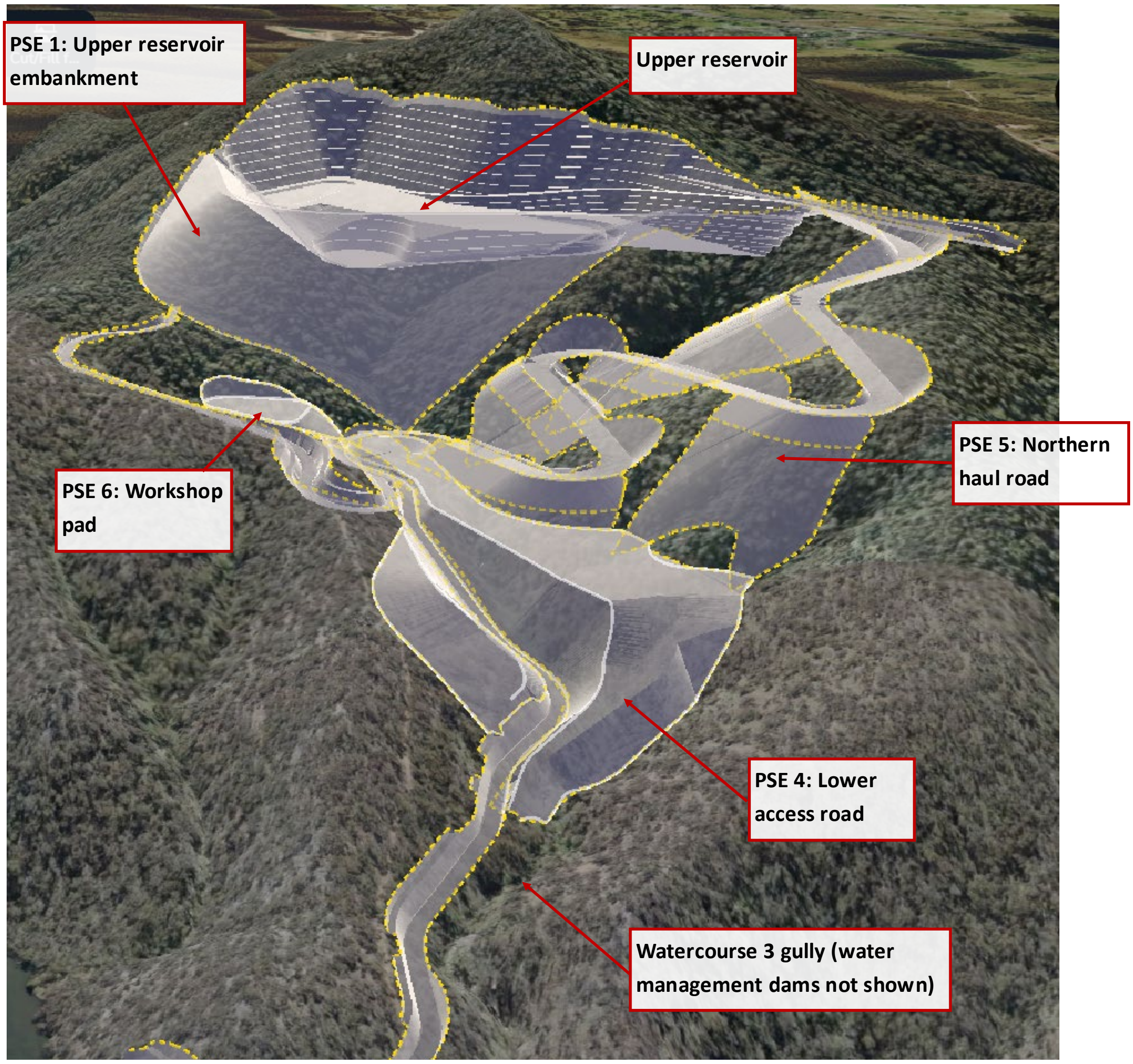
This section describes the locations, design concepts, water cycle interactions and proposed measures that will be implemented to manage water quality risks during and post construction of the land-based PSEs.

5.5.1 Design overview

Table 5.6 provides the estimated rock volume, rock category and a description of each PSE. Figure 5.9 shows a 3D image of the proposed landforms.

Table 5.6 Land-based PSEs – key elements

PSE	Volume (million PCM)	Rock category	Description
PSE 4 – Lower access road	1.27	Type 1 and 2	This PSE will be constructed within the Watercourse 3 gully, downstream of the upper reservoir and PSE 5 and 6. Construction of the landform will involve filling the gully with approximately 20 to 30 m of excavated rock. The main access road to the upper reservoir area will be constructed centrally within this landform (refer to Figure 5.9).
PSE 5 – Northern haul road	0.10	Type 1 and 2	This PSE will be constructed to the north and upgradient of PSE 4, in the eastern portion of the Watercourse 3 catchment. Construction of the landform will involve cut and fill to construct the northern haul road.
PSE 6 – Workshop pad	0.06	Type 1 and 2	This PSE will be constructed in the gully of a 1st order watercourse that is a tributary to Watercourse 3. Once constructed the pad will be part of the final landform and will be used to support construction activities (during the construction phase) and operational activities (during PHES operations).
Total	**1.43**		



Source: image provided by LLP

Figure 5.9 Conceptual landforms – land-based PSEs

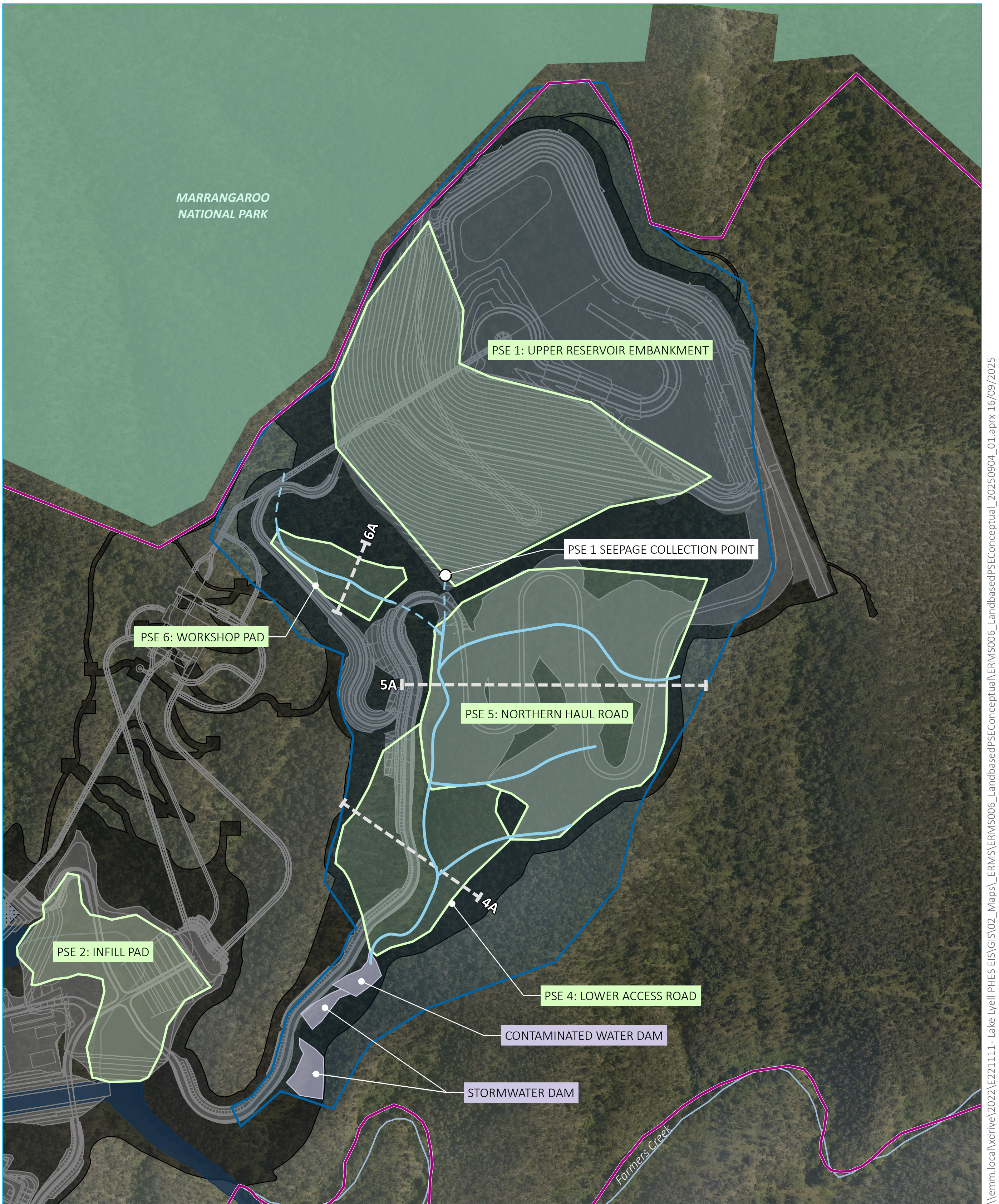
The following works will be undertaken prior to the construction of the PSEs:

- topsoil and vegetation will be removed and stockpiled for potential use in landform rehabilitation
- the construction water management system will be installed and commissioned.

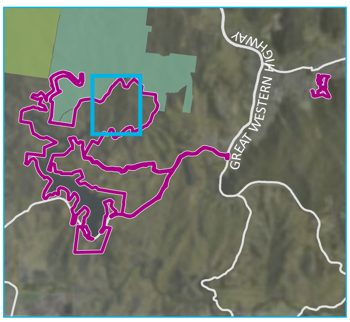
Once constructed each PSE will be part of the final landform. Parts of the landforms that are not the access road or pads will be revegetated.

Figure 5.10 shows a conceptual layout of the land-based PSEs and locates the following features that are discussed in Section 5.5.3:

- the Watercourse 3 catchment area
- proposed water management dams in the Watercourse 3 catchment
- the alignment of subsurface drainage systems
- the alignment of conceptual cross-sections for each PSE.



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)



KEY
- Project area
- Disturbance footprint
- Seepage collection point
- Site layout
- Cross section
- Subsurface drainage
- Surface drainage
- Permanent spoil emplacement
- Catchment area to dams (72 ha)
- Water management dam
- Lake inundation extent at minimum PHES operating level (780.0 m AHD)
- PHES operating range to FSL (780.0 to 785.5 m AHD)

Existing environment
- Named watercourse
- NPWS reserve
- State forest

Land-based PSEs – conceptual layout

Lake Lyell PHES
Excavated Rock Management Strategy
Figure 5.10

EMM
creating opportunities

The conceptual water system layout will be further developed at detailed design and may vary from the layout shown.

5.5.2 Water quality management during construction

During construction, all collected runoff and seepage from the land-based PSEs and other construction areas within the Watercourse 3 catchment will drain to the water management dams that will be located at the bottom of the catchment (refer to Figure 5.10). Captured runoff will be managed in the contaminated water system that is described separately in the Surface Water Assessment (EMM 2025a).

5.5.3 Water quality management for the final landform

i PSEs 4 (lower access road) and PSE 5 (northern haul road)

Figure 5.11 and Figure 5.12 are diagrams that show key water cycle processes and proposed controls to manage water quality for PSE 4 and 5 respectively. These figures should be read in conjunction with Table 5.7 which describes the key processes and controls that are noted in both figures.

Table 5.7 Water cycle interfaces and proposed controls – PSE 4 and 5

ID	Description
Water cycle processes	
1	Most rainfall onto the landform will be stored in the soil and will be slowly depleted via evapotranspiration. During prolonged rainfall, the moisture holding capacity of soil will be exceeded and excess rainfall will infiltrate into the underlying excavated rock. Surface water runoff will also occur during intense rainfall. Surface water runoff will be managed in the drainage system (ID 6).
2	Clean surface water runoff and interflow from upgradient areas will drain towards the PSE. Where practical, clean water drainage systems will be constructed around the perimeter of the PSE at hillslope interface locations to intercept this runoff and shallow interflow (ID 6).
3	Seepage into the PSE will likely infiltrate vertically through the excavated rock to the underlying bedrock, which has a low permeability. Most seepage will be intercepted by the bedrock and will flow downgradient along the bedrock interface where it will accumulate in low points in the pre-disturbance terrain. Subsurface drains will be installed in these low points (refer to Figure 5.10) to facilitate subsurface flow through the landform (ID 7). As the seepage will be exposed to excavated rock the water quality risks described in Table 4.1 for Type 1 rock apply to this water. There is potential for some seepage to infiltrate vertically through fractures in the bedrock into the underlying shallow groundwater system.
4	At PSE 4 and 5, the local shallow groundwater system is interpreted to drain towards Watercourse 3. The groundwater levels and flow rates are interpreted to vary due to weather. This means that some groundwater flow into the subsurface drain in Watercourse 3 will occur and that there will be limited potential for seepage from this drain to the shallow groundwater system.
Water quality control measures	
5	The PSEs will be designed and constructed to be a safe, stable and free draining landforms that have similar characteristics to the surrounding landscape with slope and lengths appropriate for the constraints posed by the excavated rock. Parts of the landform that are not access road will be revegetated with endemic native vegetation. The proposed rehabilitation approach is described in Soil, Land Use and Rehabilitation Assessment (Minesoils 2025).
6	All drainage features in the landforms will be designed and constructed to be geomorphologically stable using natural channel design techniques.
7	Subsurface drainage will be installed in the low points in the pre-disturbance terrain (refer to Figure 5.10) to facilitate subsurface flow through the landform. The drainage will comprise a graded rock media with appropriate measures to minimise the entry of fines from the overlying excavated rock. Collected seepage will drain via surface and subsurface drainage to the water management dams located in the bottom of the Watercourse 3 catchment (refer to Figure 5.10). Captured water will be managed in the contaminated water system, which is described in the Surface Water Assessment (EMM 2025a).

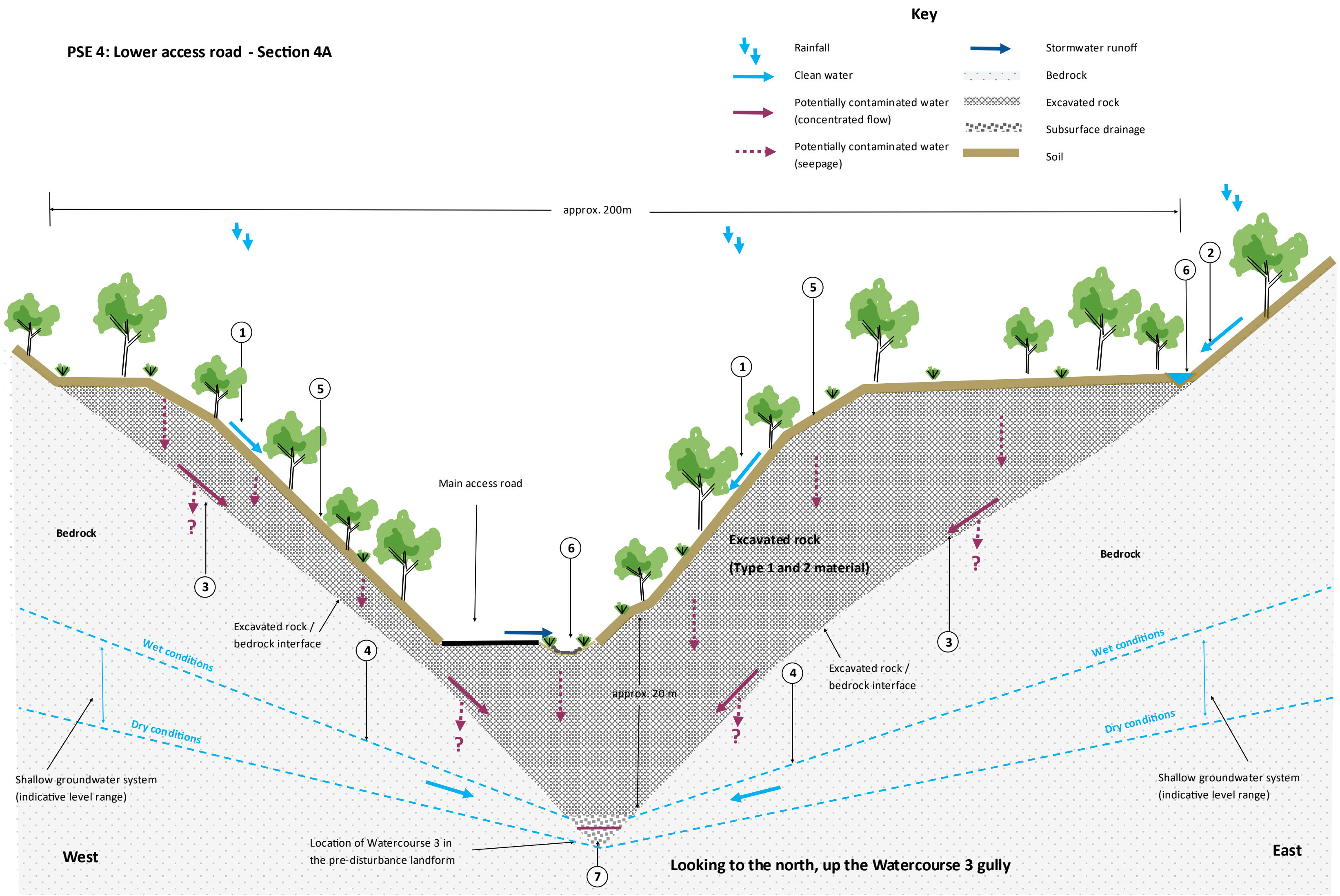


Figure 5.11 PSE 4 concept – Section 4A

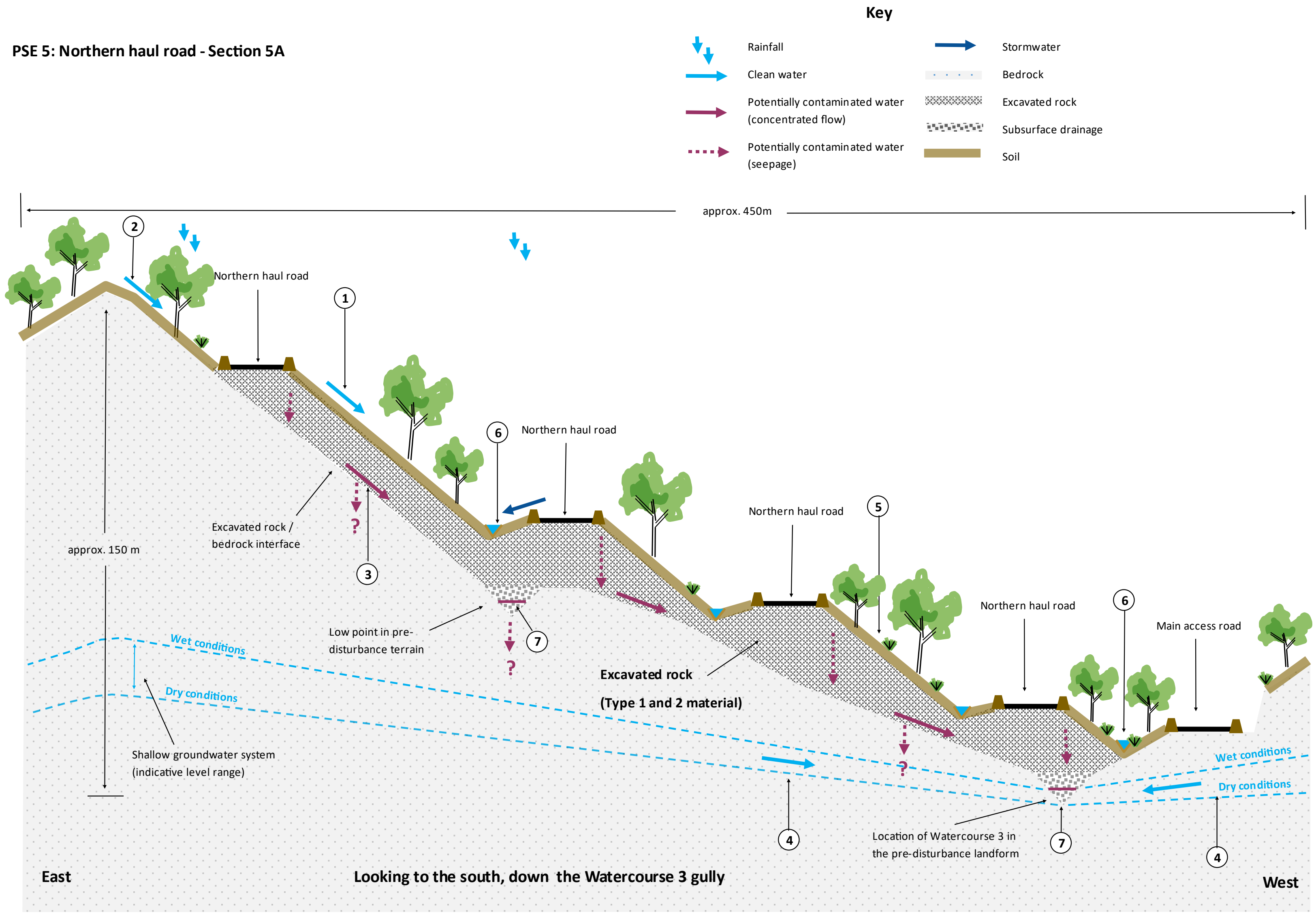


Figure 5.12 PSE 5 concept – Section 5A

ii PSE 6 – workshop pad

Figure 5.13 is a diagram that shows key water cycle processes and proposed controls to manage water quality. This figure should be read in conjunction with Table 5.8 which describes the key processes and controls that are noted in the figure.

Table 5.8 Water cycle interfaces and proposed controls – PSE 6

ID	Description
Water cycle processes	
1	Stormwater runoff will occur from building roof areas and the low permeability hardstand (ID 6). Stormwater runoff will be managed in a stormwater system that will be designed to minimise infiltration and to meet the stormwater management standard described in the Surface Water Assessment EMM (2025a). Any water storages within the pad will be lined to minimise infiltration (ID 7). Overflows from the stormwater system will drain to the clean water diversion system (ID 5).
2	Clean surface water runoff and interflow from upgradient areas will drain towards the pad. A clean water drainage system will be constructed around the perimeter of the pad at hillslope interface locations to intercept this runoff and shallow interflow (ID 5).
3	Seepage into the PSE will be minimised by the proposed controls. Any seepage or groundwater inflows will accumulate in the low point in the PSE. Subsurface drains will be installed in the low points (refer to Figure 5.10) to facilitate subsurface flow through the landform (ID 7). As the seepage will be exposed to excavated rock the water quality risks described in Table 4.1 for Type 1 rock would apply to this water. There is potential for some seepage to infiltrate vertically through fractures in the bedrock into the underlying shallow groundwater system.
4	The shallow groundwater system is interpreted to be below the invert or low point of the PSE during dry conditions. During wet conditions, there is potential for groundwater flows into the low point in the PSE to occur.
Water quality control measures	
5	Clean surface water runoff and interflow from upgradient areas will drain towards the pad. A clean water drainage system will be constructed around the perimeter of the pad at hillslope interface locations. The drains will be lined to minimise infiltration losses into the emplacement and will be free draining to downstream of the pad.
6	A low permeability hardstand will be established on the surface of the pad to minimise the infiltration of stormwater into the rock emplacement. Stormwater runoff will be collected in a stormwater system that is also designed to minimise infiltration. These measures will minimise the volume of surface water that seeps into the emplacement and the volume of seepage that needs to be managed in the surface water system.
7	Any water storages within the pad will be lined to minimise infiltration. Overflows from the stormwater system will drain to the clean water diversion system (ID 5).
8	Subsurface drainage will be installed in the low point in the pre-disturbance terrain (refer to Figure 5.10) to facilitate subsurface flow through the landform. The drainage will comprise a graded rock media with appropriate measures to minimise the entry of fines from the overlying excavated rock. Collected seepage will drain via surface and subsurface drainage to the water management dams located in the bottom of the Watercourse 3 catchment (refer to Figure 5.10). Captured water will be managed in the contaminated water system, which is described in the Surface Water Assessment (EMM 2025a).

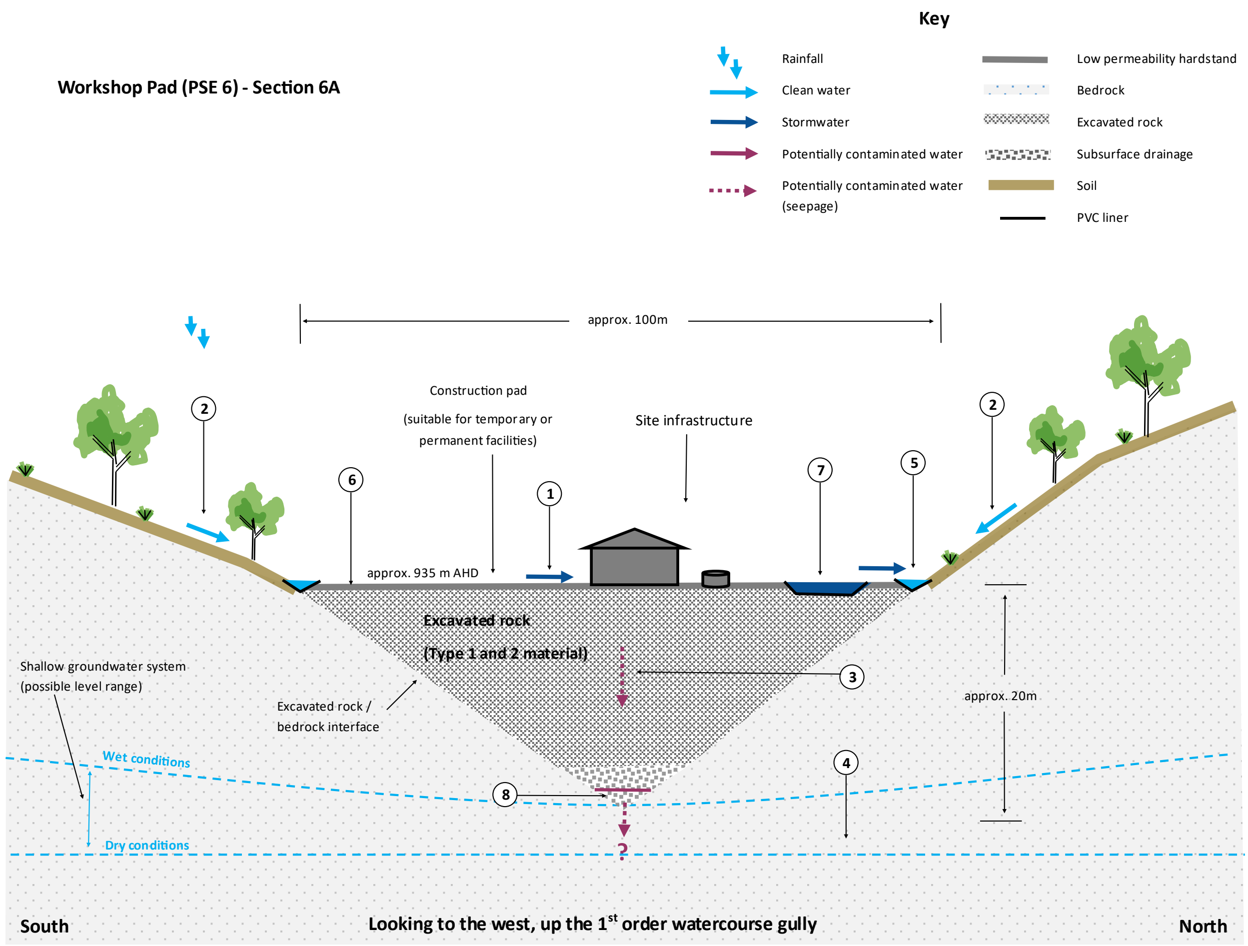


Figure 5.13 PSE 6 concept – Section 6A

5.6 Potential impacts to surface and groundwater

5.6.1 In-reservoir PSEs

During construction of the PSEs, all seepage and runoff from the PSE construction areas will be managed in the construction water system, which is described in the Surface Water Assessment (EMM 2025a). Therefore, no material impacts to receiving surface and groundwater systems are expected.

Following construction of the PSEs, no material impacts to receiving surface and groundwater systems are expected as the proposed construction methods will address risks associated with:

- fines being washed from excavated rock into the lake as lake levels change
- nitrogen leaching from excavated rock.

5.6.2 Upper reservoir embankment and land-based PSEs

Collected seepage from PSE 1, 4, 5 and 6 will drain via surface and subsurface drainage to the water management dams located in the bottom of the Watercourse 3 catchment (refer to Figure 5.10). Captured water will be managed in the contaminated water system, which is described in the Surface Water Assessment (EMM 2025a). Therefore, no material impacts to the receiving surface water environment are expected.

There is potential for some seepage of potentially contaminated water into the underlying groundwater system to occur via the following mechanisms:

- seepage from the floor of the PSEs through fractures in the underlying bedrock
- seepage from subsurface drains

The potential water quality of this seepage is described in Table 4.1. Residual impacts are described in the Groundwater Assessment (EMM 2025b).

References

ANZECC and ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand and the Australian and New Zealand Environment and Conservation Council) 2000, Australian and New Zealand guidelines for fresh and marine water quality.

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EMM 2025a, Lake Lyell Pumped Hydro Project – Surface Water Assessment

EMM 2025b, Lake Lyell Pumped Hydro Project – Groundwater Assessment

Minesoils 2025, Lake Lyell Pumped Hydro Project – Soil, land use and rehabilitation assessment

Abbreviations

AEP	annual exceedance probability
AMD	acid and metalliferous drainage
ANFO	Ammonium Nitrate Fuel Oil
BCM	bank cubic metres
CSSI	Critical State Significant Infrastructure
D&B	drill and blast (refers to a method for excavating rock)
DPHI	NSW Department of Planning, Housing and Infrastructure
EDFA	EDF power solutions Australia
EIS	environmental impact statement
EMM	EMM Consulting Pty Limited
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
FSL	full supply level
GL	gigalitres
HDPE	high-density polyethylene
KV	kilovolt
LCM	loose cubic metres
MOL	minimum operating level
MW	Megawatts
MWh	megawatt hours
NAG	net acid generation
NAF	non-acid forming
NEM	National Electricity Market
NOA	naturally occurring asbestos
NPR	neutralisation potential ratio
the project	the Lake Lyell Pumped Hydro Energy Storage Project
PAF	Potentially acid forming
PCM	placed cubic metres
PHES	pumped hydro energy storage
PMF	probable maximum flood
PSEs	permanent spoil emplacements
PVC	polyvinyl chloride
SEARs	Secretary's Environmental Assessment Requirements

Annexure A

Geochemical characterisation report

Lake Lyell Pumped Hydro Energy Storage

Geochemical characterisation report

Prepared for Lake Lyell Project Pty Ltd

September 2025

Lake Lyell Pumped Hydro Energy Storage

Geochemical characterisation report

Lake Lyell Project Pty Ltd

E221111 RP25

September 2025

Version	Date	Prepared by	Reviewed by	Comments
V1	29 May 2025	Bill Bull Edward Dawes	Glenn Passfield	Reporting on Stage 1 laboratory results
V2	29 September 2025	Bill Bull Edward Dawes	Chris Kuczera	Updated with Stage 2 laboratory results

Approved by

Chris Kuczera
Associate Water Resources Engineer
29 September 2025

Level 10 201 Pacific Highway
St Leonards NSW 2065
ABN: 28 141 736 558

Executive Summary

EnergyAustralia Portfolio Holdings Pty Ltd (EnergyAustralia) in partnership with EDF power solutions Australia (EDFA), referred to as Lake Lyell Project Pty Ltd (LLP) as trustee, is developing the Lake Lyell Pumped Hydro Energy Storage (PHES) Project (the project). The project is Critical State Significant Infrastructure (CSSI), and as such an environmental impact statement (EIS) is required to be prepared in accordance with Secretary's Environmental Assessment Requirements (SEARs). This geochemical characterisation study has been undertaken to assess whether excavated rock (spoil) generated during construction may result in acidic, saline or neutral drainage, which could impact surface or groundwater on site.

This study involved sampling and geochemical analysis of material from the proposed disturbance footprint. A total of 175 samples from 24 boreholes were analysed across two stages of testing. Stage 1 focused on screening (pH, EC, acid-base accounting (ABA) and whole-rock geochemistry), while Stage 2 targeted samples with elevated sulphur or trace element enrichment and included net acid generation (NAG), sequential NAG, sulphur speciation, acid buffering characteristic curves (ABCC), leachate testing, nutrient analysis and asbestos screening. This report documents the results from Stage 1 and Stage 2 and forms an appendix to the Excavated Rock Management Strategy, which describes how excavated rock will be managed.

ABA results indicated that most samples contained very low sulphur contents (<0.05% S) and moderate to high acid neutralising capacities (ANC; values of 5-110 kg H_2SO_4/t). Classification outcomes showed that approximately 80% of samples are non-acid forming (NAF), 12% are uncertain, and only 8% are potentially acid forming (PAF). The PAF material was limited to isolated quartzite and hornfels intervals containing elevated sulphur.

NAG testing further supported these findings. The majority of samples did not produce acidity under single addition testing, consistent with their NAF classification. Sequential NAG testing confirmed that when acidity was generated, it was largely expressed in the first oxidation stage, with minimal additional acidity released in subsequent stages. This indicates that reactive sulphide phases are limited and that oxidation occurs rapidly with limited potential for delayed (or long-term) acid release.

ABCC testing demonstrated that while static ANC values were generally high, the effectiveness of neutralisation varied under different pH conditions. Deeper quartzite and hornfels samples (greater than 230 m depth) retained effective buffering capacity above pH 4.5. In contrast, shallower quartzite samples exhibited neutralisation that only became effective at lower pH values, indicating that some of the neutralising capacity would not act until acidity had already developed. This distinction highlights the importance of understanding not only the total neutralising capacity, but also its effectiveness across relevant pH ranges.

Whole-rock elemental analysis indicated that most samples had metal and metalloid concentrations at or below global median soil values. However, certain samples were naturally enriched in elements including arsenic, bismuth, cobalt, copper, molybdenum, sulphur, selenium, antimony and tin. Arsenic had the highest proportion of significantly enriched samples, with 7% of all samples recording geochemical abundance index (GAI) values of 3 or more.

Whole-rock nutrient concentrations of ammonia, nitrate, and nitrite were consistently low, providing a useful baseline against which to distinguish natural background levels from any blasting-related nitrogen inputs during construction. Testing for naturally occurring asbestos (NOA) was also undertaken on eight targeted quartzite and hornfels samples, with no asbestos identified, indicating a low risk of NOA in spoil materials.

Leachate testing provided further insight into element mobility. Deionised (DI) water leachates were typically alkaline (pH 8–10) with low electrical conductivity (<200 µS/cm), confirming strong inherent buffering and minimal release of soluble salts under neutral conditions. Acetate-buffered (pH 5.0) leachates consistently returned higher concentrations of manganese and chromium, while and aluminium showed elevated mobility under both acidic and alkaline conditions. The other trace metals tested were leached at concentrations at or below those measured in local groundwater and surface water. However, two arsenic outliers (up to 0.32 mg/L) were observed in DI leachates from arsenic-enriched quartzite, and one zinc outlier (0.88 mg/L) was measured in a PAF quartzite sample with elevated whole-rock zinc content.

Overall, the results demonstrate that acid and metalliferous drainage risks are low and manageable. The majority of spoil is classified as NAF and possesses strong neutralisation capacity, while only isolated quartzite and hornfels intervals are PAF or uncertain and therefore require targeted management. The key contaminants of concern identified through leachate testing are arsenic, zinc, manganese, chromium, and aluminium, all of which should be prioritised for monitoring in groundwater and surface water. Prevention of acidification should remain a central objective of the spoil management plan, supported by segregation or blending of PAF materials and a targeted monitoring program to verify the geochemical characteristics of excavated rock prior to placement.

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1 Introduction

1.1 Background

EnergyAustralia Portfolio Holdings Pty Ltd (EnergyAustralia) in partnership with EDF power solutions Australia (EDFA), referred to as Lake Lyell Project Pty Ltd (LLP) as trustee, is developing the Lake Lyell Pumped Hydro Energy Storage (PHES) Project (the project). The project will have the capacity to store up to 3,080 megawatt hours (MWh) of energy and generate at 385 megawatts (MW) for 8 hours or generate up to around 440 MW for a shorter period. At a basic level, it will consist of upper and lower water reservoirs, a pipeline connecting them, and a hydro-electric power station connected to the national energy grid that is capable of generating or consuming electricity.

The project is located approximately 5 kilometres (km) west of Lithgow and 110 km west of the Sydney central business district. The project takes advantage of existing infrastructure (i.e. Lake Lyell) associated with Mt Piper power station which will be decommissioned in the coming decades and allows Lake Lyell to continue to serve a specific purpose in electricity generation (consistent with its existing use).

In June 2024, the Minister for Planning and Public Spaces declared the project to be Critical State Significant Infrastructure (CSSI). Accordingly, approval for the project is required under Part 5, Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This requires the preparation of an environmental impact statement (EIS) for the project in accordance with Secretary's Environmental Assessment Requirements (SEARs) and the approval of the Minister. EMM Consulting Pty Limited (EMM) has been engaged by LLP to prepare the EIS.

1.2 Report objectives

This report supports the EIS for the project by geochemically characterising excavated rock (spoil) generated as part of the project activities. The excavated rock has been assessed to determine whether the disturbed material may generate acidic, saline or neutral drainage (collectively termed acid and metalliferous drainage or AMD), which may then impact surface water and/or groundwater on site. This report forms an appendix to the Excavated Rock Management Strategy that describes sources of excavated rock and how it will be managed. It may also inform future excavated rock management plans that are prepared post approval. The characterisation consists of the following components:

- Sampling and geochemical analysis of potentially disturbed samples from the proposed disturbance footprint to determine the characteristics of the material and highlight any potential sources of AMD.
- Leachate testing on samples identified as potentially concerning to determine the mobility of metals and metalloids if exposed to the receiving environment (e.g. subjected to rainfall).
- Assessment of the geochemical characteristics of the surface water and groundwater currently monitored on site to compare to the leachate test results and determine whether impacts would be likely.

2 Geological setting

2.1 Geological units

The project area is underlain by a diverse suite of geological units belonging to the Lachlan Fold Belt (LFB) and the Sydney Basin. These include metamorphosed sedimentary successions of the Devonian Lambie Group, comprising the Gibbons Creek Sandstone (sandstone-quartzite) and the Rydal Formation (mudstone-quartzite). Intrusive Carboniferous igneous rocks of the Bathurst Batholith are also present, represented by the Hartley Suite, Blaxland Granite and Lett Granite. Overlying these older sequences are Permian to Triassic sedimentary deposits of the Sydney Basin, including the Illawarra Coal Measures (shale), the Bery Siltstone of the Shoalhaven Group (siltstone), and the Narrabeen Group, which hosts the Banks Wall Sandstone and the Caley Formation (mudstone). These units are summarised in Table 2.1.

Table 2.1 Geological units within the study area

Province	Age	Group/suite	Dominant type	Unit	Dominant lithology
Lachlan Fold Belt	Devonian	Lambie Group	Sedimentary/Metamorphic	[1]Gibbons Creek Sandstone	Sandstone / Quartzite
				[1]Rydal Formation	Mudstone / Quartzite
	Carboniferous	Bathurst Batholith	Igneous (plutonic)	Hartley Suite	Granite
				Blaxland Granite	Granite
				Lett Granite	Granite
Sydney Basin	Permian	Illawarra Coal Measures	Sedimentary	Illawarra Coal Measures	Shale
		Shoalhaven group		Bery Siltstone	Siltstone
	Triassic	Narrabeen Group	Sedimentary	Banks Wall Sandstone	Sandstone
				Caley Formation	Mudstone

Source: NSW seamless geology dataset (Colquhoun et al. 2022)

Notes: 1. Units intercepted by sub-surface project infrastructure.

2.2 Weathering

A review of borehole data from the project area indicates a well-developed weathering profile in quartzite and associated lithologies. Weathering grades ranges from highly to extremely weathered intervals near the surface, through moderately and slightly weathered zones at intermediate depths, to fresh, unweathered rock at depth. This progression is typical of deeply weathered terrains and is important for understanding geochemical reactivity, as weathered profiled can influence both acid generation potential and secondary mineral formation.

Across the site, a relatively consistent vertical weathering profile is observed:

- The upper 10 to 30 m commonly consists of highly to extremely weathered quartzite, breccia or hornfels. These intervals typically retain little original rock structure and are associated with enhanced permeability and leaching of reactive phases.

- At intermediate depths (20 to 50 m), lithologies transition to slightly to moderately weathered states. Quartzite dominates in this zone.

- Below 50m, the rock mass is predominantly fresh, with intact quartzite, hornfels, basalt and andesite units. These fresh intervals retain their primary mineralogy, including unoxidized sulphides and reactive silicates, and are more competent than overlying weathered materials.

2.3 Alterations

Hydrothermal and weathering-related alteration features are recorded across multiple boreholes, mainly affecting quartzite and hornfels. Alteration styles range from localised overprints in weathered material to pervasive chloritic development in fresh bedrock. These features reflect both regional hydrothermal events and near-surface oxidative processes, and they may influence acid generation and metal mobility. The following alteration types are observed:

- Chlorite alteration is the most widespread, recorded in both quartzite and hornfels at depths greater than 50 m. Intensity ranges from slight to intense, and in some cases is associated with disseminated sulphides (e.g. BH105 at 190 m).

- Siliceous alteration is noted in quartzite near surface (BH104, 10-30m) and persists sporadically at depth (e.g. BH104 at 270 m, BH105 at 290 m). These zones may represent silica flooding or veining linked to past hydrothermal activity.

- Hematite alteration occurs as staining and discrete alteration zones within quartzite (BH105 at 230-330 m; BH203 at 30-39 m). Iron oxide coatings are also described on fracture surfaces, potentially influencing trace metal adsorption and release.

- Sulphide mineralisation, including disseminated pyrite and pyrite veining, is recorded in fresh quartzite (e.g. BH105 at 90 m and 190 m). These intervals represent potentially reactive sulphide zones relevant to acid generation potential.

- Other alteration styles include:

  - Blue-green alteration in shallow quartzite (BH104 at 50 m).

  - Brown/purple alteration in quartzite (BH108 at 90-100 m).

  - Siliceous-hematite alteration in quartzite (BH106 at 130 m).

  - Intense chlorite alteration and iron staining in weathered quartzite and tuff (BH203 at 30-39 m).

  - Chlorite inclusions in hornfels and wollastonite-bearing units (BH203 at 82-100 m).

  - Strongly altered andesite in highly weathered intervals (BH104 at 327 m).

In summary, alteration across the site is dominated by chlorite-rich assemblages, with siliceous and hematite overprints occurring in localised intervals. The occurrence of sulphide mineralisation within altered quartzite represents a key geochemical consideration, as these zones may contribute the acid generation and metal leaching.

3 Sampling and testing program

3.1 Sample selection

Core and chip samples for geochemical analysis were selected from existing material obtained from geotechnical and groundwater studies. Material was available from 24 boreholes which are presented in Figure 3.1, with further details provided in Table 3.1. Boreholes beginning with 'BH' were cored, while only chip samples were available for the 'MB' series boreholes.

The geotechnical investigations included geological logging which found that quartzite is the dominant lithology, with hornfels, sandstone, phyllite, breccia, and andesite also encountered. The logs noted numerous instances of pyrite disseminated throughout the quartzite.

Samples for laboratory analysis were selected based on the approach recommended by regulator guidelines (DITR 2007). This approach recommends that approximately 80 samples per lithology per 10M tonnes of spoil are collected (Kentwell, Garvie & Chapman 2012; DMP 2009). Based on estimated excavation volumes of 6.83 million m^3, and assuming a spoil density of 1,700 kg/m^3, around 11.5M tonnes of material may be excavated during the Project. Given the lithology types, the estimated disturbance tonnage, the presence of pyrite in the quartzite and based on the best-practice guideline outlined above, approximately 180 samples were recommended for the initial geochemical characterisation.

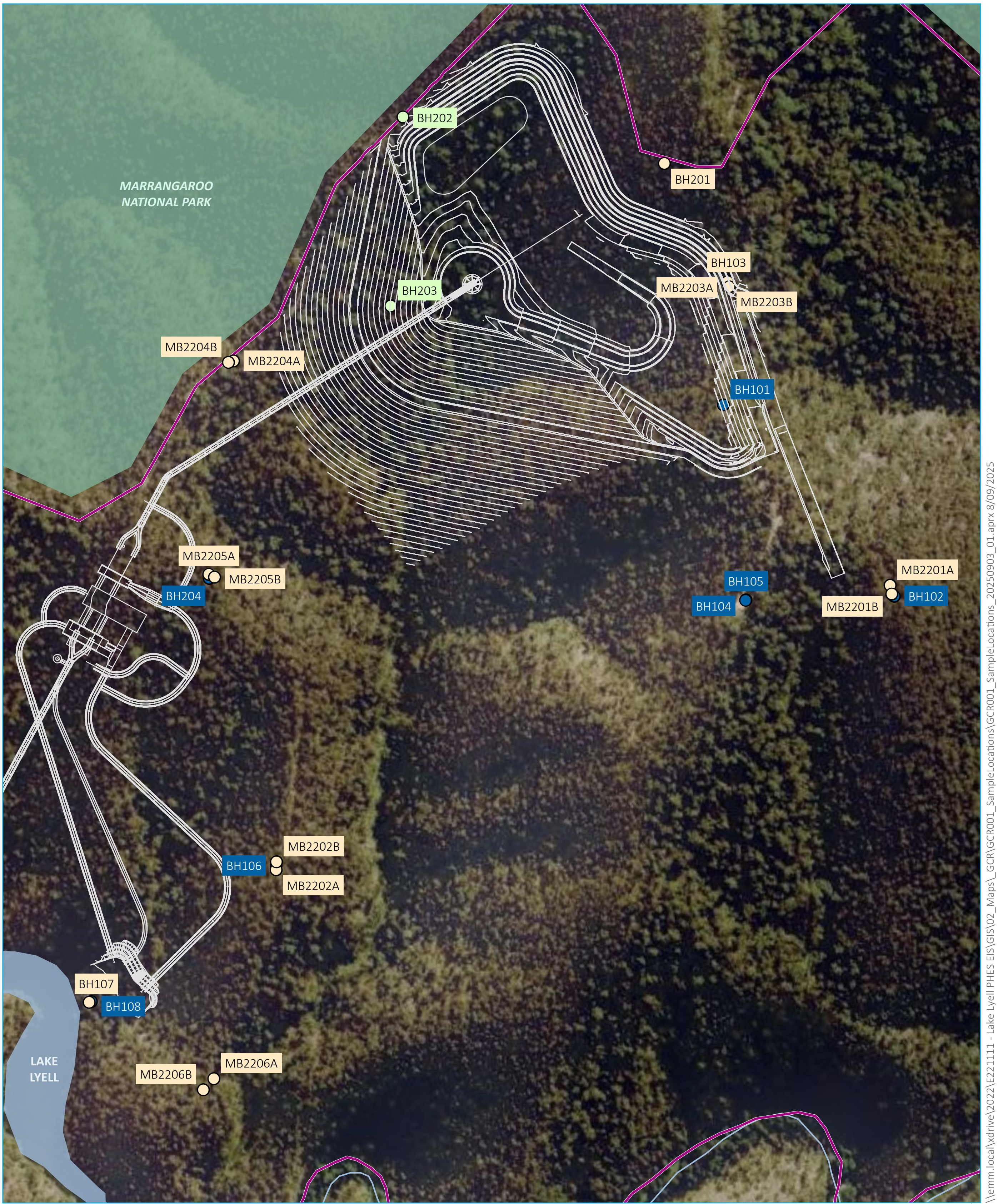
Sampling was conducted by EMM between 17 and 20 April 2025 at the Lake Lyell site. Samples were collected at approximately 20-meters intervals, with spacing adjusted as necessary to ensure representative coverage of lithological variability. A total of 175 samples were collected, which are summarised by borehole and lithology in Table 3.1, with full sample details provided in Appendix A. A total of 149 quartzite, 17 hornfels, 2 shale, 2 sandstone and 1 sample each of breccia, basalt, andesite, tuff and wollastonite were collected.

Table 3.1 Summary of samples by borehole and lithology

Borehole	Lithology sampled	Number of samples collected
BH101	Quartzite	**4**
BH102	Quartzite	**1**
BH103	Quartzite	**3**
BH104		**20**
	Quartzite	17
	Breccia	1
	Basalt	1
	Andesite	1
BH105	Quartzite	**18**
BH106	Quartzite	**11**
BH107	Quartzite	**2**
BH108	Quartzite	**6**
BH201		**7**
	Quartzite	4
	Sandstone	1

Borehole	Lithology sampled	Number of samples collected
	Hornfels	2
BH202	Hornfels	**1**
BH203		**11**
	Quartzite	7
	Tuff	1
	Hornfels	2
	Wollastonite	1
BH204		**14**
	Quartzite	7
	Hornfels	7
MB2201A	Quartzite	**10**
MB2201B	Quartzite	**6**
MB2202A	Quartzite	**8**
MB2202B	Quartzite	**4**
MB2203A	Quartzite	**9**
MB2203B	Quartzite	**4**
MB2204A		**11**
	Shale	1
	Quartzite	10
MB2204B		**4**
	Sandstone	1
	Shale	1
	Quartzite	2
MB2205A		**10**
	Quartzite	5
	Hornfels	5
MB2205B	Quartzite	**3**
MB2206A	Quartzite	**4**
MB2206B	Quartzite	**4**

Note: Bold values are the total amount of samples collected from each borehole.



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); ESRI (2025); GA (2009)

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GDA2020 MGA Zone 56
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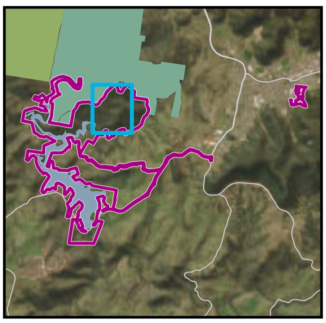


KEY

- Project area
- Key project infrastructure

Baseline investigation and monitoring location

- Geotechnical borehole
- Monitoring bore
- VWP

Existing environment

- Major road (refer to inset)
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest (refer to inset)

Sample locations

Lake Lyell PHES
Geochemical Characterisation Summary Report
Figure 3.1

EMM
creating opportunities

3.2 Staged laboratory analysis

Laboratory testing was undertaken by ALS Sydney and consisted of the tests outlined in the following subsections. Verification of Lake Lyell geochemical characteristics involved the implementation of a staged testing approach consisting of:

- Determining initial geochemical characteristics using static acid-base accounting and whole-sample geochemistry (Stage 1).
- Using the results of the Stage 1 testing to determine whether Lake Lyell samples should undergo more detailed geochemical testing (Stage 2).

3.3 Stage 1 laboratory analysis

To provide an initial verification of the Lake Lyell geochemical characteristics and potential for AMD, the following Stage 1 analyses were undertaken:

- pH and electrical conductivity (1:5; i.e. a ratio of 1 part solid sample, 5 parts deionised water).
- Total sulphur concentration as S.
- Maximum potential acidity (MPA) in kg H_2SO_4/t (calculated, see Section 3.3.2).
- Acid neutralising capacity (ANC) in kg H_2SO_4/t.
- Net acid producing potential (NAPP) in kg H_2SO_4/t (calculated, see Section 3.3.2).
- Major and trace element whole-sample concentrations, including metals and metalloids.

Further details about the testing undertaken as part of Stage 1 are presented in Sections 3.3.1 through to 3.3.3.

3.3.1 pH and electrical conductivity (1:5)

1:5 pH and electrical conductivity (EC) testing was undertaken to assess the short-term soluble acidity and salinity characteristics of the samples. The 1:5 method involves mixing one part finely crushed sample with five parts deionised water. The mixture is shaken for a fixed period and then allowed to settle, after which the pH and EC of the supernatant is measured. These tests are standard methods used to screen material for potential environmental reactivity and to support interpretation of acid-base accounting results.

The 1:5 pH value indicates the presence of readily soluble acidic or basic compounds that may be leached from the material. Lower pH values may suggest the presence of acid-forming minerals or previous oxidation of the sample material, while higher values may indicate buffering compounds such as carbonates.

The 1:5 EC value correlates with the total concentration of soluble salts within the sample. High EC values may reflect salt accumulation due to evaporation, oxidation, or mineral dissolution and can provide an early indicator of salinity issues or the mobility of trace metals.

3.3.2 Acid-base accounting

The initial assessment of the AMD potential of the samples was undertaken via acid-base accounting, which evaluates the balance between acid generation processes and acid neutralising processes (AMIRA 2002). The MPA (in kg H_2SO_4/t) is a measure of the highest acidity that a sample will generate assuming all sulphur within the sample is oxidisable and available to form sulphuric acid. It is defined from the stoichiometry of pyrite (sulphide) oxidation and is calculated as:

$$MPA = S\%_{wt} \times 30.6 \quad \text{(AMIRA 2002)}$$

For example, a sample containing 1% sulphur by weight has the potential to generate 30.6 kg of H_2SO_4 per tonne of sample (30.6 kg H_2SO_4/t). It is noted that total sulphur concentrations for the samples considered in this report were measured through high-temperature combustion, which does not differentiate between different forms of sulphur, such as sulphides and sulphates. Sulphides are the main contributor to AMD, as they produce acid during oxidation. Sulphates are already oxidised and therefore cannot generate acid. Therefore, calculating MPA using the total sulphur concentration is a conservative indication of potential acidity.

The ANC of a sample is a measure of the capacity of the material within the sample (e.g. carbonates) to buffer the acidity produced. ANC is generally expressed in units of kg H_2SO_4/t (i.e. equivalent to MPA units).

The net acid production potential (NAPP, reported in kg H_2SO_4/t) records the balance within the sample of the acidity generated versus its intrinsic buffering capacity and provides an indication of the potential for a sample to generate acidity. It is defined as:

NAPP=MPA-ANC (AMIRA 2002)

Where MPA is less than ANC, NAPP is negative, indicating that the sample may have sufficient buffering capacity to prevent AMD. A positive NAPP (MPA>ANC) indicates that the material may potentially generate net acidity under the appropriate conditions. In addition, the neutralisation potential ratio (NPR) is used to provide an indication of the acidity versus buffering of a sample. NPR is calculated as:

NPR=ANC/MPA

Classifications in this characterisation report adhere to the conventions in Price (2009) with the following divisions:

- NPR>2 = Non-acid forming (NAF).
- NPR<1 = Potentially acid forming (PAF).
- 1≤NPR≤2 = Uncertain (UC).

3.3.3 Metals/metalloids analysis

The Lake Lyell samples were analysed for whole-sample metals/metalloids concentrations. Concentrations were assessed with reference to the geochemical abundance index (GAI). The GAI compares the concentration of an analyte in a sample with a reference value to determine the level of enrichment in the sample and thus to highlight analytes that may act as sources of contamination in AMD. For this verification exercise, global median soil concentrations were used following the standard convention (GARD Guide 2009; Bowen 1979; Berkman 1976). The GAI is calculated as follows:

$$GAI = \log_2\left(\frac{Conc_{Sample}}{1.5 \times Conc_{Median,soil}}\right)$$

GAI values are reported as integers and range between 0 (the sample analyte concentration is similar to or less than the reference concentration) to 6 (the sample analyte concentration is enriched to approximately 100 times the reference content). As a general guide, a GAI value of 3 or above is considered significant and may warrant further investigation (GARD Guide 2009).

3.4 Stage 2 laboratory analysis

To build upon the initial Stage 1 program and to address specific uncertainties identified in the preliminary results, a targeted Stage 2 laboratory testing program was undertaken. The Stage 2 analyses were selected to provide greater resolution on acid-base characteristics, sulphur forms, leachability and other potential environmental risks not fully constrained by Stage 1 data. The Stage 2 testing suite was selected to directly address elevated sulphur concentrations, low pH values, enrichment of certain trace elements, and the potential presence of naturally occurring asbestos (NOA). Accordingly, the following analyses were undertaken:

- Net acid generation (NAG) and sequential NAG testing, together with sulphur speciation, to better quantify acid generation potential and differentiate between sulphide (acid-generating) and sulphate (non-acid generating) sulphur.

- Existing acidity testing (titratable actual acidity; TAA), targeted at samples with low paste pH, to ensure that existing acidity in oxidised or weathered materials is not underestimated.

- Acid buffering characteristic curve (ABCC) testing, for samples with both elevated sulphur and neutralisation capacity, to capture the actual buffering response as acidity is generated.

- Leach testing (deionised water and acetate buffer at pH 5.0) to evaluate the mobility of metals, metalloids and acidity under neutral and acidic conditions, particularly for samples showing enrichment in trace elements.

- Nutrient testing (ammonia, nitrite and nitrate) to provide baseline data on potential nitrogen contributions associated with blasting residues.

- Asbestos testing to identify the presence of naturally occurring asbestos (NOA) in excavated rock or soil, informing safe material handling procedures.

Further details about the testing undertaken as part of Stage 2 are presented in Sections 3.4.1 and 3.4.2, and the entire laboratory testing program is summarised in Table 3.2.

3.4.1 Net acid generation analysis

NAG testing was conducted in accordance with the AMIRA (2002) protocol and Australian best-practice guidelines (LPSDP 2016; QLD Department of Resources 2022) to assess the acid-forming potential of sulphide materials. The method involves the oxidation of reactive sulphides using hydrogen peroxide under controlled laboratory conditions, with the acidity produced measured through titration of the resulting solution.

The single-step NAG test uses a single peroxide addition intended to fully oxidise reactive sulphides. Only the final NAG pH (NAG pH_{ox}) is typically reported, representing the leachate pH after oxidation. As stated in AMIRA (2002), this method provides a conservative estimate of acid generation potential following sulphide oxidation. The solution is titrated to pH 4.5 and pH 7.0:

- The NAG value at pH 4.5 quantifies acidity from strong acids (principally sulphuric acid) and soluble metal cations (Fe^{3+}, Al^{3+}), and reflects the immediate acid-forming potential.

- The NAG value at pH 7.0 captures the total titratable acidity, including weak acids and hydrolysed metal species, and therefore provides an estimate of the total potential acidity. The difference between NAG 4.5 and NAG 7.0 values can indicate the presence of secondary buffering reactions or delayed acid release.

The sequential NAG test extends this method by applying multiple peroxide additions to the same sample until no further acid generation is observed. This approach differentiates between:

- Readily oxidisable sulphides, which generate acidity in the first cycle(s).
- Refractory or encapsulated sulphides, which may only oxidise after repeated peroxide additions, highlighting potential for long-term or delayed acid generation.
- Interaction with neutralising phases, where buffering may suppress acidity in early cycles, but later additions reveal additional acid potential once buffering capacity is overcome.

Sequential NAG is particularly valuable where discrepancies exist between static sulphur data and single-step NAG results (e.g. measurable pyritic sulphur but low single-step NAG acidity). It provides a clearer understanding of whether sulphides are truly non-reactive, or whether their oxidation is simply slow and therefore underestimated by a single-step test.

Thresholds for NAG values at pH 4.5 and 7.0, expressed in kg H_2SO_4 per tonne of sample (kg H_2SO_4/t), are applied to evaluate residual acidity and neutralisation potential. In line with AMIRA (2002) and national guidelines, NAG results (single and sequential) are interpreted alongside NAPP and NPR values to classify materials as NAF, PAF, or uncertain. This integrated approach provides greater confidence in material classification and improves predictions of long-term geochemical behaviour

3.4.2 Acid buffering characteristic curve analysis

The interpretation of ABCC results focuses on both the absolute neutralisation capacity of a material and the pH range over which that capacity is effective. While ANC alone provides a measure of total acid-neutralising potential, ABCC reveals whether this neutralisation is expressed at environmentally relevant pH values or only once the slurry is already acidic. Key aspects of the interpretation framework are as follows:

- Starting pH – Provides an indication of whether the sample contains existing acidity. Neutral to alkaline starting pH (>6.5) suggests no measurable acidity, whereas acidic starting pH (<5.5) may indicate prior oxidation or depletion of buffering phases.
- Total ANC – Represents the theoretical maximum neutralisation capacity of the sample. By itself, this value may overestimate effective neutralisation if buffering is only expressed at low pH.
- Acid addition at pH thresholds – The cumulative acid addition required to lower the slurry to pH 5.5 and 4.5 are of interest, as these values describe how much acid a material can neutralise before conditions become acidic in the field.
    - pH 5.5 represents a practical early protection threshold. Buffering above this threshold is largely readily available buffering capacity from carbonates.
    - pH 4.5 represents the onset of net acid generation. Neutralisation that occurs below this pH typically represents silicate and secondary mineral buffering, which may delay but not prevent acidification.
- Effectiveness of ANC above pH 4.5 – Expressed at the proportion of total ANC consumed before the slurry reaches pH 4.5.

- >75% indicates largely effective buffering, with the majority of neutralisation occurring at a relevant pH.

- 50%-75% indicates partially effective neutralisation, which helps to buffer but not fully offset acid generation.

- <50% indicates that neutralisation mostly occurs at low pH values, meaning that the material is likely to become acidic before buffering occurs.

By combining these parameters, ABCC results provide a clear indication of whether a material is capable of preventing acid generation under field conditions, or whether it may only delay acidity after it has already developed.

Table 3.2 Description of analytical methodologies

Type of Test	Test Performed	Units	Significance
pH and electrical conductivity (powdered rock: water)	pH (1:5) EC (1:5)	-	The pH (1:5) value is an initial indicator in assessing the acid-generating potential of powdered rock samples. A low pH signals an immediate concern for acid generation, while a neutral or alkaline pH suggests current buffering. However, it is always interpreted in conjunction with other geochemical tests to provide a comprehensive and reliable prediction of AMD potential. The electrical conductivity (EC) (1:5) test is an initial indicator of the saline drainage potential of powdered rock samples. A higher EC indicates more soluble material within the sample which may pose a seepage risk to the surrounding environment.
Acid potential tests	Sulphur – Total as S (LECO)	% S or kg S/tonne	Quantifies the total sulphur content in a solid sample, including both sulphide and sulphate forms. This is a critical parameter in acid-base accounting as it helps estimate the potential for acid generation from sulphide oxidation. The LECO method involves high-temperature combustion to ensure complete sulphur release and quantification.
	Chromium Reducible Sulphur (CRS)	% S (as sulphide sulphur)	Measures the concentration of sulphur present specifically as acid-generating sulphide minerals, such as pyrite (FeS_2), using a hot acidic chromium (II) chloride digestion. CRS selectively quantifies reducible inorganic sulphide, excluding non-acid-generating forms like sulphate, elemental sulphur, and organic sulphur. This test provides a more accurate estimate of a material's acid potential (AP) for use in acid-base accounting compared to total sulphur, especially in samples with mixed sulphur species.
Actual acidity tests	EA033-A: Actual Acidity	(1) pH (no unit); (2) moles H^+/tonne or mg/L $CaCO_3$ equivalent	Quantifies the current acidity of a solid sample by extracting and analysing soluble and exchangeable acidic components. (1) pH KCl: Indicates exchangeable hydrogen ions (H^+) from mineral surfaces using a potassium chloride extract. (2) Titratable Acidity (sodium hydroxide (NaOH) to pH 7): Measures the amount of base required to neutralise acidity from free hydrogen ions (H^+), hydrolysed metal ions (e.g. iron (III) (Fe^{3+}), aluminium (III) Al^{3+}), and weak acids.
Neutralisation potential tests	EA013: ANC	kg H_2SO_4/tonne or % $CaCO_3$ equivalent	The ANC by EA013 method offers an assessment of a sample's neutralising capability. This methodology involves the addition of a known excess of standardised hydrochloric acid to a precisely weighed sample. To ensure a complete reaction between the acid and all neutralising bases, primarily carbonate minerals, the mixture is heated. Subsequently, a back titration with standardised sodium hydroxide is performed to quantify the amount of hydrochloric acid consumed during the reaction, thereby determining the ANC.
Acid buffering characteristic curves	EA046-B	pH versus kg H_2SO_4	ABCC testing was undertaken to provide a more detailed assessment of the neutralisation behaviour of selected rock samples. ANC test, which measures the total amount of acid that can be consumed, ABCC involves incremental titration of powdered sample with dilute

Type of Test	Test Performed	Units	Significance
			hydrochloric acid. The pH of the slurry is recorded after each acid addition, generating a curve of pH versus cumulative acid addition (kg H_2SO_4/t equivalent).
Leachate tests	DI and acetate leaching	Concentrations in leachate (e.g. mg/L, µg/L; pH; EC)	Measures the short-term, readily soluble contaminants that leach from a sample when contacted with deionised water or an acetate buffered solution at pH 5.0. Provides a baseline assessment of leachate quality, identifies soluble salts and mobile constituents, and helps assess short-term environmental impact. This test does not simulate long-term weathering or sulphide oxidation.
Net acid generation testing	NAGpH	-	The NAG pH (NAGpH, oxidised) represents the final pH of the leachate following complete oxidation of sulphidic constituents under controlled laboratory conditions. When reported alongside ABA parameters and NAG values, NAGpH (oxidised) enhances the interpretation of a material's acid-forming potential, particularly in cases where ABA or NAG results alone yield inconclusive or borderline outcomes.
	NAG (pH 4.5)	kg H_2SO_4/tonne	The NAG test simulates the oxidation of sulphide minerals (primarily pyrite) using hydrogen peroxide (H_2O_2) and quantifies the acid produced. Titration to pH 4.5 estimates the acidity from strong acids (mainly sulphuric acid (H_2SO_4)) and soluble metal ions such as Fe^{3+} and Al^{3+}, which dominate under very low pH conditions. A relatively low pH 4.5 NAG value may indicate limited acid-forming potential, but this endpoint does not capture acidity released by weaker acids or metal hydrolysis above pH 4.5.
	NAG (pH 7.0)	kg H_2SO_4/tonne	This test follows the same peroxide oxidation procedure as NAG pH 4.5 but titrates the oxidised solution to pH 7.0, capturing all titratable acidity, including that released by weak acids and metal hydrolysis (e.g. (iron (III)) $Fe^{3+} \rightarrow$(iron (III) hydroxide)$Fe(OH)_3$) between pH 4.5 and 7.0. The difference between NAG pH 7.0 and pH 4.5 provides insight into the buffering capacity or delayed acid generation potential of the material. If NAG pH 7.0 is significantly greater than NAG pH 4.5, additional acid generation is likely under near-neutral conditions.
Naturally occurring asbestos	Polarized-light microscopy (PLM) and dispersion staining (DS)	-	NOA is typically associated with ultramafic rocks, which are characterised by elevated magnesium and iron content and comparatively low concentrations of silica and potassium. Samples containing suspected fibrous minerals are analysed using polarised light microscopy (PLM) and dispersion staining (DS).
Whole-rock elemental analysis	Four acid digestion and inductively coupled plasma atomic emission spectrometry	% or ppm (mg/kg)	Provides the chemical composition of the rock matrix, including major, minor, and trace elements. Used for geochemical characterisation and identifying potential contaminants which may leach under neutral or acidic conditions.

4 Results

Results from the geochemical sampling and analysis program described in Section 2 and Section 3.2 are presented in the sections below. A condensed table of the laboratory data is presented in Appendix C, while the full laboratory results and certificates are attached in Appendix D.

4.1 pH and electrical conductivity (1:5)

1:5 pH results are compared with sample depth, lithology, weathering type and Price classification (Section 3.3.2) and summarised in Figure 4.1 to Figure 4.3. Some notable results are as follows:

- pH values range from 2.9 to 9.8, with most samples exhibiting alkaline pH values of approximately 8.5 to 9.5.
- pH values below 6 are observed sporadically in some quartzite and hornfels samples at shallow depths, potentially reflecting localised acidic conditions related to oxidation of sulphide minerals or other geochemical processes.
- The samples show a cut-off of about 50 m depth, below which pH values are almost entirely above 8.5.
- PAF samples recorded significantly lower pH values with a median pH of 7.4 compared to NAF, uncertain and unknown samples which recorded median pH values of 9.3, 9.2 and 8.8, respectively.
- The lowest pH values recorded were amongst chips samples which have an unknown Price classification, demonstrating an unknown risk. As these samples were taken from chips, it is likely that the extent of oxidation for these samples was greater than the core samples at the time of testing, due to the greater exposed surface area. Therefore, the low pH values may represent existing acidity due to oxidation prior to testing.
- pH values of all fresh samples were measured above 7 with a median pH of 9.3. In contrast, most slightly to extremely weathered samples were measured below pH 7 and had a notably lower median pH of 6.4.

1:5 EC results are compared with sample depth and summarised in Figure 4.4 to Figure 4.6. Some notable results are as follows:

- A wide range of EC values from 8 to 1,050 µS/cm are observed, with most having EC measurements around the median of 59 µS/cm. The highest EC measurements are attributable to the following samples: MB2205B_30m (1,050 µS/cm), MB2204B_40m (700 µS/cm), MB2204A_60m (678 µS/cm) and BH204_50m (492 µS/cm).
- Higher EC measurements are present in some shallower quartzite and hornfels samples, potentially indicating zones of enhanced mineral weathering or oxidation.
- Most of the largest EC measurements recorded were from unknown weathering type samples.
- No significant difference in the median EC measurements based on lithology, Price classification or weathering type was determined.
- Figure 4.7 compares the pH and EC results and shows that the higher EC measurements are correlated with lower pH values, supporting the interpretation of weathering or oxidation within these samples. The lower pH and higher EC samples were chip samples and therefore have unknown Price classifications.

The pH and EC results suggest a generally alkaline environment, with localised zones of acidity and salinity at shallow depths.

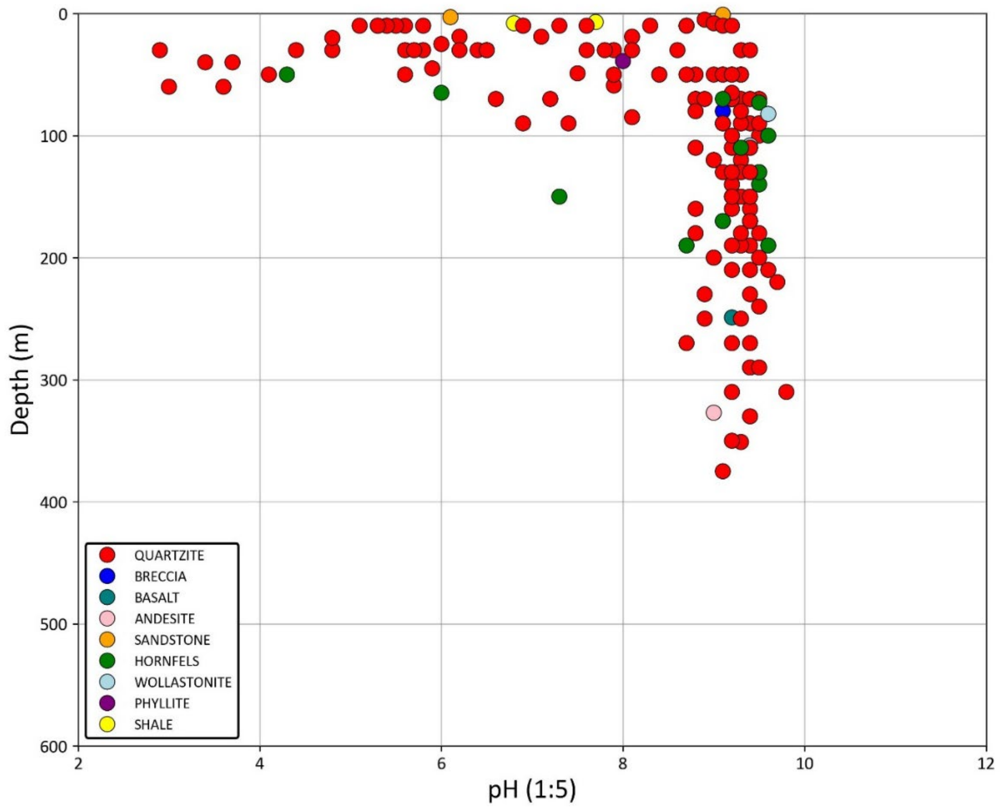


Figure 4.1 1:5 pH results versus sample depth grouped by lithology

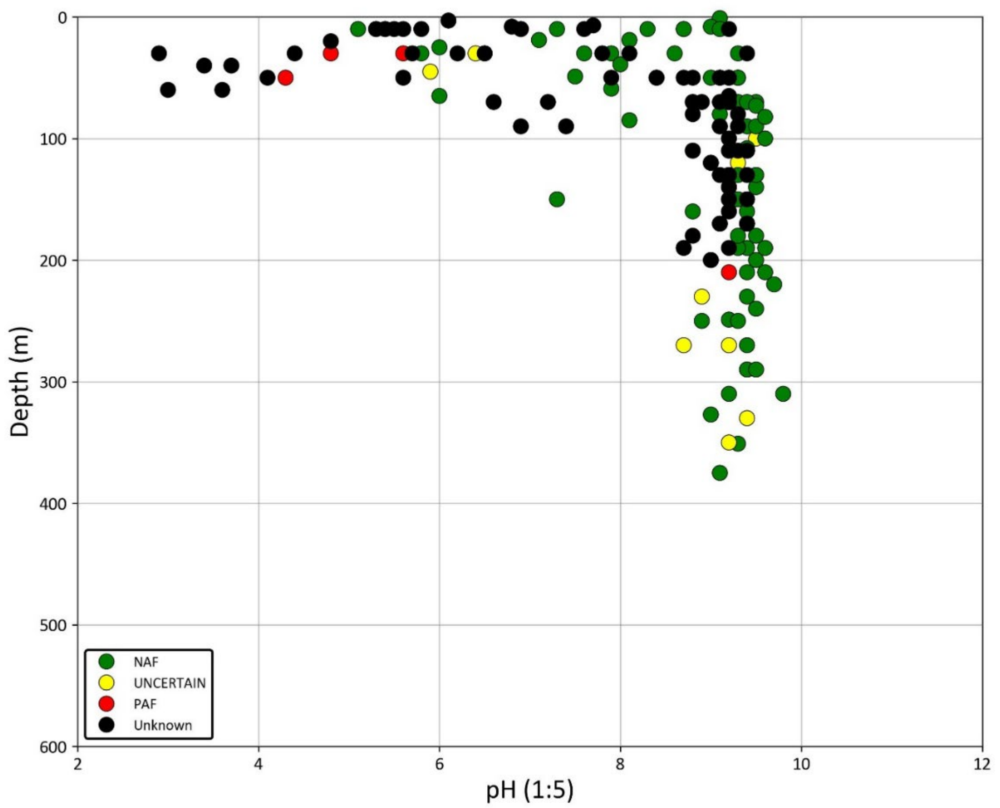


Figure 4.2 1:5 pH results versus sample depth grouped by Price classification

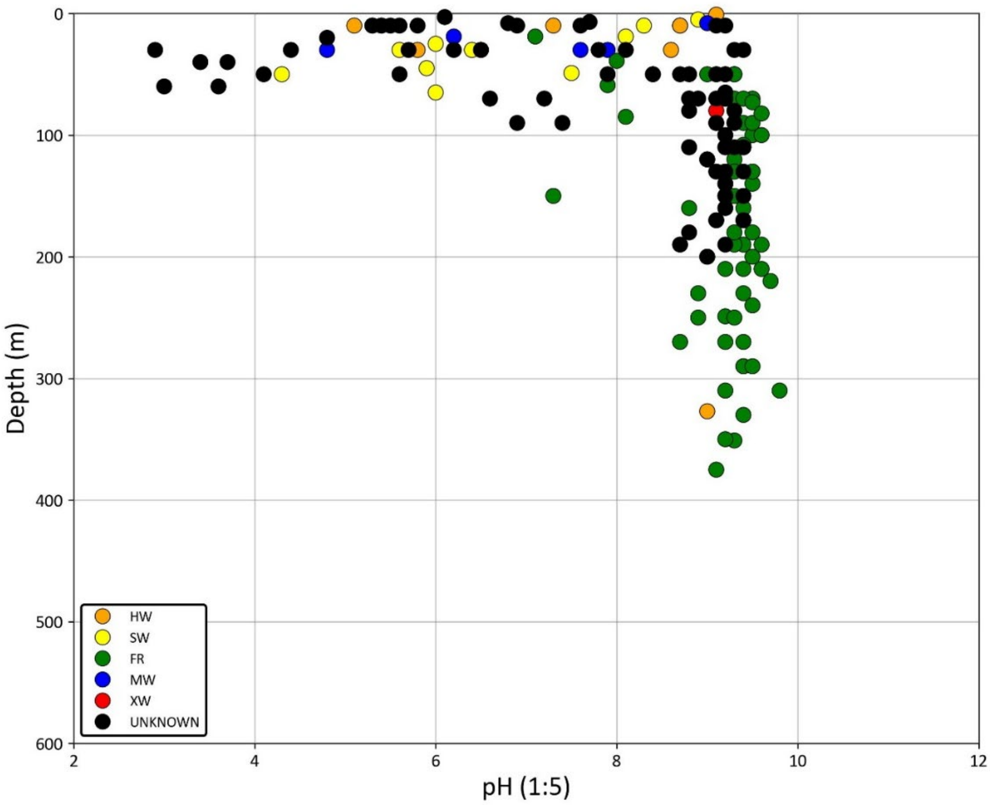


Figure 4.3 1:5 pH results versus sample depth grouped by weathering type

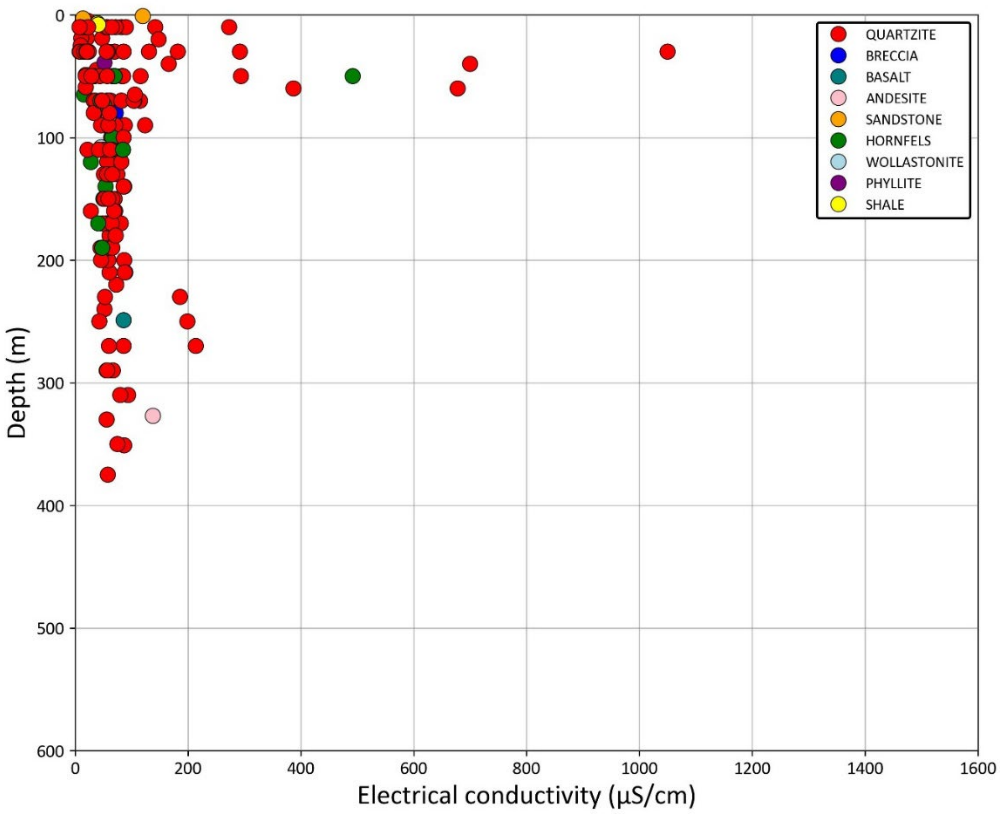


Figure 4.4 1:5 EC results (µS/cm) versus sample depth grouped by lithology

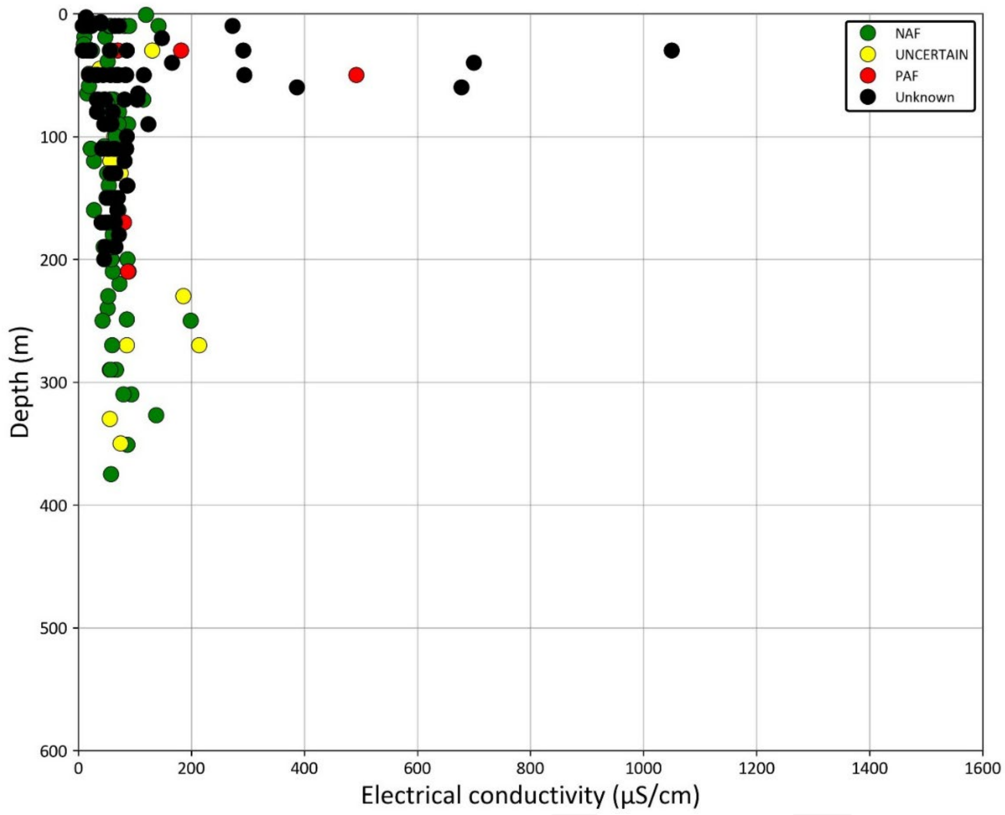


Figure 4.5 1:5 EC results (µS/cm) versus sample depth grouped by Price classification

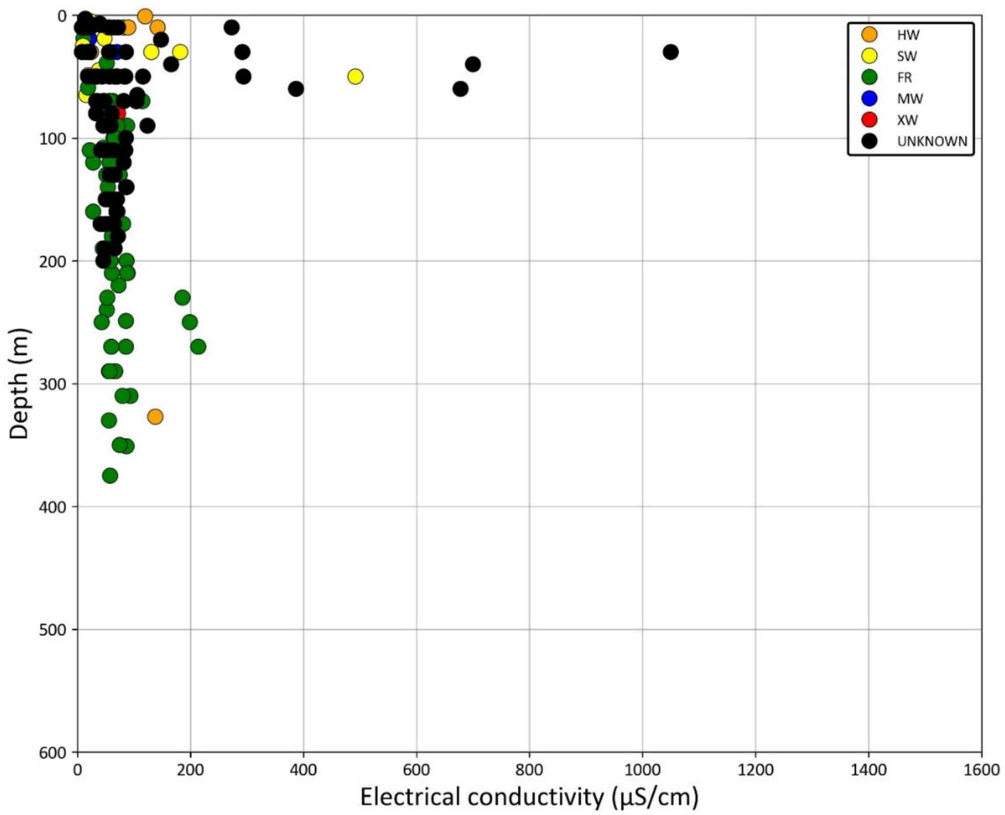


Figure 4.6 1:5 EC results (µS/cm) versus sample depth grouped by weathering type

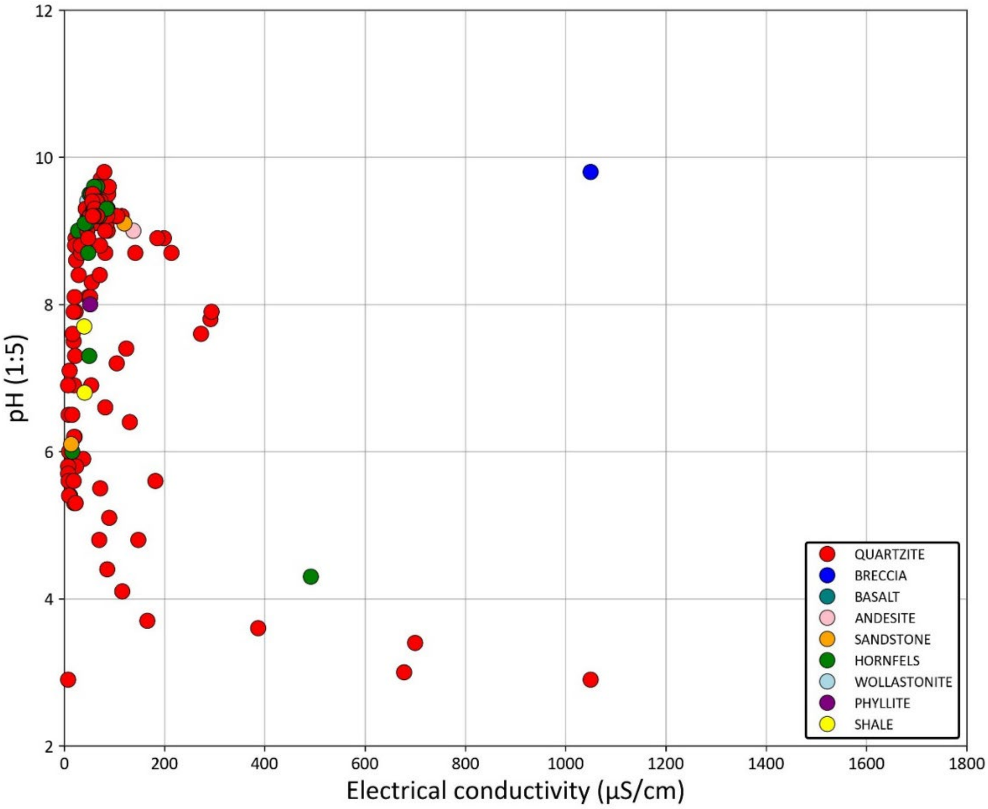


Figure 4.7 1:5 pH versus 1:5 EC (µS/cm) grouped by lithology

4.2 Acid-base characteristics

4.2.1 Sample classification

Results from the Stage 1 acid-base accounting are summarised in Figure 4.8 to Figure 4.10, with full results presented in Appendix C. Classifications for the 175 samples are as follows:

- 76 samples were classified as non-acid forming (NAF) (NPR > 2);
- 11 samples were classified as uncertain (NPR = 1-2);
- 8 samples recorded as potentially acid forming (PAF) (NPR < 1); and
- 80 samples had unknown acid-forming potential. Samples receiving the unknown classification either had both sulphur and acid neutralisation capacity measurements below the laboratory limit of reporting, or there was insufficient sample mass to perform the ABA testing in conjunction with the metals testing described in Section 3.3.3, due to these samples being chip samples rather than core samples.

From the 95 samples analysed, 80% were classified as NAF, 12% as uncertain and only 8% as PAF. The samples have a large acid-buffering capacity, with the median NPR being 11.9, indicating that the median acid neutralisation capacity is 11.9 times the maximum potential acidity. These results demonstrate that the rock analysed is largely NAF and unlikely to pose a significant AMD risk.

The rock lithology appears to have no significant influence on the Price classification, with six of the PAF samples being quartzite and two being hornfels. Similarly, there is no correlation between sample depth and Price classification, with the PAF samples being collected from depths between 10m and 290m. Furthermore, there does not appear to be any correlation between sample weathering type and Price classification, with the four of the PAF samples being fresh, two are slightly weathered and two are moderately weathered.

The alteration type for each sample (listed in Appendix A) was considered with respect to the Price classification. None of the samples classified as PAF had any noted alterations, while 6 of the 11 uncertain samples had alterations including silicious, haematitic and chloritic. 38 of the 76 NAF samples had noted alterations including chloritic, haematitic, siliceous, pyritic and iron staining. From these results, there does not appear to be any correlation between the alteration type of each sample and the acid-forming behaviour.

Figure 4.10 presents the proportion of samples classified as PAF, NAF and uncertain for each borehole analysed. This figure shows that all of the PAF samples came from BH204, BH108, BH105 and BH104. It is noted though that these bores were deeper and therefore had higher sample counts than other bores, making them more likely to contain PAF samples.

A three-dimensional visualization of the boreholes coloured by their Price classification is shown in Figure 4.11. This figure shows zones of PAF and uncertain samples are observed around the following boreholes and depths:

- BH104 and BH105 from 100-170 m.
- BH104 and BH105 from 270-350 m.
- BH107 and BH108 around 30 m.
- BH204 10-50 m and 210-230 m.
- BH201 around 45 m.

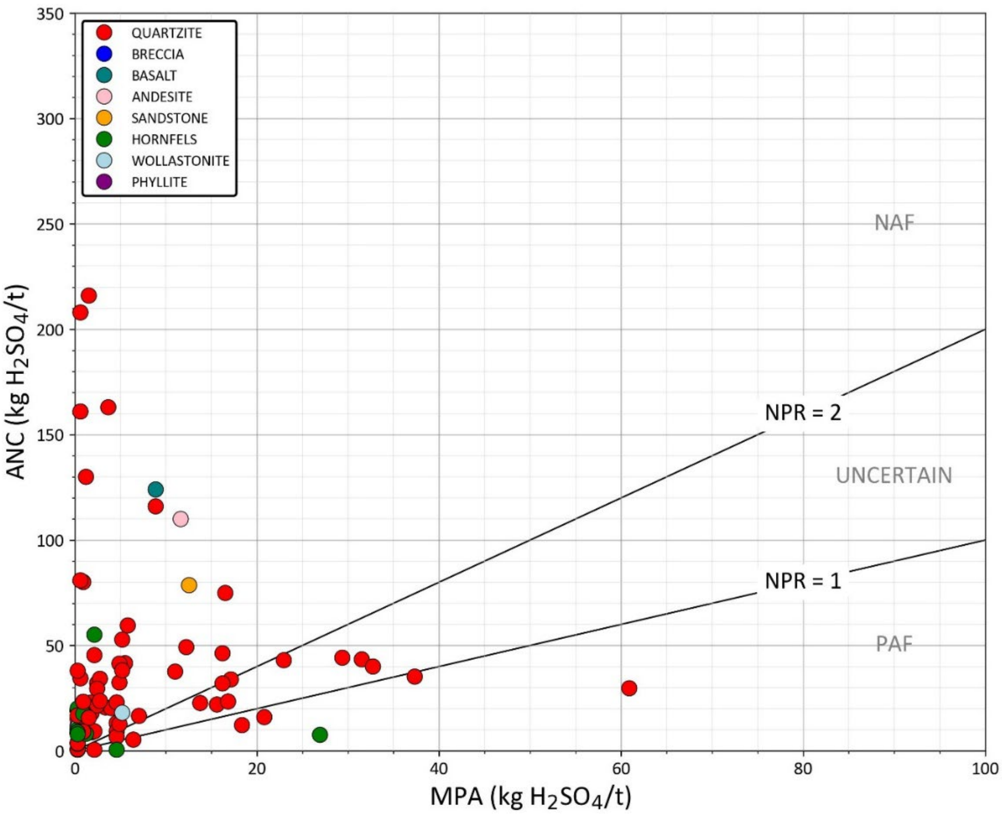


Figure 4.8 MPA versus ANC for Lake Lyell samples grouped by lithology

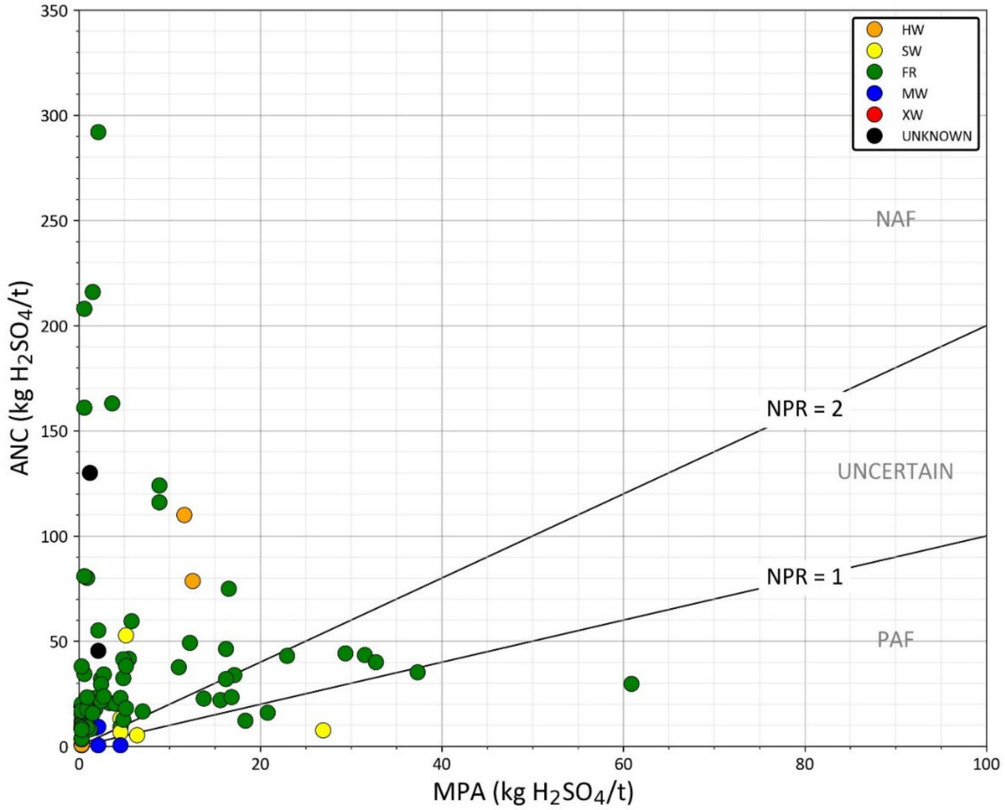


Figure 4.9 MPA versus ANC for Lake Lyell samples grouped by weathering type

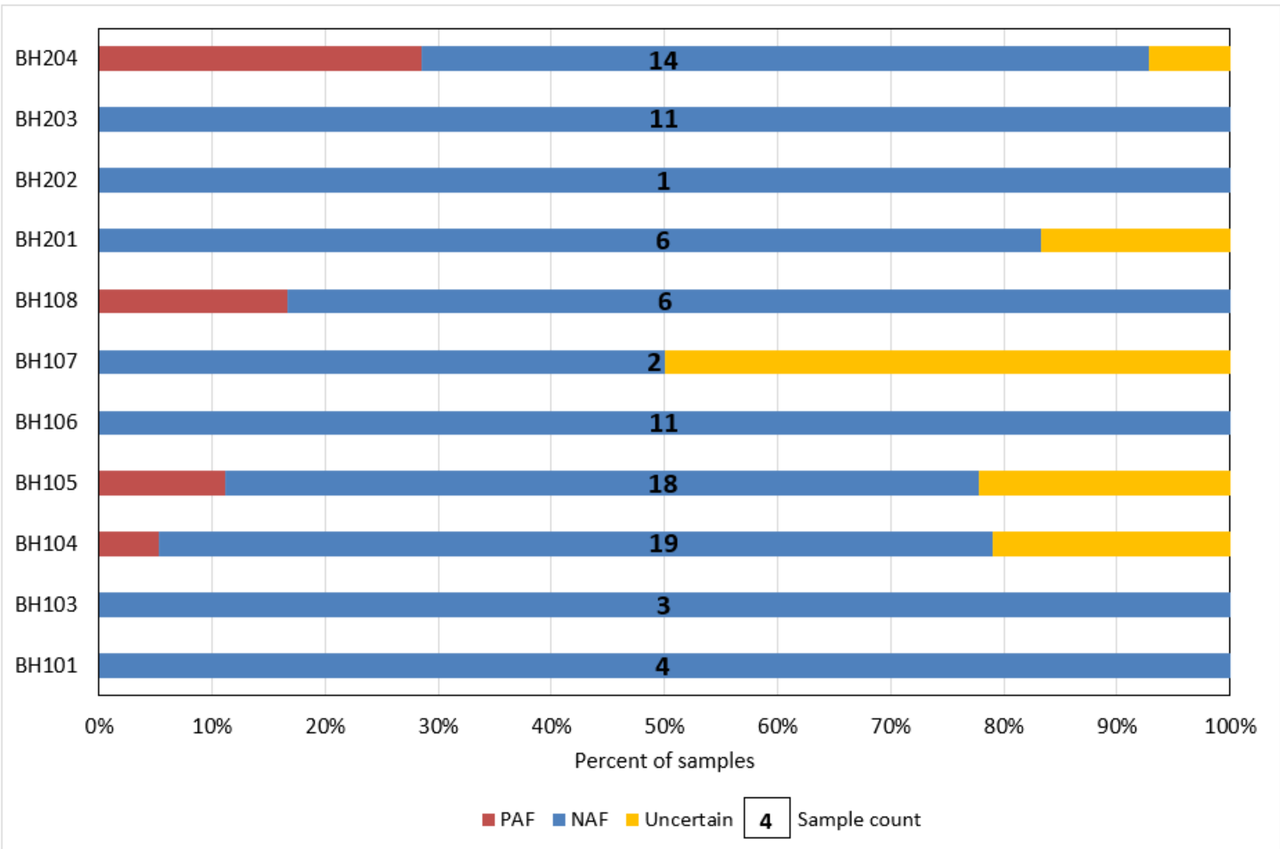


Figure 4.10 Sample classification by borehole

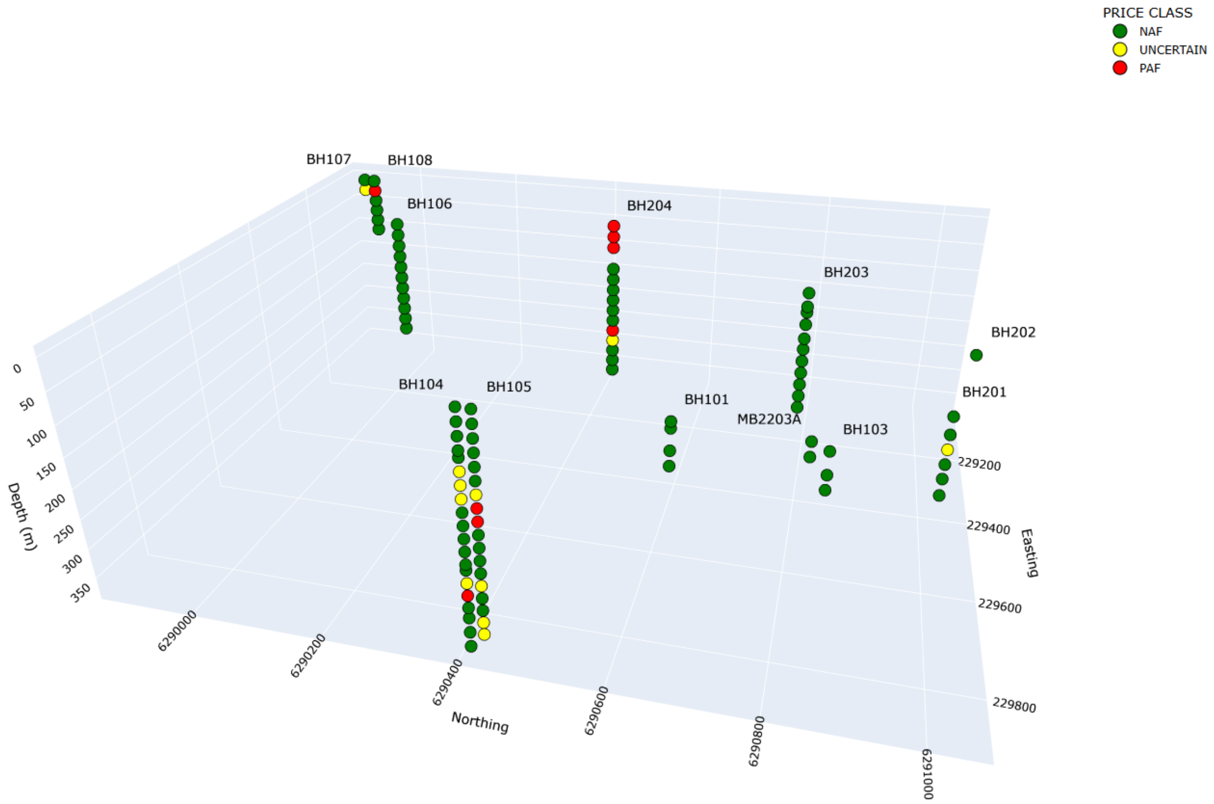


Figure 4.11 Price classification shown spatially

4.2.2 Net acid production potential and total sulphur

The relationship between NAPP and total sulphur for the samples is presented in Figure 4.12. This figure shows that samples generally have a NAPP between 0 and -50 kg H_2SO_4/t. It is also noted that only 8 of the 95 samples have positive NAPP values, while 15 samples have large acid neutralisation capacities with NAPP values below -50 kg H_2SO_4/t. 15 samples have high sulphur concentrations greater than 0.5%.

Figure 4.13 illustrates the relationship between NAPP and 1:5 pH. In general, samples with pH values below 7 tend to exhibit positive NAPP values (acid-generating), whereas those with pH above 7 typically show negative NAPP (net acid-consuming). Notably, four of the PAF samples had high pH values (>9) despite positive NAPP. These results are from deeper (≥150 mbgl) samples from bores BH104, BH105 and BH204. This could suggest that these samples contained readily available buffering minerals that temporarily neutralized acidity during the test, but which may be depleted over time, leading to future acidification. Alternatively, the sulphur measured in these samples could be largely present as sulphate, which would lead to mistakenly large NAPP values despite them not being potentially acid forming.

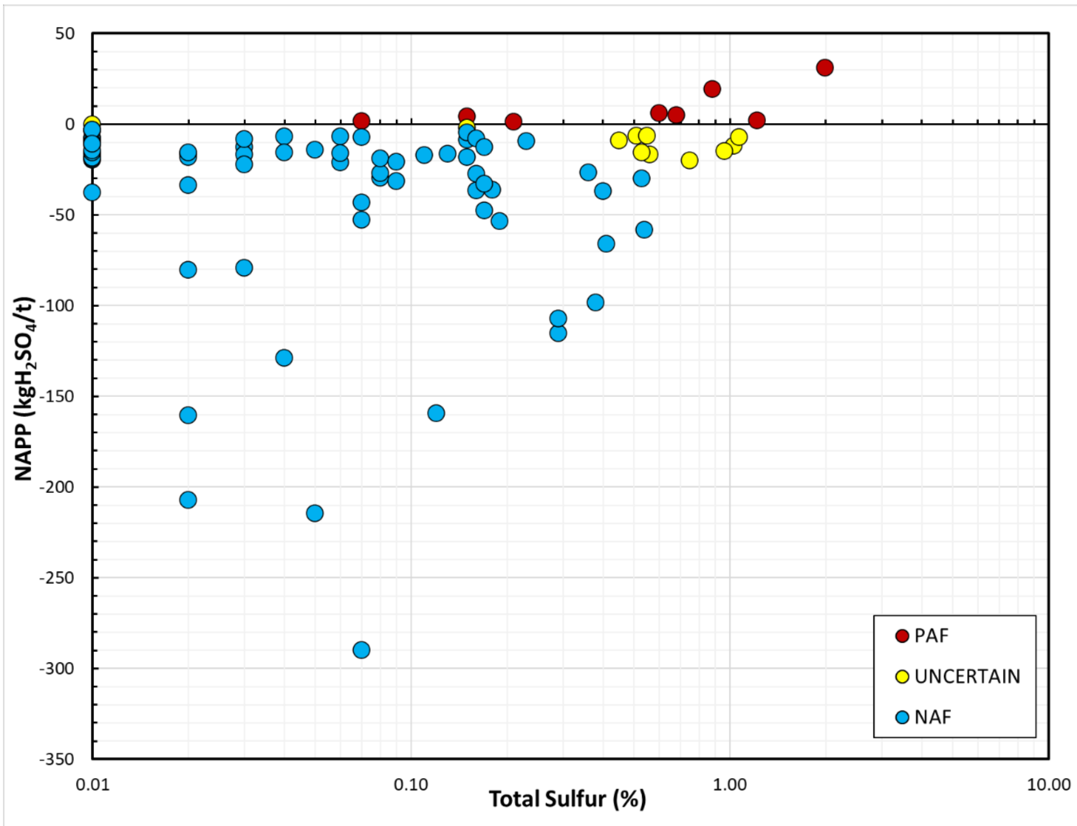


Figure 4.12 Net acid production potential of Lake Lyell samples versus total sulphur concentration (%)

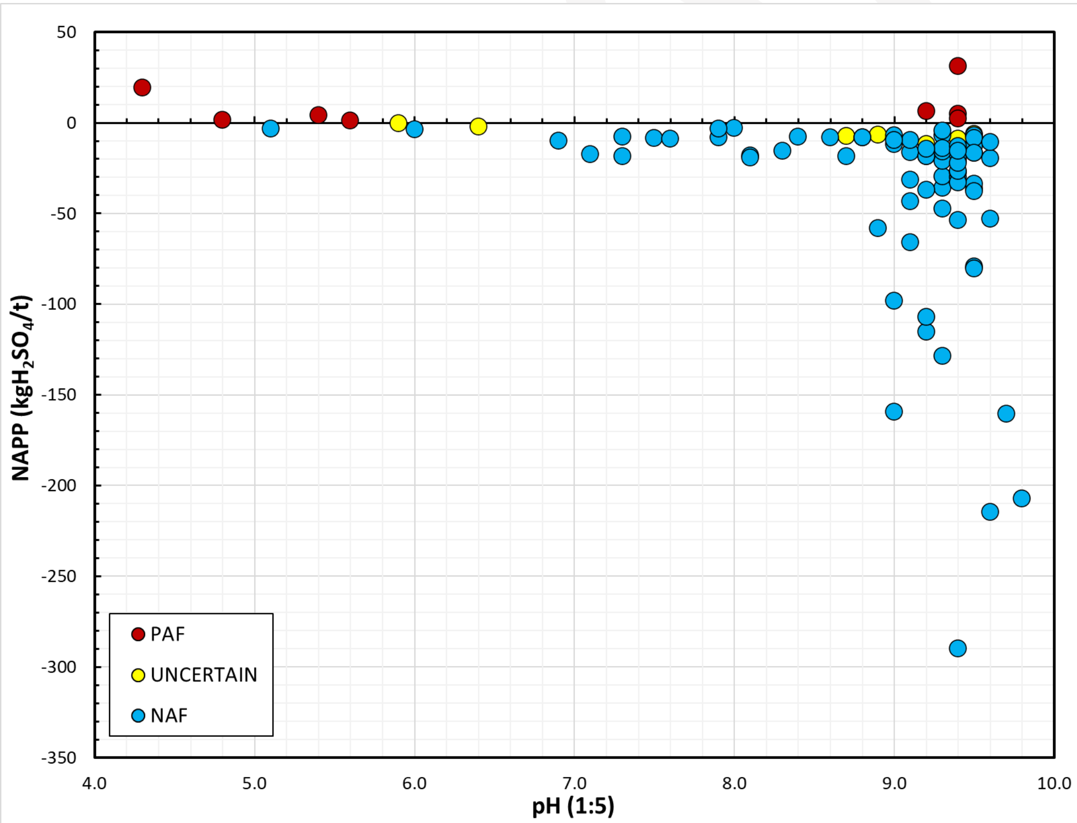


Figure 4.13 Net acid production potential of Lake Lyell samples versus pH (1:5)

4.3 Sulphur speciation

The total sulphur content of analysed samples, as determined by the LECO technique, provides a conservative estimation of the acid potential, often referred to as the MPA. The accuracy of this conservative MPA estimation can be evaluated by comparing total sulphur (LECO-S) to the chromium reducible sulphur content (CRS). An MPA overestimation occurs in samples where total sulphur substantially exceeds CRS.

Figure 4.14 illustrates the relationship between LECO sulphur and CRS. All but three samples exhibit alignment with a 1:1 ratio (within a tolerance of ±25% sulphur), which suggests that sulphide sulphur is the predominant sulphur species. Three samples, BH204_210m, BH104_140m and BH105_170m deviate below the 1:1 line (and the -25% tolerance line), suggesting that, in addition to sulphides, they likely contain non-reactive forms of sulphur, such as sulphate, that do not contribute to acid generation. This observation underscores the conservative nature of assumptions employed in the MPA calculation.

PAF samples tend to deviate below the 1:1 line more than NAF and uncertain samples with the median CRS to LECO-S ratio being less for PAF samples (0.84) compared to NAF (0.91) and uncertain (0.90) samples. No other relationship between LECO-S and CRS based on sample lithology or weathering type was determined.

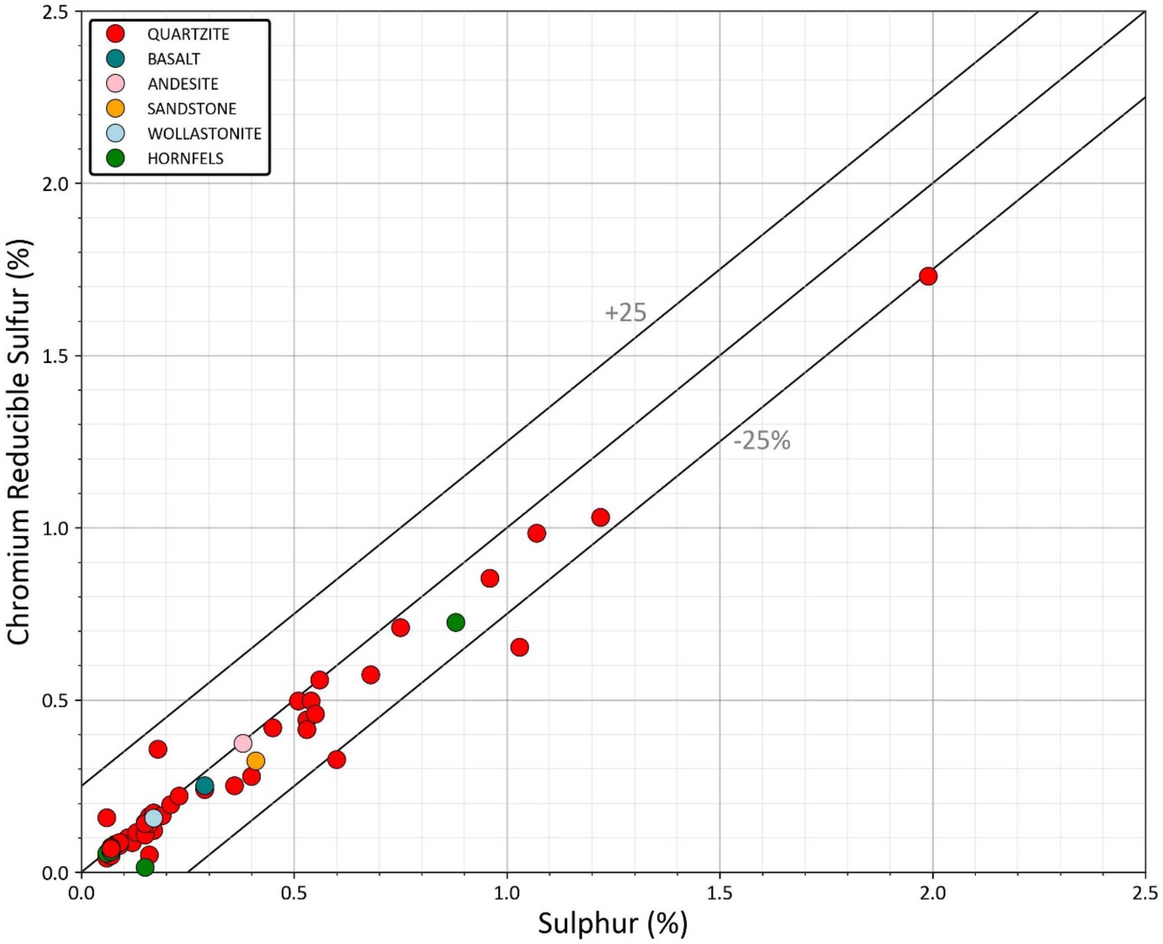


Figure 4.14 Results of LECO-S versus chromium reducible sulphur (by lithology)

4.4 Net acid generation

4.4.1 Single-step NAG testing

Samples with a sulphur concentration greater than 0.05% were tested for net acid generation (NAG) at pH 4.5 and pH 7.0. Of the 61 samples tested, 45 samples (74%) recorded NAG pH 4.5 below the analytical detection limit (<0.1 kg H_2SO_4/t). These 45 samples show a negligible immediate risk of acid generation under highly acidic conditions. Similarly, 31 of the samples (51%) recorded NAG pH 7.0 values below the analytical detection limit (<0.1 kg H_2SO_4/t) and thus show a negligible immediate risk of acid generation under neutral conditions. The remaining samples presented a range of NAG results:

- BH108_90m, MB2201A_10m and MB2201A_30m recorded very low NAG results at pH 4.5 (maximum of 0.3 kg H_2SO_4/t) and higher NAG results at pH 7.0 (>3 kg H_2SO_4/t). Demonstrating a risk of acid generation under neutral conditions but no risk of acid generation under acidic conditions.

- BH104_270m, BH105_270m, BH105_330m and BH105_350m recorded NAG results at pH 4.5 and 7.0 below the laboratory limit of reporting (LOR) (<0.1 kg H_2SO_4/t) despite being classified as uncertain with NPR values between 1 and 2. This indicates that these samples have sufficient effective buffering capacity to neutralise any acid produced and are effectively NAF.

- 4 samples (BH108_30m, BH104_120m, BH104_140m, and BH107_30m) recorded low NAG values (>1 kg H_2SO_4/t) at both pH 4.5 and 7.0. 5 samples (BH104_290m, BH105_130m, BH105_150m, BH204_50m and BH204 210m) recorded moderate NAG values (>3 kg H_2SO_4/t) at both pH 4.5 and 7.0. These 9 samples demonstrate some risk of acid generation under both highly acidic and neutral conditions. Of these 9 samples, 5 recorded NPR values below 1, classifying them as PAF, and 4 samples recorded NPR results of between 1 and 2 classifying them as uncertain.

- 8 samples (BH101_49m, BH103_19m, BH103_50m, BH105_70m, BH105_90m, BH106_130m, BH108_50m and BH202_73m) recorded NAG results at pH 4.5 below the LOR (<0.1 kg H_2SO_4/t) and very low NAG at pH 7.0 (<1 kg H_2SO_4/t).

It is noted that NAG results can also be used to classify the acid-forming potential of samples as demonstrated in Figure 4.15 and Figure 4.16. This method provides a more realistic view of acid-forming potential, as NAG testing measures the actual acidity generated during oxidation of the sample, rather than a theoretical acidity as calculated with MPA values. These two figures show seven samples classified as PAF, which are summarised in Table 4.1.

- The single basalt, sandstone, andesite and wollastonite samples were all classified as NAF.

- Hornfels samples showed a higher rate of PAF and uncertain results. With one hornfels sample (25% of NAG tested hornfels samples) classified as PAF and one as uncertain. The remaining two hornfels were classified as NAF.

- Six quartzite samples (15% of NAG tested quartzite samples) were classified as PAF and nine samples (19%) as uncertain.

- Slightly weathered samples have higher rates of PAF and uncertain results. With two of the five slightly weathered samples (40%) classified as PAF and 2 classified as uncertain.

- All heavily weathered samples (two) were classified as NAF.

- Five fresh samples (11% of the 45 fresh NAG-tested samples) were classified as PAF and two (4% of samples) as uncertain.

These results largely align with those observed in Section 4.2, but eight samples were re-classified based on the NAG results which are summarised Table 4.2.

4.4.2 Sequential NAG testing

Sequential NAG testing was undertaken on four samples due to their significant sulfur content (>1% S): BH104_140m, BH105_150m, BH105_170m and BH105_270m. Sequential testing was undertaken to investigate the reactivity of sulphides beyond the single-step NAG test. The results provide insight into whether sulphides oxidise readily in the first peroxide addition, or only after repeated oxidation cycles. The following was observed from these tests:

- BH104_140m (quartzite) **–** The single-step NAG result classified this sample as uncertain, with NAG pH of 3.5 and total acidity of 7.2 kg H_2SO_4/t at pH 7.0. The sequential NAG shows that most acidity was released in Stage 1 (6.0 kg H_2SO_4/t at pH 7.0), with only a small additional contribution in Stage 2 (1.2 kg H_2SO_4/t). The pH increased to 5.5 after the second addition, suggesting that most reactive sulphides oxidised quickly and were then depleted. This behaviour indicates the presence of readily oxidisable sulphides at low concentrations, consistent with an uncertain to PAF (low capacity) classification.

- BH105_150m (quartzite) – This sample was classified as PAF in single-step NAG, with NAG pH of 2.9 and total acidity of 11.7 kg H_2SO_4/t. Sequential NAG confirms that almost all acidity was released in the first stage (10.5 kg H_2SO_4/t at pH 7.0, 6.6 kg at pH 4.5), with negligible additional acidity in Stage 2. This indicates the presence of highly reactive sulphides, likely fine-grained pyrite, which oxidise rapidly under oxidising conditions. The sequential results reinforce a PAF classification with high reactivity.

- BH105_170m (quartzite) **–** The single-step NAG showed strong acid generation (NAG pH 2.8; 28.1 kg H_2SO_4/t at pH 7.0). The sequential NAG demonstrates progressive acidity release across three stages: Stage 1 (22.7 kg H_2SO_4/t), Stage 2 (3.6 kg), and Stage 3 (1.8 kg). This indicates that while most sulphides are readily oxidisable, a significant fraction are refractory or less accessible and require additional peroxide to oxidise fully. This suggests a risk of ongoing acid generation over time rather than only immediate reactivity. The classification remains PAF, with both immediate and delayed acid potential.

- BH105_270m (quartzite) – The single-step NAG returned neutral results (pH 7.6; <0.1 kg H_2SO_4/t), and sequential NAG confirmed no measurable acidity after multiple additions. This demonstrates the absence of reactive sulphides in this sample, consistent with a NAF classification.

Of the high-sulphur samples subjected to NAG testing, the majority were found to have negligible acid production potential, with 74% of samples recording NAG values below detection at pH 4.5 and 51% below detection at pH 7.0. Only a minority of samples showed measurable acidity, and within these, most of the acid generation was associated with isolated quartzite and hornfels intervals. Sequential NAG testing further confirmed that reactive sulphides, where present, were typically oxidised in the first peroxide addition, with only limited delayed (i.e. long-term) acid release. Overall, these results indicate that while isolated PAF and uncertain samples exist, the bulk of the tested material has no practical capacity to generate acidity under either neutral or acidic conditions.

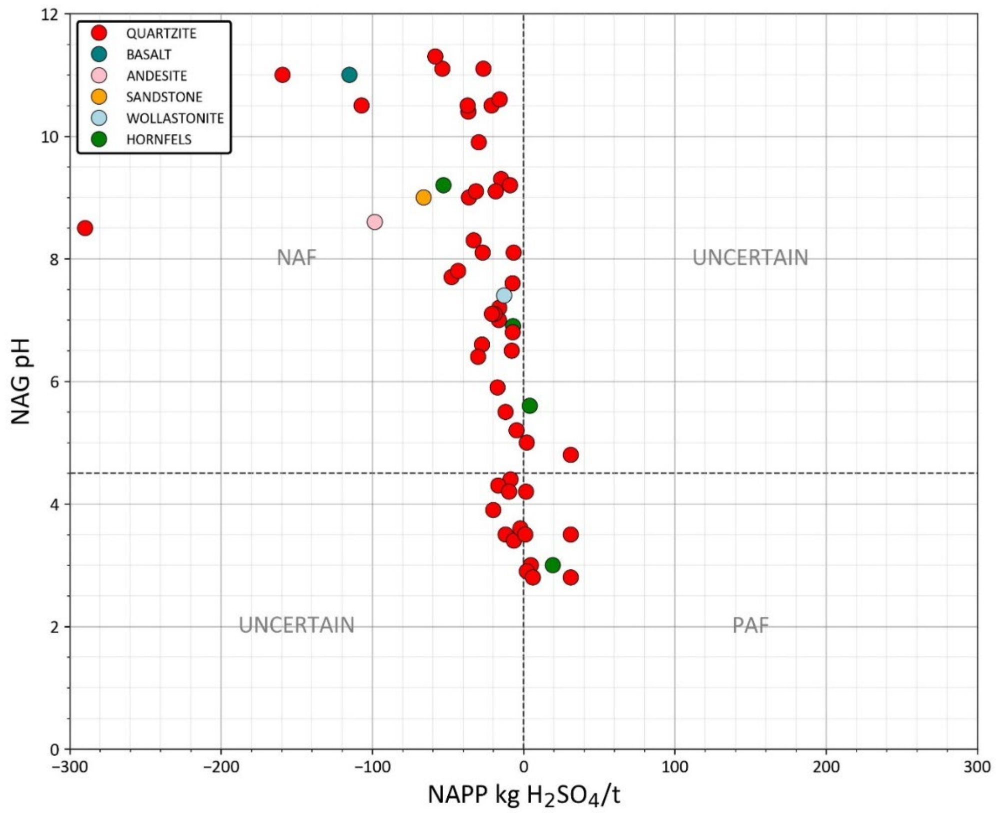


Figure 4.15 Sample classification using NAG pH and NAPP by lithology

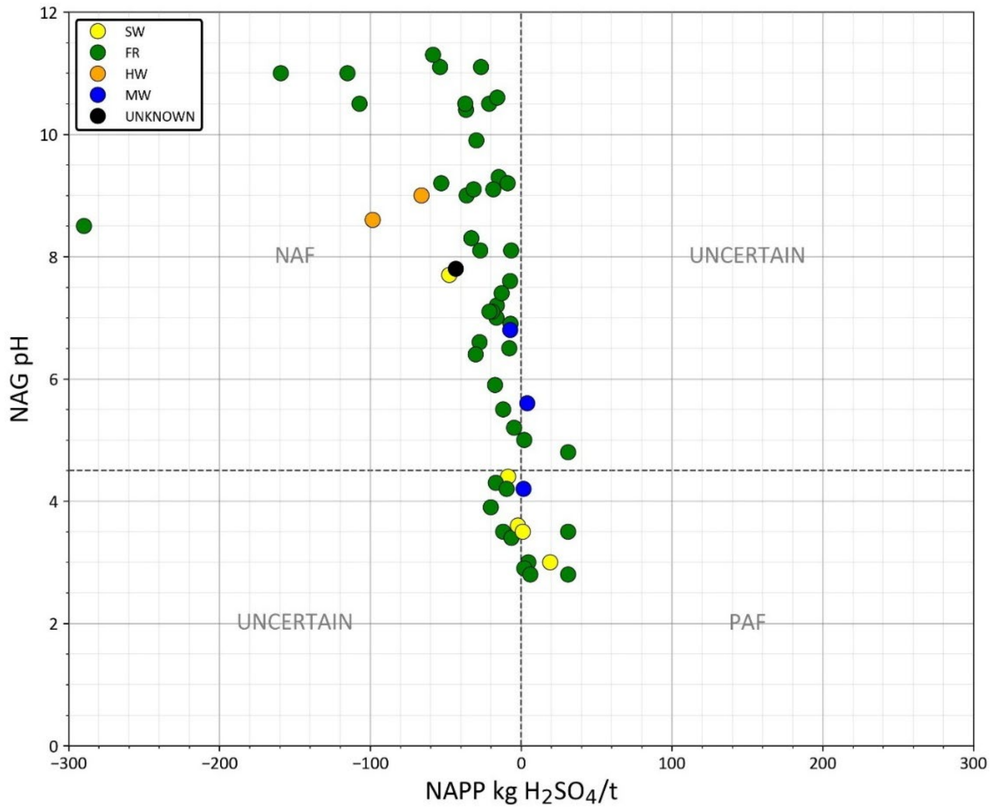


Figure 4.16 Sample classification using NAG pH and NAPP by weathering

Table 4.1 PAF samples based on NAG pH results

Sample ID	NAG pH	NAPP	Classification
BH104_290m	3.0	4.8	PAF
BH105_150m	2.9	2.1	PAF
BH105_170m	2.8	31.2	PAF
BH108_30m	3.5	1.1	PAF
BH204_30m	4.2	1.6	PAF
BH204_50m	3.0	19.2	PAF
BH204_210m	2.8	6.2	PAF

Table 4.2 Sample re-classification based on NAG pH results

Sample ID	NAG pH	NAPP	Price Classification	Updated classification
BH204_10m	4.1	5.6	PAF	Uncertain
BH204_230m	8.1	-6.6	Uncertain	NAF
BH105_270m	7.6	-7.3	Uncertain	NAF
BH105_330m	9.2	-8.9	Uncertain	NAF
BH105_350m	10.6	-15.8	Uncertain	NAF
BH101_49m	4.4	-8.6	NAF	Uncertain
BH108_90m	4.2	-9.6	NAF	Uncertain
BH104_270m	9.3	-14.8	Uncertain	NAF

4.5 Actual acidity

The actual acidity test is designed to quantify the current, existing acidity within a solid sample (such as spoil, tailings, or soil), rather than future potential to generate acidity. It provides a snapshot of how acidic the material is at the time of testing, due to the presence of soluble and exchangeable acidic components that have already formed through weathering or oxidation.

Samples which recorded 1:5 pH values of 5.5 or lower, and which were available in sufficient quantity for further testing, were analysed for actual acidity. Actual acidity was analysed for seven samples, with the results summarised in Table 4.3. These results indicate variable degrees of acidification across the samples, ranging from strongly acidic conditions with measurable stored acidity to samples with only weakly acidified pore waters and negligible acid salt storage.

Two samples, BH106_10m and BH204_50m, recorded both low slurry pH (5.1 and 4.3 respectively) and high actual acidity values (17-20 mol H^+/t). These results are consistent with the presence of significant quantities of stored acidity, most likely associated with secondary sulphate minerals such as jarosite or schwertmannite. The combination of acidic pore water and measurable titratable acidity confirms that these materials are at an advanced stage of sulphide oxidation and represent a high risk for AMD if not appropriately managed. It is noted that while BH106_10m is expected to contribute a significant acid load in the short-term, it was classified as NAF with an NPR value of 12.4 and therefore is expected to acid-consuming in the long-term. BH204_50m was classified as PAF with an NPR value of 0.3 and therefore is expected to contribute ongoing acidity.

Sample BH204_10m displayed moderately acidic conditions (1:5 pH 5.4, pH KCl 4.9) with an actual acidity value of 9 mol H^+/t. While less extreme than BH106_10m and BH204_50m, this sample still indicates the presence of secondary acidity and should be considered a moderate risk material. This sample was classified as PAF with an NPR value of 0.1 and therefore is expected to contribute both short-term acidity (due to actual acidity) and long-term acidity due to the ongoing oxidation of sulphides.

In contrast, several samples (BH204_30m and MB2201A_50m) returned acidic slurry pH values (4.1-4.8), but negligible titratable acidity (<2 mol H^+/t). This suggests that the acidity present is mainly associated with pore water chemistry, weak acids, or soluble salts rather than a significant store of strong acid salts. These samples may not represent a large reservoir of stored acidity, but could still contribute to localised acidification and trace metal mobility in drainage.

The remaining samples, MB2202A_10m and MB2202B_10m, had slightly acidic pH values (5.3-5.5 in 1:5 pH, 5.7-5.8 in pH KCl) and negligible titratable acidity (<2 mol H^+/t). These results indicate that these materials are effectively benign with respect to existing acidity and are unlikely to contribute to acid generation in their current state. It is noted that ABA testing was not undertaken for these samples, and therefore there are no indications of the longer-term behaviour of these samples.

Table 4.3 Summary of actual acidity results

Sample ID	1:5 pH value	pH KCl	Actual acidity (mol H^+/t)
BH106_10m	5.1	4.7	17
BH204_10m	5.4	4.9	9
BH204_30m	4.8	5.5	<2
BH204_50m	4.3	4.7	20
MB2201A_50m	4.1	6.0	<2
MB2202A_10m	5.5	5.7	<2
MB2202B_10m	5.3	5.8	<2

4.6 Whole-rock elemental analysis

All 175 samples collected were analysed for total metal and metalloid concentrations, with full laboratory results presented in Appendix C. Concentrations are recorded at or below the LOR for the majority of the analytes measured. For the purpose of this characterisation report, these values have been assumed to be equal to the LOR.

4.6.1 Geochemical abundance index

GAI values compared to the global median soil content were calculated for all results. Calculated GAI values were zero for almost all measured analytes, indicating that the samples have similar or lower metal/metalloid concentrations than the global median soil content. Notable exceptions include the following:

- GAI values for arsenic range between 0 and 8 with the largest arsenic concentration recorded in sample BH204_210m totalling 2,850 mg/kg, approximately 475 times the global median soil concentration. This sample was also noted to be PAF, with a NAPP of 6.2 kg H_2SO_4/t.

- Up to four samples each for copper, cobalt, molybdenum and antimony had GAI values in the range of 1-3, indicating infrequent enrichment in these analytes.

- Bismuth was enriched above the global median soil content in 10 samples, with GAI values of 1 (7 samples), 2 (2 samples) and 3 (1 sample) recorded.

- GAI values for sulphur ranged between 0 and 4, indicating up to approximately 28 times the enrichment of median soil content. 24 samples had GAI values greater than 0. The greatest sulphur concentration was recorded in sample BH105_170m equalling 1.99%.

- Selenium recorded the largest number of elevated GAI results, with 49 samples having a GAI value of 1 or greater. 28 samples recorded GAI values 1, 17 recorded GAI values of 2, 3 samples recorded GAI values of 3 and 1 sample had a GAI of 4. The two largest recorded concentrations were 10 mg/kg and 9 mg/kg from BH201 at depths of 45 m and 80 m.

- GAI values for tin ranged between 0 and 5, with only 6 samples showing enrichment above the median soil content.

These results show that arsenic, bismuth, cobalt, copper, molybdenum, sulphur, antimony selenium and tin are naturally enriched in some of the samples and therefore may be at risk of leaching if acidification occurs. However, while elevated concentrations of these metals are present, they are not necessarily leachable under real-world environmental conditions. The leachability of these metals under field conditions is investigated further in Section 4.8.

The GAI values of elements where natural enrichment was noted are summarised in Figure 4.17. While some enrichment is evident, the majority of samples have a GAI of 0. Selenium shows the highest proportion of enriched samples, with 27% of samples having a selenium GAI value of 1 or greater. When focusing on significant enrichment (GAI ≥ 3), arsenic has the highest proportion with 7% of samples meeting this criterion. Overall, although some enrichment is present, the majority of samples do not exhibit significant enrichment in any of the assessed elements.

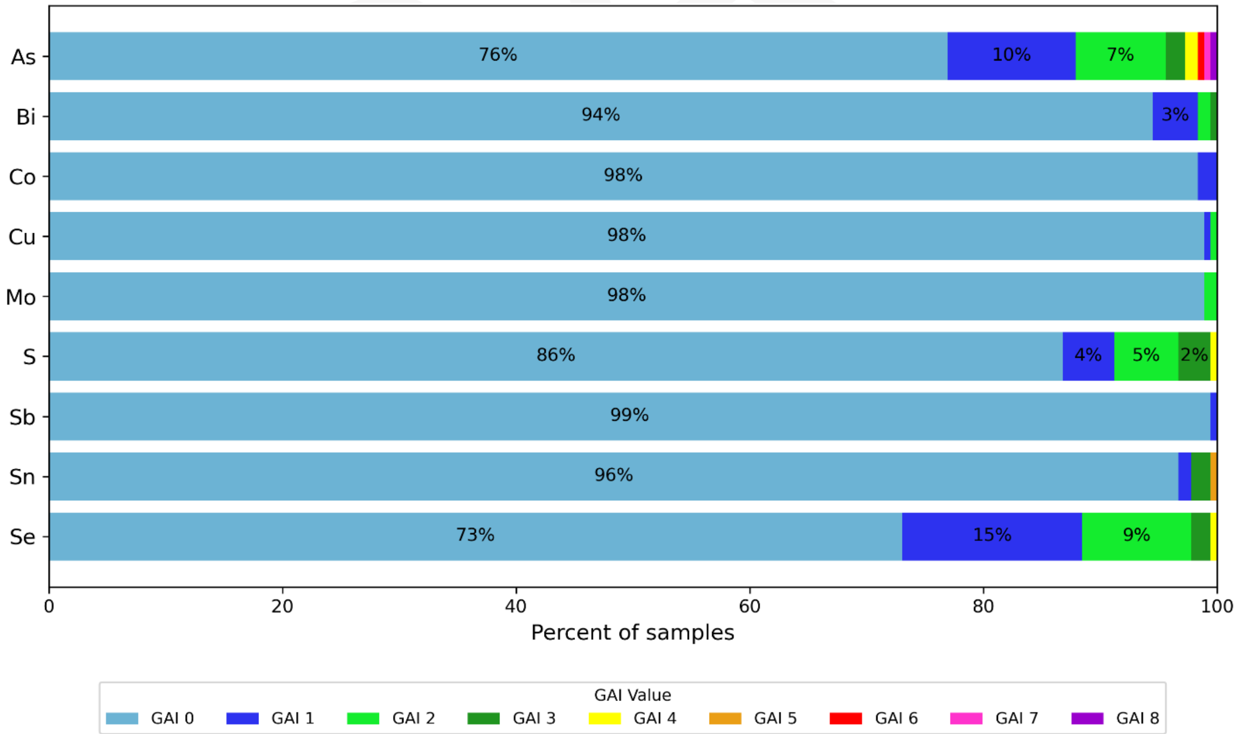


Figure 4.17 GAI value distribution for analytes of interest (percent of samples)

4.6.2 Correlation with lithology, weathering and borehole

GAI values were compared across sample lithology, weathering type and borehole with the results presented in Figure 4.18 to Figure 4.20. All GAI values greater than 4 were recorded in quartzite samples. However, quartzite represents the majority of the dataset (149 of 175 samples) and therefore more outlier values are expected to be observed for this lithology.

Basalt and andesite displayed the highest relative proportion of enrichment, with basalt recording 8% of results with a GAI value of 1 and 4% with a GAI value of 2, and andesite recording 4% with a GAI value of 1 and 8% with a GAI value of 2. Conversely, no enrichment was noted for wollastonite or shale samples. It is noted that only a single sample was collected from each of the basalt, andesite and wollastonite lithologies, and two shale samples were collected, and therefore these percentages reflect the response of individual samples rather than broader lithological trends.

When considered by weathering class, all large GAI values (>4) were associated with fresh samples. However, given the high number of fresh samples (71 of 98 samples with weathering information available), the overall rate of enrichment within this group was very low. Highly weathered samples exhibited the greatest relative frequency of enrichment (GAI>0), although the magnitude of enrichment was generally small. Overall, there does not appear to be any correlation between weathering class and elemental enrichment, with the proportion of samples showing no enrichment (GAI value of 0) being between 93% and 98% in all cases.

At the borehole scale, most bores recorded low enrichment rates, with typically 1-4% of samples returning GAI values of 1 or 2. Isolated higher values were recorded in BH104, BH105 and BH201, while the largest GAI value (GAI of 8) was recorded in BH204. Overall, high GAI values were not strongly associated with any single borehole and represented isolated outliers rather than systematic enrichment trends.

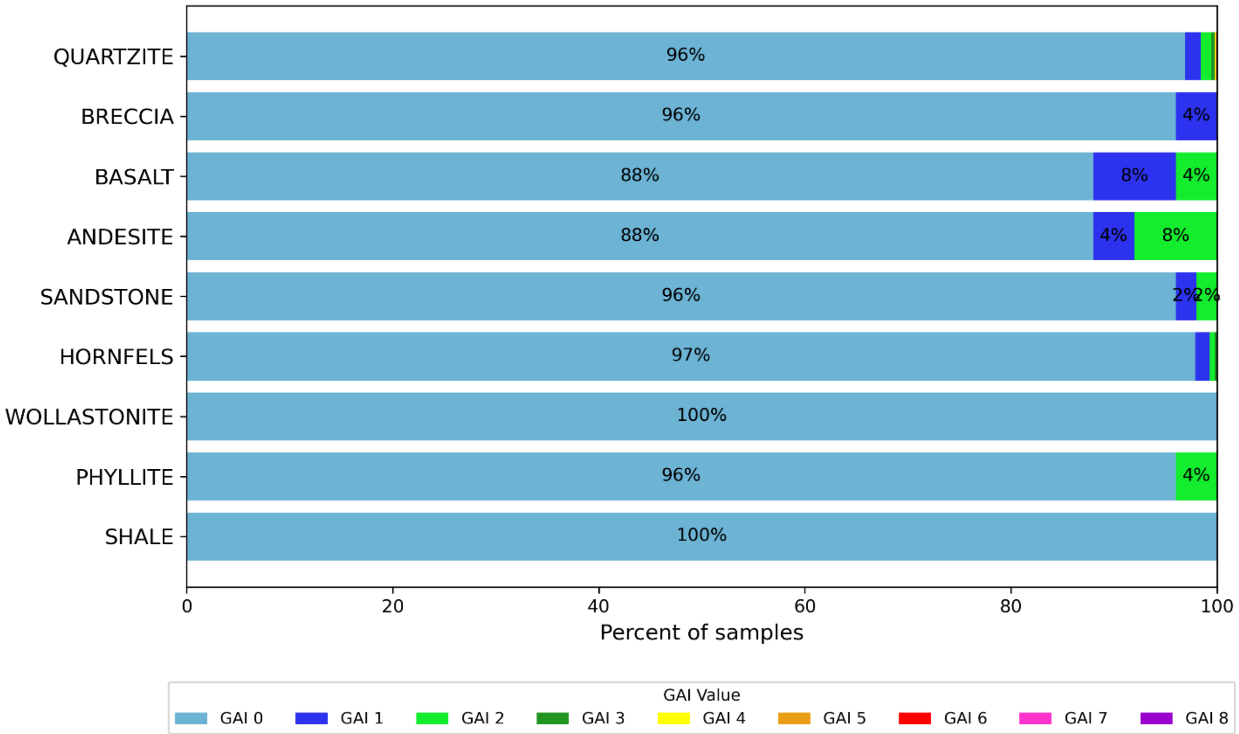


Figure 4.18 GAI value distribution for analytes of interest (percent of samples) by lithology

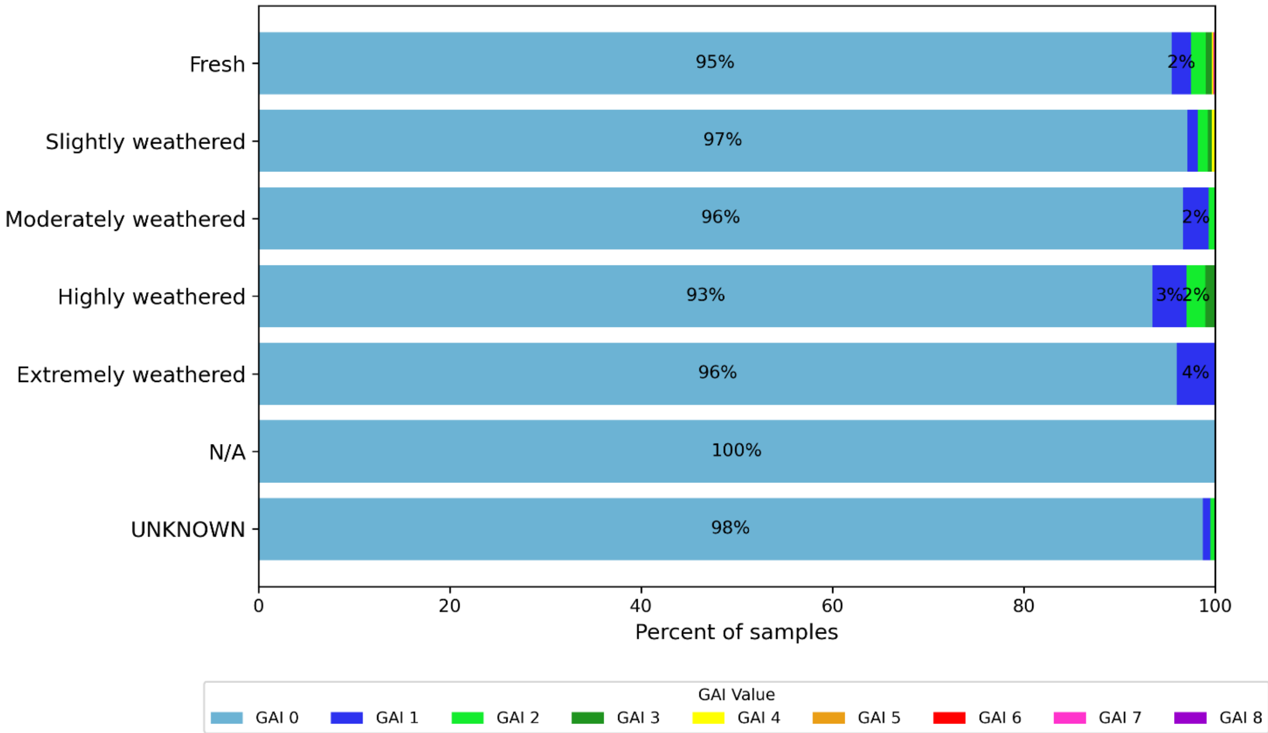


Figure 4.19 GAI value distribution for analytes of interest (percent of samples) by weathering type

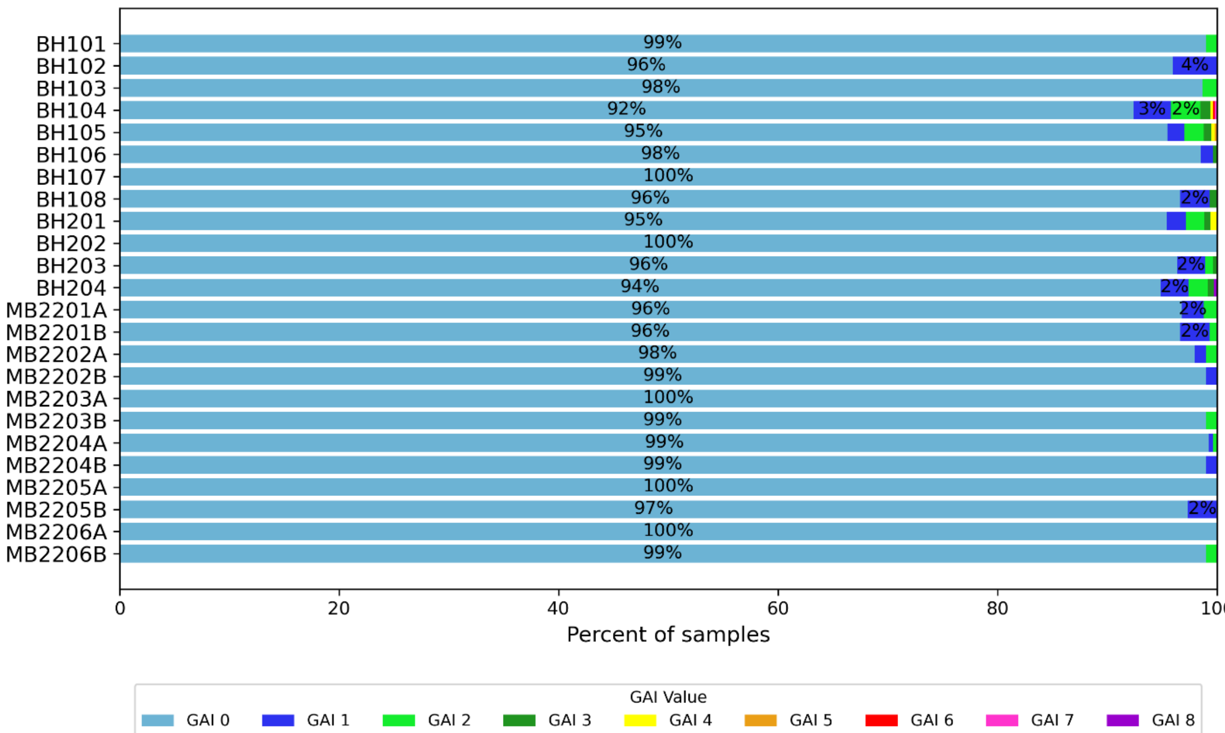


Figure 4.20 GAI value distribution for analytes of interest (percent of samples) by bore

4.6.3 Whole-rock nutrients

Whole-rock nutrient testing was undertaken to assess the concentrations of ammonia, nitrite and nitrate in 24 representative samples. This testing was included for samples undergoing leach testing to establish a baseline understanding of nutrient concentrations in the host materials, as nitrogen has been identified as a contaminant of potential concern due to the likely use of explosives during construction.

The results of the nutrient testing are summarised in Table 4.4. Ammonia as N was reported below the laboratory reporting limit (<20 mg/kg) in all samples, indicating negligible concentrations of reduced nitrogen. Similarly, nitrite (as N) was consistently below the detection limit (<0.1 mg/kg).

Nitrate (as N) was detected in all samples at low levels, with concentrations ranging from 0.1 to 3.3 mg/kg and a median concentration of 0.3 mg/kg. The highest value of 3.3 mg/kg was recorded in sample BH108_30m. These results confirm that nitrate is the dominant form of nitrogen in these samples.

Overall, the data indicates that whole-rock nitrogen concentrations are very low and dominated by nitrate. These results suggest that the host materials and spoil are unlikely to represent a material source of nitrogen loading to leachates, with the exception of isolated samples (e.g. BH108_30m) that show minor enrichment.

Table 4.4 Whole-rock nutrients summary

Analyte	Count	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	Percent above LOR (%)
Ammonia as N	24	-	-	-	0
Nitrite as N	24	-	-	-	0
Nitrate as N	24	0.1	0.3	3.3	100

4.6.4 Co-association of metals

First-row transition metals generally exhibited consistent depth profiles across bores sampled, with vanadium, chromium, cobalt and manganese showing similar trends. This is best exemplified for vanadium and cobalt in BH108 (Figure 4.21). Arsenic and antimony also exhibited similar concentration profiles with depth across individual bores, suggesting co-association or comparable geochemical behaviour (Figure 4.22). Arsenic and antimony are both group 15 metals, and as such, are expected to share similar geochemical characteristics.

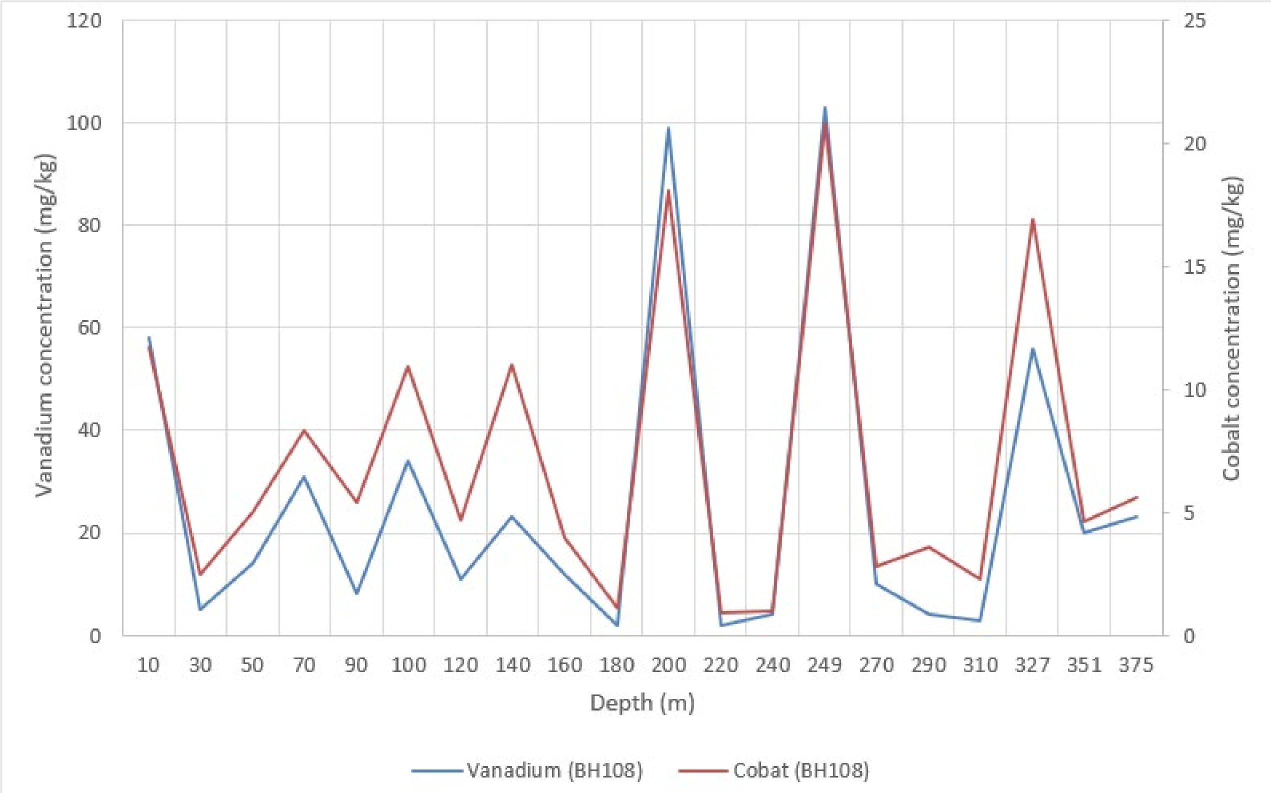


Figure 4.21 Vanadium and cobalt concentrations versus depth (BH108)

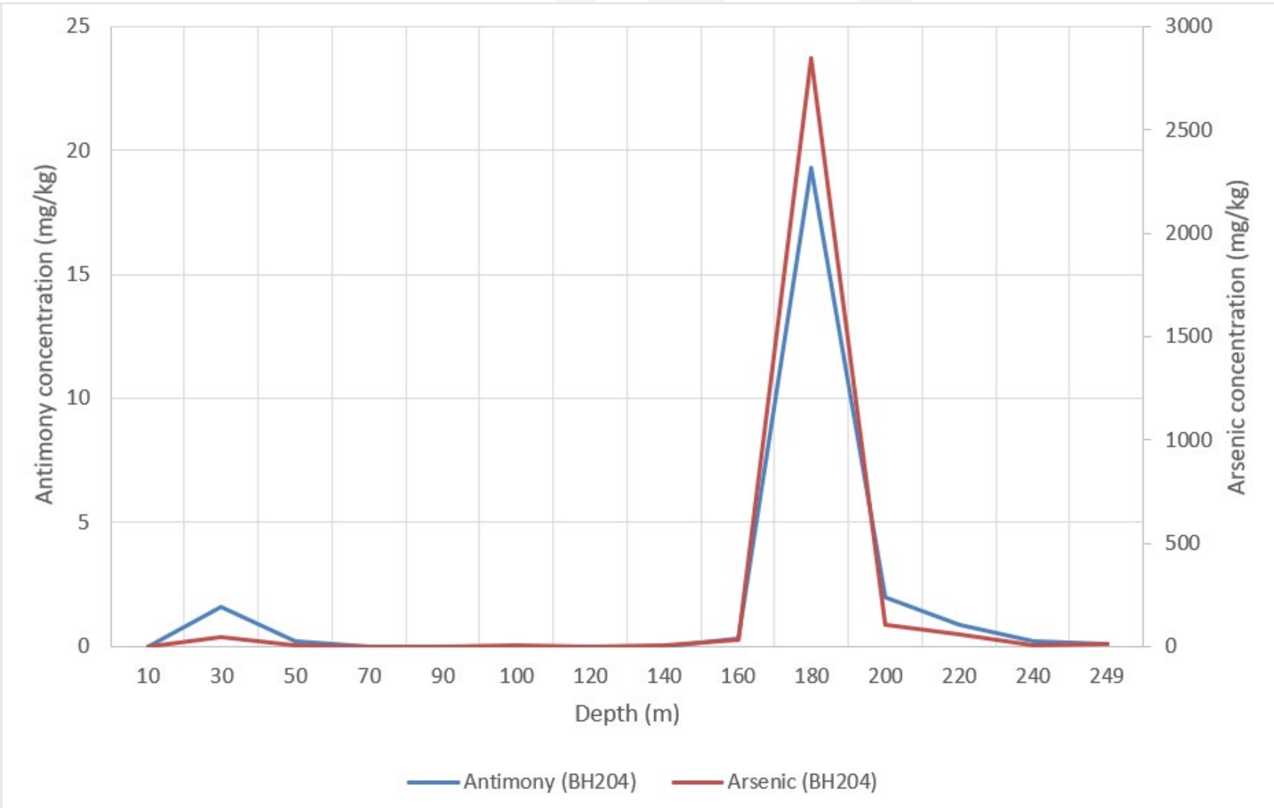


Figure 4.22 Antimony and arsenic concentrations versus depth (BH204)

4.7 Acid buffering characteristic curves

ABCC testing was undertaken on 15 samples from boreholes BH104, BH105, BH201 and BH204. This testing was undertaken for all samples containing a significant proportion of sulphur (>0.3%), along with an NPR value greater than 1, to understand buffering performance. All samples commenced testing with an alkaline slurry pH (pH 8.9-12.3), confirming the absence of measurable existing acidity. Measured ANC values ranged from 22 to 110 kg H_2SO_4/t, indicating a generally moderate to high neutralisation potential across the dataset.

The ABCC results provide further insight into the timing and effectiveness of this neutralisation, rather than simply the total ANC value. For each sample, the proportion of ANC consumed before pH 4.5 was calculated, with the results presented in Figure 4.23. These results have also been compared to the MPA and NAG results for each sample in Table 4.5. Complete ABCC plots for each sample are provided in Appendix E. These comparisons highlight several important trends:

- 7 of the 15 samples contained largely effective buffering capacity, with more than 75% of ANC utilised before reaching pH 4.5. These samples were all deeper (>230 m) quartzite samples from boreholes BH204, BH104 and BH105.

- 3 of the 15 samples contained partly effective buffering capacity, with 50% to 75% of ANC utilised before reaching pH 4.5. This includes one quartzite sample (BH105_270m), one sandstone sample (BH201_1m) and one andesite sample (BH104_327m).

- The majority of the ANC in the remaining 5 samples was only effective below pH 4.5 (i.e. <50% utilised before pH 4.5). These samples were all shallower (<140 m) quartzite samples from boreholes BH104 and BH105. Due to the low effective buffering capacity of these samples, they are at risk of acid generation.

- The effective ANC values for 9 samples comfortably exceed the MPA values, therefore classifying these samples as NAF. In 4 of these cases, the samples had previously been classified as uncertain based on static testing alone, but ABCC demonstrated that buffering is expressed early and effectively, allowing for reclassification to NAF. The NAF classifications of these samples are consistent with the NAG (pH 7.0) values, which show that <0.1 kg H_2SO_4/t of acidity is produced.

- 4 samples which were previously considered uncertain have been reclassified as PAF-low capacity (PAF-LC), due to their MPA values slightly exceeding the effective ANC. The NAG (pH 7.0) values for these samples range from 1.6 to 7.2 kg H_2SO_4/t, indicating low levels of net acid production. These include shallower quartzite samples (BH104 100-140 m and BH105 90-130 m). In these cases, the apparent neutralisation observed in their static ANC values is likely due to silicate or secondary mineral buffering, which only becomes active once the material has already acidified. This delayed neutralisation explains why static tests overestimate the buffering effectiveness of these samples.

Overall, ABCC testing confirms that while many materials are NAF, a subset of shallower quartzite samples displayed delayed neutralisation, with most ANC only active below pH 4.5. This behaviour is attributable to silicate or secondary mineral buffering, which is not effective in preventing the onset of acidity. Consequently, 4 samples were reclassified to PAF-LC, highlighting that reliance on static ANC/MPA values alone would have overestimated their neutralisation performance. Integration of ABCC with NAG and sulphur speciation therefore provides a more realistic basis for AMD classification and management.

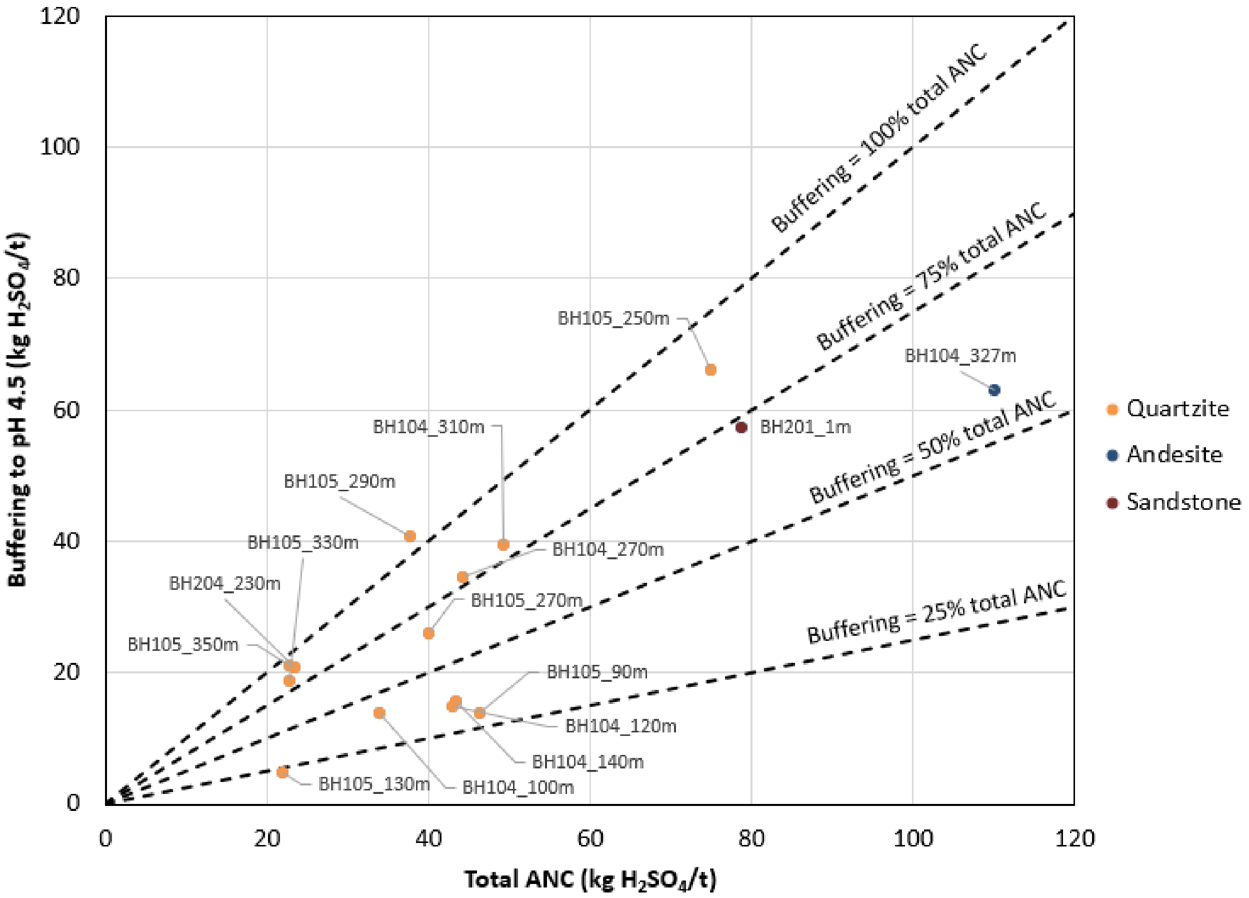


Figure 4.23 Available ANC determined from ABCC (to pH 4.5) compared to total ANC

Table 4.5 Comparison of static and ABCC ANC results with NAG results

Sample	Static ANC (kg H_2SO_4/t)	Effective ANC from ABCC to pH 4.5 (kg H_2SO_4/t)	MPA (kg H_2SO_4/t)	NAG (pH 7.0) (kg H_2SO_4/t)	Price classification	Classification (based on effective ANC)
BH201_1m	78.6	57.5	12.5	<0.1	NAF	NAF
BH204_230m	23.4	21.0	16.8	<0.1	Uncertain	NAF
BH104_100m	33.9	13.8	17.1	1.6	Uncertain	Uncertain/PAF-LC
BH104_120m	43.0	14.8	23.0	4.1	Uncertain	PAF-LC
BH104_140m	43.4	15.8	31.5	7.2	Uncertain	PAF-LC
BH104_270m	44.2	34.6	29.4	<0.1	Uncertain	NAF
BH104_310m	49.2	39.6	12.2	<0.1	NAF	NAF
BH104_327m	110	63.0	11.6	<0.1	NAF	NAF
BH105_90m	46.3	13.8	16.2	<0.1	NAF	Uncertain
BH105_130m	22	4.9	15.6	3.6	Uncertain	PAF-LC

Sample	Static ANC (kg H_2SO_4/t)	Effective ANC from ABCC to pH 4.5 (kg H_2SO_4/t)	MPA (kg H_2SO_4/t)	NAG (pH 7.0) (kg H_2SO_4/t)	Price classification	Classification (based on effective ANC)
BH105_250m	74.9	66.3	16.5	<0.1	NAF	NAF
BH105_270m	40	25.9	32.7	<0.1	Uncertain	Uncertain
BH105_290m	37.6	40.8	11.0	<0.1	NAF	NAF
BH105_330m	22.7	18.7	13.8	<0.1	Uncertain	NAF
BH105_350m	32.0	21.2	16.2	<0.1	Uncertain	NAF

4.8 Leachability testing

Short-term deionised (DI) water leach testing was undertaken for 24 samples and acetate-buffered (pH 5.0) leaching was undertaken for a further 12 samples. Leachable major ions and metals were measured, with the results for these analytes presented in Section 4.8.1 and Section 4.8.2. For the purpose of these assessments, concentrations at or below the LOR have been assumed to be equal to the LOR. The samples selected for leach testing were those identified as having enrichment above the global median soil content in one or more elements from the whole-rock elemental results (Section 4.6), ensuring that the testing program was targeted towards materials with the greatest potential for mobilisation of trace constituents.

The leachate results are compared to local groundwater and surface water quality data to provide context for potential environmental risk. The groundwater dataset comprises 204 measurements collected between January 2023 and April 2025 across 14 bores (EMM 2025a), while the surface water dataset includes 2,284 measurements collected between January 2016 and August 2024 from 16 sites (EMM 2025b). Leachate results were compared to filtered (dissolved) metal and metalloid concentrations. This comparison allows the leachate chemistry to be assessed against observed natural water quality conditions in the project area.

4.8.1 pH, EC and major ions

DI water and acetate-buffered leachate results for pH, EC and major ions are presented in Figure 4.24 and compared to local groundwater and surface water data. The following key observations are made from these results:

- DI leachates were generally more alkaline than local groundwater and surface water, with most results falling between pH 8 and 10. This indicates that the majority of samples possess strong neutralisation capacity, consistent with carbonate and silicate buffering minerals. Two outliers (5.8 and 6.7) were recorded for samples BH204_50m (PAF) and BH201_45m (Uncertain), both of which also had 1:5 pH values below 6.0. Acetate leachates consistently returned acidic conditions (pH ~5), reflecting the buffered test environment.

- DI leachate EC values were consistently low (typically <200 µS/cm), with a few outliers up to approximately 1,000 µS/cm. The median DI leachate EC value was significantly lower than local groundwater and surface water concentrations, reflecting the limited soluble salts released from the samples under neutral leaching conditions. Acetate-buffered leachates recorded lower EC values (generally <100 µS/cm).

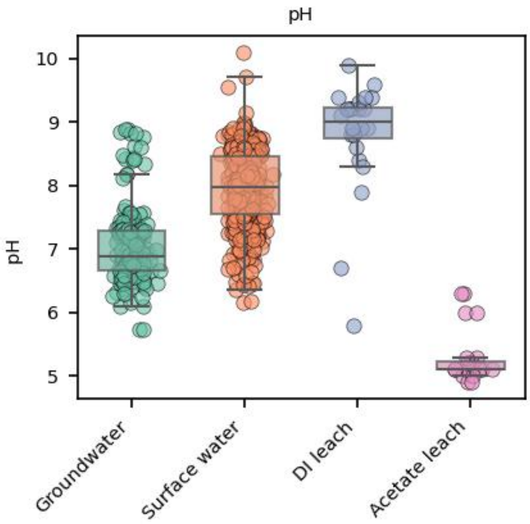
- Median calcium concentrations in the DI leachates were lower than those observed in groundwater and broadly comparable to surface water values. In contrast, the median calcium concentration in acetate leachates was elevated, though still within the overall range of groundwater concentrations. This reflects the increased dissolution of calcium-bearing phases under acidic conditions. Two acetate leachate samples (BH104_200m and BH104_327m) recorded markedly higher concentrations (>600 mg/L) compared to all other samples. These two samples also correspond to the highest measured ANC values of the acetate-buffered leach tests, suggesting that the elevated calcium is associated with the dissolution of calcium carbonate minerals present in these materials.

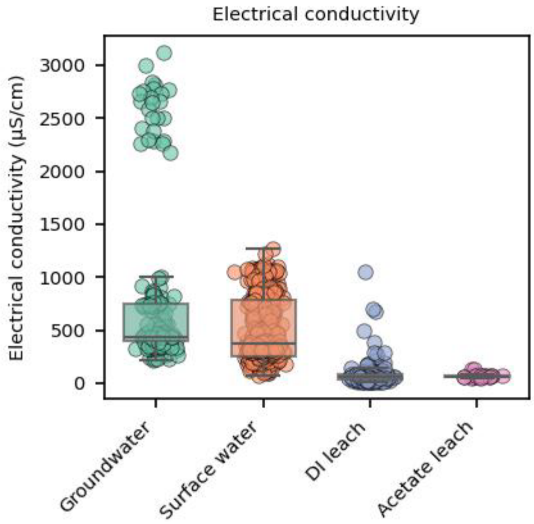
- Median sodium concentrations in DI leachates were low and broadly comparable to those in groundwater, while surface waters generally contained slightly higher sodium concentrations, reflecting natural variability. In contrast, acetate leachates returned consistently high sodium concentrations (~1350 mg/L across all samples). This enrichment does not reflect the composition of the rock but is instead attributable to the use of sodium acetate as the leaching buffer. The consistency of the acetate leach sodium results across samples further supports this interpretation, as it reflects the reagent background rather than sample-specific geochemical behaviour.

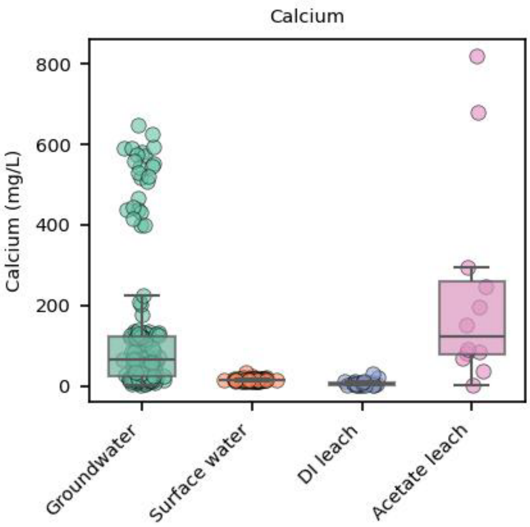
- Potassium concentrations in DI leachates were generally very low (median 1 mg/L). Notably, 17 of the 24 DI leachate samples (71%) returned potassium concentrations below the laboratory reporting limit (<1 mg/L). By contrast, both groundwater and surface water samples exhibited higher and broadly overlapping ranges (typically 2–12 mg/L), reflecting natural background variability. Acetate leachates showed a wider spread of concentrations (2–15 mg/L) with a higher median than both groundwater and surface water. This indicates that more potassium is mobilised under acidic conditions; however, the overall range of acetate leachate results remains generally aligned with concentrations observed in groundwater and surface water. The mobilisation observed in acetate leachates is therefore consistent with mineralogical sources such as feldspars and micas, but does not indicate an enrichment beyond natural background levels.

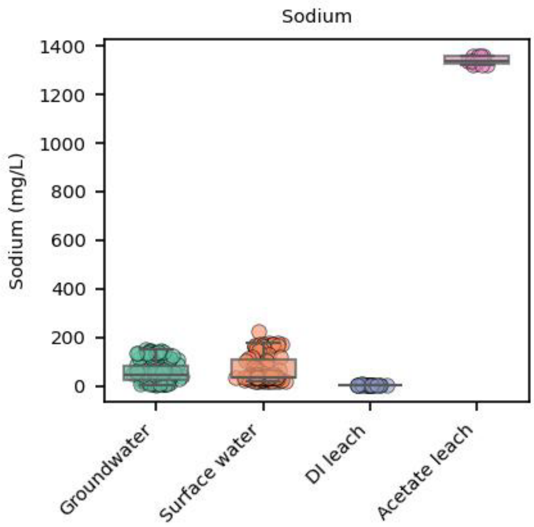
- Chloride concentrations in DI leachates were generally very low (median ~2 mg/L), and 12 of the 24 DI leachate samples (50%) were reported below the laboratory reporting limit (<1 mg/L). In comparison, chloride concentrations in groundwater and surface water were consistently higher, with typical values ranging between 5 and 30 mg/L, reflecting natural background salinity. Surface water samples exhibited slightly higher median concentrations than groundwater, with some outliers exceeding 40 mg/L. Acetate leachates also contained only low chloride concentrations (median ~3 mg/L), comparable to DI leachates and well below natural water concentrations. These results confirm that chloride is only weakly mobilised from the rock matrix during leaching, and the concentrations observed in leachates remain lower than those in groundwater and surface water.

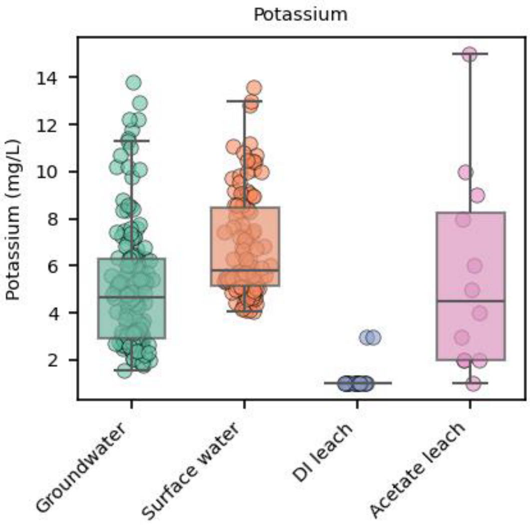
- Sulphate was largely absent from the DI and acetate-buffered leachates. A total of 15 of 24 DI leachate samples (63%) and 8 of 12 acetate-buffered leachate samples (67%) recorded concentrations below the LOR (<1 mg/L). These concentrations are much lower than those observed in local groundwater and surface water samples.

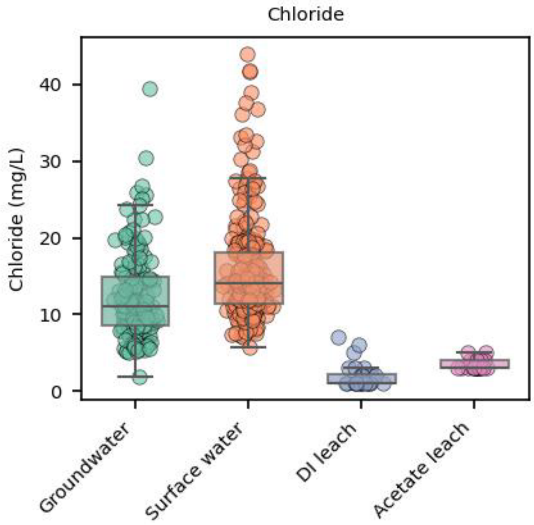

pH
pH
5
6
7
8
9
10
Groundwater
Surface water
DI leach
Acetate leach


Electrical conductivity
Electrical conductivity (µS/cm)
0
500
1000
1500
2000
2500
3000
Groundwater
Surface water
DI leach
Acetate leach


Calcium
Calcium (mg/L)
0
200
400
600
800
Groundwater
Surface water
DI leach
Acetate leach


Sodium
Sodium (mg/L)
0
200
400
600
800
1000
1200
1400
Groundwater
Surface water
DI leach
Acetate leach


Potassium
Potassium (mg/L)
2
4
6
8
10
12
14
Groundwater
Surface water
DI leach
Acetate leach


Chloride
Chloride (mg/L)
0
10
20
30
40
Groundwater
Surface water
DI leach
Acetate leach

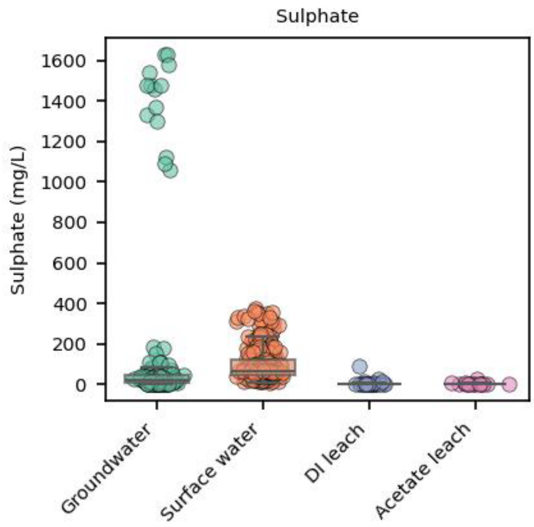


Figure 4.24 pH, EC and major ion concentration box plots – Leachate versus water systems

4.8.2 Metals and metalloids

DI water and acetate-buffered leachate results for metals and metalloids are presented in Figure 4.25 and compared to local groundwater and surface water data. The following key observations are made from these results:

- Arsenic concentrations in the DI water and acetate-buffered leachates are generally aligned with groundwater and surface water concentrations, with the exception of two notable outliers in the DI leachates. These outliers are from samples BH204_210m (0.316 mg/L) and BH104_310m (0.266 mg/L). These two samples had high whole-rock arsenic concentrations (2,850 mg/kg and 812 mg/kg), which indicates that arsenic may be weakly mobilised under neutral conditions where arsenic-bearing minerals are present.

- Chromium concentrations in the DI water leachate samples were generally aligned with groundwater and surface water concentrations. In contrast, while acetate-buffered leachate concentrations are still low, they are notably higher than the DI leachate concentrations, indicating chromium is more soluble under acidic conditions. This behaviour is consistent with mobilisation of trace chromium from silicate or oxide minerals.

- Copper concentrations in both DI water and acetate-buffered leachate samples were very low and broadly consistent with those in groundwater and surface water. Occasional higher values observed in groundwater (up to 0.6 mg/L) were not reflected in the leachate results, suggesting these enrichments are related to localised hydrogeochemical conditions. 11 of 12 acetate-buffered leachate samples and 22 of 24 DI leachate samples reported copper concentrations below the LOR (<0.001 mg/L).

- Nickel DI water leachate concentrations were generally low and comparable to surface water, with two samples showing moderate enrichment similar to groundwater outliers. These two outliers were noted for samples BH201_45m and BH204_50m, both of which showed no enrichment above global median soil content in whole-rock elemental testing. Acetate-buffered leachates returned slightly higher concentrations than DI leachates, indicating nickel is more mobile under acidic conditions; however, the results remain broadly within the range of natural groundwater variability.

- Zinc concentrations in the DI water leachates were aligned with local groundwater and surface water concentrations, with 12 of the 24 samples (50%) being below the LOR (<0.005 mg/L). Sample BH204_50m was an exception with a zinc concentration of 0.878 mg/L. This sample was identified as PAF with a NAPP of 19.3 kg H_2SO_4/t and it also had the highest whole-rock zinc concentration of 201 mg/kg. Therefore, the combination of acid-forming conditions and the availability of zinc-bearing minerals may have contributed to this high leachate concentration. It is noted that three other PAF samples were DI leach tested which did not result in concentrations above local groundwater and surface water. It is noted that the LOR for the acetate-buffered leach testing was higher, at 0.1 mg/L, with 9 of the 12 samples recording zinc concentrations below this value.

- Manganese DI water leachate concentrations were generally lower than those found in local groundwater and surface water, with the exception of sample BH204_50m (identified as PAF) which recorded a manganese leachate concentration of 3.72 mg/L. A much wider range of manganese concentrations were observed in the acetate-buffered leachate samples, from approximately 0 to 8 mg/L, demonstrating the solubility of manganese under acidic conditions.

- Aluminium concentrations in DI water leachates were generally higher than those observed in groundwater and surface water, with several samples exceeding 4 mg/L compared to typically <1 mg/L in natural waters. Acetate-buffered leachates also contained elevated aluminium compared to groundwater and surface water, though at lower levels than the DI leachates. These results indicate that aluminium is mobilised from the rock under both neutral and acidic leaching conditions, likely due to dissolution of aluminosilicate minerals. It is noted that the samples showing the highest aluminium concentrations (BH108_90m, BH201_85m and

BH204_90m) were identified as NAF with high pH 1:5 values (>pH 8), indicating that aluminium mobility for these samples is higher under alkaline conditions.

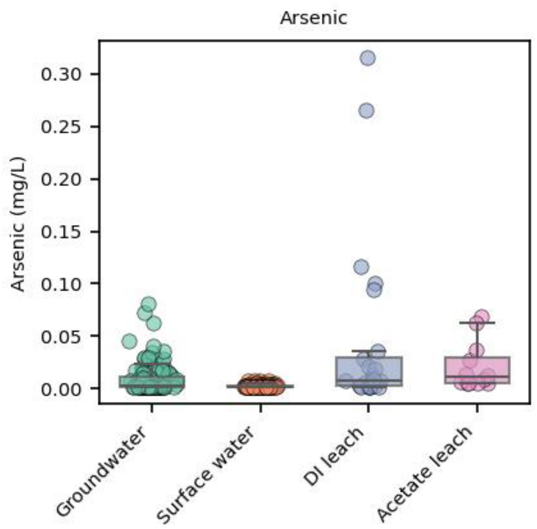
- Median DI leachate and acetate-buffered leachate iron concentrations exceeded the medians observed in local groundwater and surface water. These results suggest that iron is mobilised under both neutral and acidic leaching conditions. It is noted that while the median concentrations were higher, the maximum leachate iron concentration of 23.7 mg/L is much lower than the maximum observed in groundwater (139 mg/L).

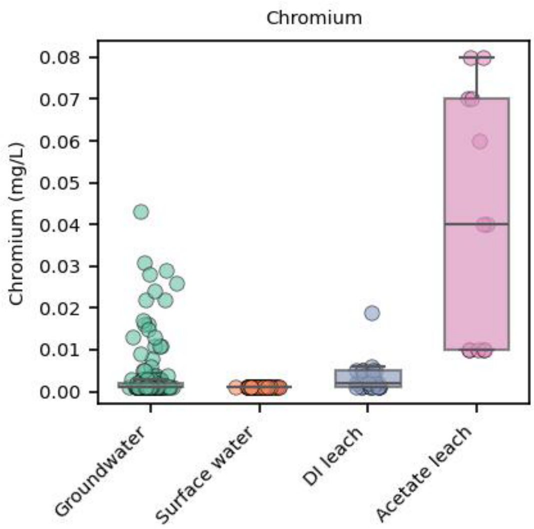
- Chromium, nickel, manganese and iron all demonstrated higher leachate concentration under acidic condition (acetate buffer), while aluminium demonstrated higher solubility under near-neutral conditions (deionised water).

The leach testing program investigated the potential mobilisation of major ions and trace metals from site materials under both neutral (DI water) and acidic (acetate-buffered) leaching conditions. Overall, leachable concentrations of most analytes were low and generally comparable to or below those observed in local groundwater and surface water.

Potential contaminants of concern were identified in isolated cases. Arsenic was elevated in two DI leachate samples from arsenic-rich rocks, while zinc showed a single high leachate concentration associated with a PAF sample containing elevated whole-rock zinc. The solubility of chromium and manganese increased under acidic conditions, while aluminium solubility increased under more alkaline conditions, in both cases producing concentrations in excess of those typically measured in local groundwater and surface water systems.

These results indicate that large-scale mobilisation of contaminants other than aluminium is unlikely; however, prevention of acidification should be prioritised in spoil management, and targeted monitoring of arsenic, nickel, zinc, chromium, manganese and aluminium in local waters should be considered to detect potential leaching.





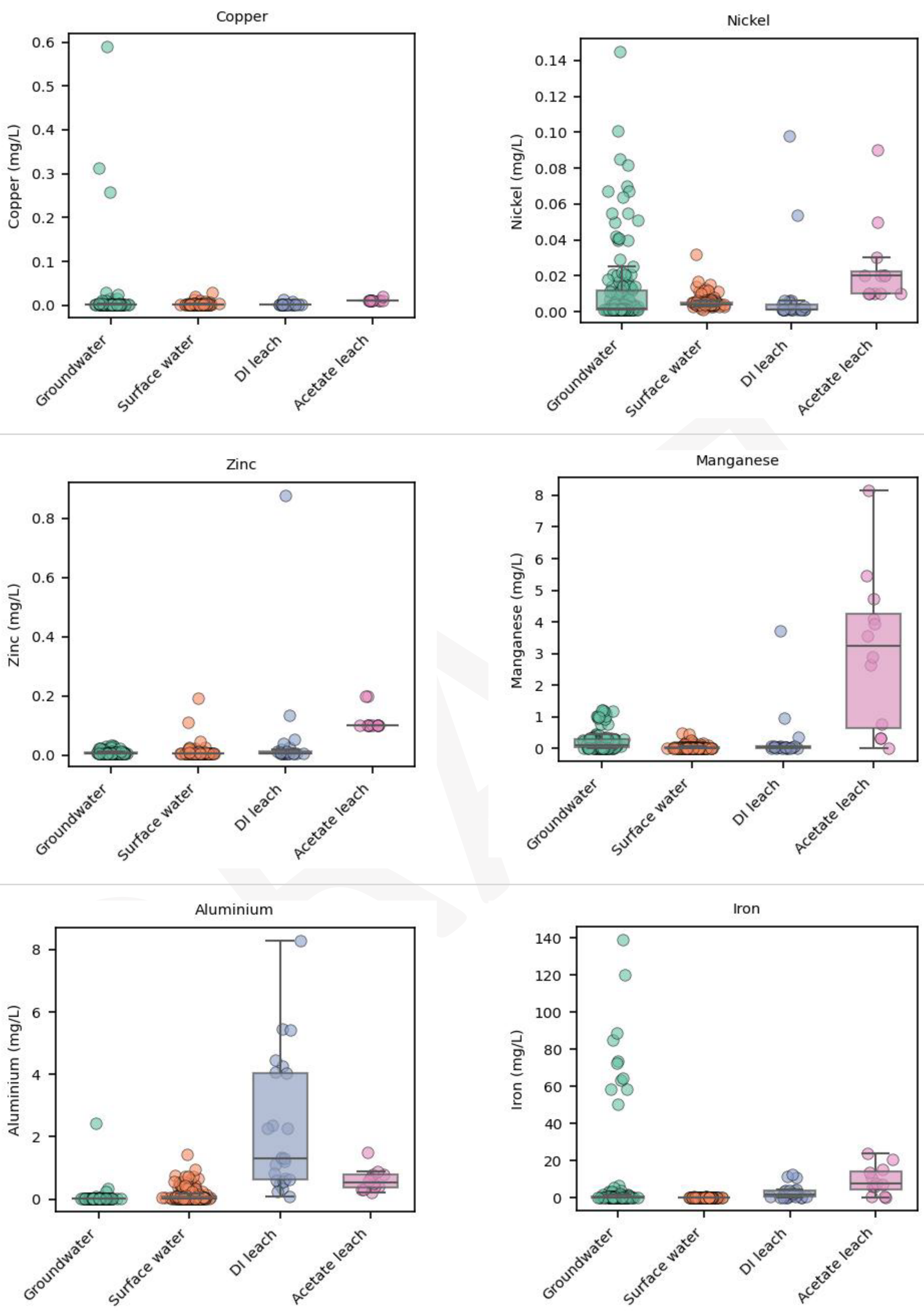


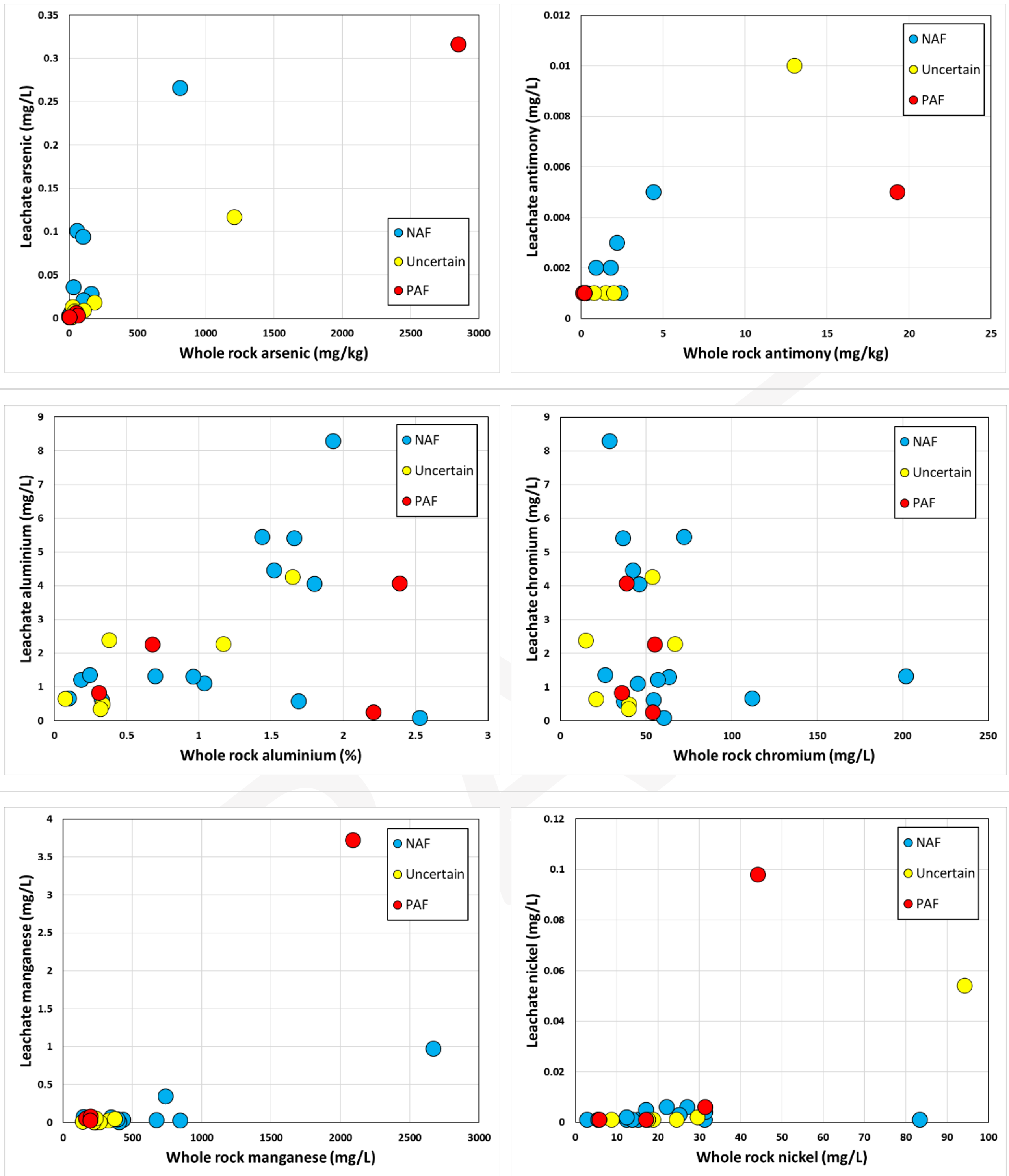
Figure 4.25 Metal/metalloid concentration box plots – Leachate versus local water systems

4.8.3 Relationship between whole-rock and leachate concentrations

Scatter plots (Figure 4.26) were produced for several analytes, including those which were identified as contaminants of potential concern in Section 4.8.2. These plots show that, for most analytes, there is no strong correlation between bulk composition and leachable concentrations. Instead, mobilisation appears to be controlled by mineralogical form, pH conditions, and acid-base characteristics rather than total abundance.

Arsenic and aluminium showed a general trend of increasing leachate concentrations with increasing whole-rock contents, though several samples with high whole-rock aluminium contents (>1.5%) recorded low leachate concentrations, indicating that this relationship is not applicable for all samples.

Chromium and manganese exhibited elevated leachate concentrations in some samples, but these did not correlate strongly with whole-rock contents, indicating mobilisation is primarily pH and redox-dependent. Nickel concentrations were consistently low with only isolated enrichments, again showing little relationship with bulk composition. Antimony leachate concentrations were uniformly negligible (<0.1 mg/L) across all samples regardless of whole-rock abundance.



Note: Values below the LOR are shown as being equal to the LOR

Figure 4.26 Whole rock metal concentration compared to leachate metal concentration

4.9 Naturally occurring asbestos

The potential presence of naturally occurring asbestos (NOA) was investigated through polarised light microscopy with dispersion staining analyses on select rock samples. A total of eight samples were analysed, representing quartzite and hornfels material from a range of locations and depths. The results of these analyses are presented in Table 4.6.

No asbestos fibres were detected in any of the samples tested. This indicates that, within the range of lithologies and depths investigated, the likelihood of encountering NOA in site materials is low.

Table 4.6 Summary of NOA results

Sample ID	Lithology	Asbestos detected
BH101_49m	Quartzite	No
BH104_180m	Quartzite	No
BH105_70m	Quartzite	No
BH107_30m	Quartzite	No
BH202_73m	Hornfels	No
BH203_8m	Quartzite	No
BH203_100m	Hornfels	No
BH204_10m	Hornfels	No

5 Conclusion and recommendations

The following conclusions are made based on the findings of the Stage 1 and Stage 2 testing programs:

- 1:5 pH values were generally alkaline (pH >8.5), with some acidic zones (pH <6) noted in shallower samples. Higher 1:5 EC measurements were correlated with the acidic pH measurements, indicating localised shallow zones of acidity and salinity, likely related to weathering.

- Most samples contained very low sulphur contents (<0.05% S) and moderate to high ANC (5-110 kg H_2SO_4/t; median NPR of 11.9), resulting in 80% of samples being classified as NAF, 12% as uncertain and 8% as PAF, with PAF results restricted to isolated quartzite and hornfels intervals.

- Total sulphur (LECO-S) measurements were generally representative of sulphide sulphur. Only three samples were found to have CRS concentrations which were less than 75% of total sulphur concentration, suggesting they contain a significant amount of non-reactive sulphur, such as sulphate.

- Of the 61 sulphur-bearing samples tested, the majority (74% at pH 4.5; 51% at pH 7.0) recorded NAG values below detection limits, confirming negligible acid generation potential; only a small number of quartzite and hornfels samples produced acidity, and sequential NAG testing showed that most reactive sulphides oxidised quickly in the first stage, with limited evidence of delayed acid generation.

- Seven samples were analysed for titratable actual acidity, based on acidic 1:5 pH measurements. Two samples (BH106_10m and BH204_50m) displayed high actual acidity (17–20 mol H^+/t) with stored acidity from secondary sulphate salts, while BH204_10m showed moderate acidity (9 mol H^+/t); other samples with low pH but negligible titratable acidity indicated only weak acidity associated with pore waters, and the remainder had negligible actual acidity.

- GAI values calculated from the total metal and metalloid measurements were generally 0, indicating no enrichment compared to the median crustal abundance. Notable enrichment (GAI ≥3) was noted in one or more samples for arsenic, bismuth, sulphur, selenium and tin. Arsenic has the highest proportion of significantly enriched samples, with 7% of samples having an arsenic GAI of 3 or more.

- Ammonia, nitrate and nitrite concentrations were very low across all 24 tested samples, providing a reliable baseline against which to compare blasting-derived nitrogen inputs during construction. Nitrate was the only analyte detected above the LOR, ranging from 0.1-3.3 mg/kg, with a median concentration of 0.3 mg/kg.

- ABCC testing confirms that while many materials are NAF, a subset of shallower quartzite samples displayed delayed neutralisation, with most ANC only active below pH 4.5. Deeper quartzite and hornfels samples (>230 m) demonstrated effective buffering above pH 4.5, allowing any acid generated to be neutralised before the pH of the slurry reached pH 4.5.

- Leach testing results for major ions showed that DI water leachates were generally alkaline (pH 8–10), with low EC (<200 µS/cm) and minimal solute release, while acetate-buffered leachates reflected acidic conditions (pH ~5) with increased mobilisation of calcium and potassium; however, overall concentrations of major ions remained comparable to or below those measured in local groundwater and surface water, with the exception of isolated high calcium results linked to carbonate-rich samples.

- Leach testing results for trace metals indicated that most analyte concentrations were low and aligned with natural groundwater and surface water, though isolated enrichments were observed for arsenic (two DI leachate outliers from arsenic-rich rocks) and zinc (one PAF sample with high whole-rock zinc). Chromium and manganese were more soluble under acidic conditions, while aluminium showed higher solubility under alkaline conditions, highlighting these elements as potential contaminants of concern if acidification or unusual pH conditions occur.

- Eight quartzite and hornfels samples were tested for NOA and no asbestos fibres were detected.

From these outcomes, the following recommendations are made:

- Manage spoil so that PAF and uncertain materials are segregated or blended with NAF to minimise AMD risk (encapsulation or cover may be required for high-risk materials).

- Implement targeted monitoring of arsenic, zinc, manganese, chromium and aluminium in groundwater and surface water, alongside spoil pH and EC monitoring during excavation.

- Continue validation ABA and NAG testing during construction to confirm classifications and refine management practices.

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Appendix A

Core samples collected

A.1 List of core samples collected

Table A.1 List of core samples collected

Borehole	Sample depth (m)	Lithology	Weathering	Alterations noted
BH101	10	Quartzite	Highly weathered	Slightly to moderately altered
	19	Quartzite	Slightly weathered	Slightly to moderately altered
	49	Quartzite	Slightly weathered	-
	70	Quartzite	Fresh	-
BH102	19	Quartzite	Moderately weathered	Moderately altered
BH103	19	Quartzite	Fresh	-
	50	Quartzite	Fresh	-
	70	Quartzite	Fresh	-
BH104	10	Quartzite	Highly weathered	Siliceous alteration
	30	Quartzite	Moderately weathered	Siliceous alteration
	50	Quartzite	Slightly weathered	Blue-green alteration
	70	Quartzite	Fresh	Chlorite alteration
	80	Breccia	Extremely weathered	-
	100	Quartzite	Fresh	-
	120	Quartzite	Fresh	-
	140	Quartzite	Fresh	-
	160	Quartzite	Fresh	-
	180	Quartzite	Fresh	-
	200	Quartzite	Fresh	Chlorite alteration
	220	Quartzite	Fresh	Occasional alteration
	240	Quartzite	Fresh	-
	249	Basalt	Fresh	-
	270	Quartzite	Fresh	Siliceous alteration
	290	Quartzite	Fresh	-
	310	Quartzite	Fresh	-
	327	Andesite	Highly weathered	Highly altered
	351	Quartzite	Fresh	-
	375	Quartzite	Fresh	-
BH105	10	Quartzite	Highly weathered	-

Borehole	Sample depth (m)	Lithology	Weathering	Alterations noted
	30	Quartzite	Highly weathered	-
	50	Quartzite	Fresh	Slightly altered
	70	Quartzite	Fresh	Slightly altered
	90	Quartzite	Fresh	Slightly altered with disseminated pyrite veins
	110	Quartzite	Fresh	Slightly altered
	130	Quartzite	Fresh	-
	150	Quartzite	Fresh	-
	170	Quartzite	Fresh	-
	190	Quartzite	Fresh	Sulphide minerals
	210	Quartzite	Fresh	Chloritic alteration
	230	Quartzite	Fresh	Hematite and chlorite alteration
	250	Quartzite	Fresh	Slight chlorite alteration
	270	Quartzite	Fresh	Slight chlorite and hematite alteration
	290	Quartzite	Fresh	Occasional chlorite and siliceous alteration
	310	Quartzite	Fresh	Chlorite alteration
	330	Quartzite	Fresh	Slight hematite alteration
	350	Quartzite	Fresh	Slight hematite alteration
BH106	10	Quartzite	Highly weathered	-
	30	Quartzite	Moderately weathered	-
	50	Quartzite	Fresh	Zones of alteration
	70	Quartzite	Fresh	-
	90	Quartzite	Fresh	Moderately altered
	110	Quartzite	Fresh	-
	130	Quartzite	Fresh	Siliceous hematite alteration
	150	Quartzite	Fresh	-
	170	Quartzite	Fresh	Highly altered
	190	Quartzite	Fresh	Slightly to moderately altered
	210	Quartzite	Fresh	-

Borehole	Sample depth (m)	Lithology	Weathering	Alterations noted
BH107	10	Quartzite	Slightly weathered	-
	30	Quartzite	Slightly weathered	-
BH108	10	Quartzite	N/A	-
	30	Quartzite	Slightly weathered	-
	50	Quartzite	Fresh	-
	70	Quartzite	Fresh	-
	90	Quartzite	Fresh	Brown/purple alteration
	110	Quartzite	Fresh	Brown/purple alteration
BH201	1	Sandstone	Highly weathered	-
	5	Quartzite	Slightly weathered	Slightly altered
	25	Quartzite	Slightly weathered	Moderately to highly altered
	45	Quartzite	Slightly weathered	Slightly to moderately altered
	65	Hornfels	Slightly weathered	Chloritic alteration
	85	Quartzite	Fresh	Slight chloritic alteration
	125	Hornfels	Fresh	-
BH202	73	Hornfels	Fresh	Chloritic alteration
BH203	8	Quartzite	Moderately weathered	Slight hematite alteration
	30	Quartzite	Highly weathered	Intense chlorite alteration, slightly to moderately iron-stained.
	39	Tuff	Fresh	Moderately iron stained
	59	Quartzite	Fresh	Moderate to high chlorite alteration
	82.24	Wollastonite	Fresh	Slight to moderate chlorite alteration
	100	Hornfels	Fresh	Chlorite inclusions
	120	Quartzite	Fresh	-
	140	Hornfels	Fresh	-
	160	Quartzite	Fresh	Chlorite altered
	180	Quartzite	Fresh	-
	200	Quartzite	Fresh	-
BH204	10	Hornfels	Moderately weathered	-
	30	Quartzite	Moderately weathered	-

Borehole	Sample depth (m)	Lithology	Weathering	Alterations noted
	50	Hornfels	Slightly weathered	-
	90	Hornfels	Fresh	-
	110	Quartzite	Fresh	-
	130	Hornfels	Fresh	-
	150	Hornfels	Fresh	Occasional chlorite alteration
	170	Hornfels	Fresh	-
	190	Hornfels	Fresh	Occasional chlorite alteration
	210	Quartzite	Fresh	-
	230	Quartzite	Fresh	Slight chloritic alteration
	250	Quartzite	Fresh	-
	270	Quartzite	Fresh	Slight chloritic alteration
	290	Quartzite	Fresh	Chlorite alteration
MB2201A	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Quartzite	N/A	N/A
	70	Quartzite	N/A	N/A
	90	Quartzite	N/A	N/A
	110	Quartzite	N/A	N/A
	130	Quartzite	N/A	N/A
	150	Quartzite	N/A	N/A
	170	Quartzite	N/A	N/A
	190	Quartzite	N/A	N/A
MB2201B	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Quartzite	N/A	N/A
	70	Quartzite	N/A	N/A
	90	Quartzite	N/A	N/A
	110	Quartzite	N/A	N/A
MB2202A	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Quartzite	N/A	N/A
	70	Quartzite	N/A	N/A

Borehole	Sample depth (m)	Lithology	Weathering	Alterations noted
	90	Quartzite	N/A	N/A
	110	Quartzite	N/A	N/A
	130	Quartzite	N/A	N/A
	150	Quartzite	N/A	N/A
MB2202B	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Quartzite	N/A	N/A
	70	Quartzite	N/A	N/A
MB2203A	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Quartzite	N/A	N/A
	70	Quartzite	N/A	N/A
	90	Quartzite	N/A	N/A
	110	Quartzite	N/A	N/A
	130	Quartzite	N/A	N/A
	150	Quartzite	N/A	N/A
	170	Quartzite	N/A	N/A
MB2203B	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Quartzite	N/A	N/A
	65	Quartzite	N/A	N/A
MB2204A	7	Shale	N/A	N/A
	20	Quartzite	N/A	N/A
	40	Quartzite	N/A	N/A
	60	Quartzite	N/A	N/A
	80	Quartzite	N/A	N/A
	100	Quartzite	N/A	N/A
	120	Quartzite	N/A	N/A
	140	Quartzite	N/A	N/A
	160	Quartzite	N/A	N/A
	180	Quartzite	N/A	N/A
	200	Quartzite	N/A	N/A
MB2204B	3	Sandstone	N/A	N/A

Borehole	Sample depth (m)	Lithology	Weathering	Alterations noted
	8	Shale	N/A	N/A
	40	Quartzite	N/A	N/A
	60	Quartzite	N/A	N/A
MB2205A	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Hornfels	N/A	N/A
	70	Hornfels	N/A	N/A
	80	Quartzite	N/A	N/A
	110	Hornfels	N/A	N/A
	130	Quartzite	N/A	N/A
	150	Quartzite	N/A	N/A
	170	Hornfels	N/A	N/A
	190	Hornfels	N/A	N/A
MB2205B	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Quartzite	N/A	N/A
MB2206A	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Quartzite	N/A	N/A
	70	Quartzite	N/A	N/A
MB2206B	10	Quartzite	N/A	N/A
	30	Quartzite	N/A	N/A
	50	Quartzite	N/A	N/A
	70	Quartzite	N/A	N/A

Appendix B
Stage 2 analysis summary

EMM
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B.1 Stage 2 laboratory testing

Table B.1 Stage 2 laboratory testing

Sample ID	NAG testing	Sequential NAG testing	Sulphur speciation	Existing acidity testing	ABCC testing	Deionised water leach testing	Acetate buffer leach testing (pH 5.0)	Nutrients testing	Asbestos presence
BH101_49	✓		✓						
BH101_70	✓		✓						
BH103_19	✓		✓						
BH103_50	✓		✓						
BH104_50	✓		✓						
BH104_70	✓		✓			✓		✓	
BH104_100	✓		✓		✓	✓		✓	
BH104_120	✓		✓		✓		✓		
BH104_140		✓	✓		✓	✓		✓	
BH104_160	✓		✓				✓		
BH104_180	✓		✓						
BH104_200	✓		✓				✓		
BH104_220						✓		✓	
BH104_249	✓		✓						✓
BH104_270	✓		✓		✓	✓		✓	

Sample ID	NAG testing	Sequential NAG testing	Sulphur speciation	Existing acidity testing	ABCC testing	Deionised water leach testing	Acetate buffer leach testing (pH 5.0)	Nutrients testing	Asbestos presence
BH104_290	✓		✓				✓		
BH104_310	✓		✓		✓	✓		✓	
BH104_327	✓		✓		✓		✓		
BH104_351	✓		✓						
BH104_375	✓		✓			✓		✓	
BH105_30						✓		✓	
BH105_50	✓		✓						
BH105_70	✓		✓						
BH105_90	✓		✓		✓		✓		
BH105_110	✓		✓						
BH105_130	✓		✓		✓		✓		✓
BH105_150		✓	✓			✓		✓	
BH105_170		✓	✓			✓		✓	
BH105_190	✓		✓						
BH105_210	✓		✓						
BH105_230	✓		✓						
BH105_250	✓		✓		✓	✓		✓	
BH105_270		✓	✓		✓	✓		✓	

Sample ID	NAG testing	Sequential NAG testing	Sulphur speciation	Existing acidity testing	ABCC testing	Deionised water leach testing	Acetate buffer leach testing (pH 5.0)	Nutrients testing	Asbestos presence
BH105_290	✓		✓		✓				
BH105_310									
BH105_330	✓		✓		✓		✓		
BH105_350	✓		✓		✓		✓		
BH106_10				✓		✓		✓	
BH106_110						✓		✓	
BH106_130	✓		✓						
BH106_170	✓		✓						
BH106_190	✓		✓						
BH107_30	✓		✓						
BH108_10						✓		✓	
BH108_30	✓		✓						
BH108_50	✓		✓						
BH108_70	✓		✓			✓		✓	
BH108_90	✓		✓			✓		✓	✓
BH201_1	✓		✓		✓				
BH201_45						✓		✓	✓
BH201_85						✓		✓	

Sample ID	NAG testing	Sequential NAG testing	Sulphur speciation	Existing acidity testing	ABCC testing	Deionised water leach testing	Acetate buffer leach testing (pH 5.0)	Nutrients testing	Asbestos presence
BH201_125	✓		✓						
BH202_73	✓		✓						
BH203_8	✓		✓						
BH203_30						✓		✓	✓
BH203_100									✓
BH204_10	✓		✓	✓					
BH204_30	✓		✓	✓			✓		
BH204_50	✓		✓	✓		✓		✓	✓
BH204_90						✓		✓	
BH204_190	✓		✓				✓		
BH204_210	✓		✓			✓		✓	
BH204_230	✓		✓		✓	✓		✓	
BH204_250							✓		✓
MB2201A_10		✓	✓						
MB2201A_30		✓	✓						
MB2201A_50				✓					
MB2202A_10				✓					
MB2202B_10				✓					

Sample ID	NAG testing	Sequential NAG testing	Sulphur speciation	Existing acidity testing	ABCC testing	Deionised water leach testing	Acetate buffer leach testing (pH 5.0)	Nutrients testing	Asbestos presence
MB2203A_10	✓		✓						
Total	**49**	**6**	**55**	**7**	**15**	**24**	**12**	**24**	**8**

Appendix C

Laboratory results summary

C.1 ABA results

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
BH101_10	10	8.7	142	2.9	<0.01	<0.306	18.8	-18.5	61.4	NAF
BH101_19	19	8.1	48	1.7	<0.01	<0.306	19.5	-19.2	63.7	NAF
BH101_49	49	7.5	19	<1.0	0.15	4.6	13.2	-8.6	2.9	NAF
BH101_70	70	9.3	56	<1.0	0.18	5.5	41.6	-36.1	7.6	NAF
BH102_19	19	6.2	21	4.3	<0.01	<0.306	<0.5	-	-	-
BH103_19	19	7.1	11	<1.0	0.11	3.4	20.6	-17.2	6.1	NAF
BH103_50	50	9.3	84	5.8	0.15	4.6	9.2	-4.6	2.0	NAF
BH103_70	70	9.5	63	<1.0	0.03	0.9	80.1	-79.2	87.3	NAF
BH104_10	10	8.7	82	1.4	<0.01	<0.306	8.0	-7.7	26.1	NAF
BH104_30	30	7.6	17	<1.0	0.01	0.3	9.3	-9.0	30.4	NAF
BH104_50	50	9.3	83	<1.0	0.17	5.2	52.8	-47.6	10.1	NAF
BH104_70	70	9.2	115	2	0.29	8.9	116.0	-107.1	13.1	NAF
BH104_80	80	9.1	72	1.9	0.02	0.6	16.8	-16.2	27.5	NAF
BH104_100	100	9.5	64	<1.0	0.56	17.1	33.9	-16.8	2.0	UNCERTAIN
BH104_120	120	9.3	57	<1.0	0.75	23.0	43.0	-20.1	1.9	UNCERTAIN
BH104_140	140	9.2	87	<1.0	1.03	31.5	43.4	-11.9	1.4	UNCERTAIN
BH104_160	160	9.4	71	<1.0	0.06	1.8	23.0	-21.2	12.5	NAF
BH104_180	180	9.5	68	<1.0	0.16	4.9	41.4	-36.5	8.5	NAF

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
BH104_200	200	9	87	6.2	0.12	3.7	163.0	-159.3	44.4	NAF
BH104_220	220	9.7	73	<1.0	0.02	0.6	161.0	-160.4	263.1	NAF
BH104_240	240	9.5	52	<1.0	0.02	0.6	34.4	-33.8	56.2	NAF
BH104_249	249	9.2	86	3	0.29	8.9	124.0	-115.1	14.0	NAF
BH104_270	270	9.2	86	<1.0	0.96	29.4	44.2	-14.8	1.5	UNCERTAIN
BH104_290	290	9.4	56	<1.0	0.68	20.8	16.0	4.8	0.8	PAF
BH104_310	310	9.2	94	<1.0	0.4	12.2	49.2	-37.0	4.0	NAF
BH104_327	327	9	138	1.9	0.38	11.6	110.0	-98.4	9.5	NAF
BH104_351	351	9.3	87	<1.0	0.08	2.4	32.1	-29.7	13.1	NAF
BH104_375	375	9.1	58	<1.0	0.09	2.8	34.2	-31.4	12.4	NAF
BH105_10	10	7.3	22	2.2	<0.01	<0.306	18.8	-18.5	61.4	NAF
BH105_30	30	8.6	24	<1.0	<0.01	<0.306	8.4	-8.1	27.5	NAF
BH105_50	50	9.3	66	<1.0	0.06	1.8	17.9	-16.1	9.7	NAF
BH105_70	70	9.4	58	<1.0	0.16	4.9	32.4	-27.5	6.6	NAF
BH105_90	90	9.4	58	<1.0	0.53	16.2	46.3	-30.1	2.9	NAF

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
BH105_110	110	9.4	55	<1.0	0.08	2.4	29.5	-27.1	12.1	NAF
BH105_130	130	9.5	75	<1.0	0.51	15.6	22.0	-6.4	1.4	UNCERTAIN
BH105_150	150	9.4	58	<1.0	1.22	37.3	35.2	2.1	0.9	PAF
BH105_170	170	9.4	81	<1.0	1.99	60.9	29.7	31.2	0.5	PAF
BH105_190	190	9.4	47	<1.0	0.17	5.2	38.2	-33.0	7.3	NAF
BH105_210	210	9.4	61	<1.0	0.19	5.8	59.5	-53.7	10.2	NAF
BH105_230	230	9.4	53	<1.0	0.07	2.1	292.0	-289.9	136.3	NAF
BH105_250	250	8.9	199	<1.0	0.54	16.5	74.9	-58.4	4.5	NAF
BH105_270	270	8.7	214	<1.0	1.07	32.7	40.0	-7.3	1.2	UNCERTAIN
BH105_290	290	9.4	67	<1.0	0.36	11.0	37.6	-26.6	3.4	NAF
BH105_310	310	9.8	80	<1.0	0.02	0.6	208.0	-207.4	339.9	NAF
BH105_330	330	9.4	56	<1.0	0.45	13.8	22.7	-8.9	1.6	UNCERTAIN
BH105_350	350	9.2	75	<1.0	0.53	16.2	32.0	-15.8	2.0	UNCERTAIN
BH106_10	10	5.1	90	2.9	<0.01	<0.306	3.8	-3.5	12.4	NAF
BH106_30	30	7.9	23	<1.0	<0.01	<0.306	8.5	-8.2	27.8	NAF

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
BH106_50	50	9	31	<1.0	0.01	0.3	12.1	-11.8	39.5	NAF
BH106_70	70	9.2	47	<1.0	<0.01	<0.306	18.9	-18.6	61.8	NAF
BH106_90	90	9.5	88	<1.0	<0.01	<0.306	38.0	-37.7	124.2	NAF
BH106_110	110	9.4	73	<1.0	<0.01	<0.306	15.8	-15.5	51.6	NAF
BH106_130	130	9.3	51	<1.0	0.13	4.0	20.3	-16.3	5.1	NAF
BH106_150	150	9.3	56	<1.0	0.02	0.6	16.9	-16.3	27.6	NAF
BH106_170	170	9.4	54	<1.0	0.08	2.4	21.6	-19.2	8.8	NAF
BH106_190	190	9.3	45	<1.0	0.09	2.8	23.7	-20.9	8.6	NAF
BH106_210	210	9.6	89	<1.0	0.05	1.5	216.0	-214.5	141.2	NAF
BH107_10	10	8.3	55	1.1	0.04	1.2	16.8	-15.6	13.7	NAF
BH107_30	30	6.4	131	<1.0	0.15	4.6	6.7	-2.1	1.5	UNCERTAIN
BH108_10	10	6.9	20	4.9	<0.01	<0.306	10.3	-10.0	33.7	NAF
BH108_30	30	5.6	182	<1.0	0.21	6.4	5.3	1.1	0.8	PAF
BH108_50	50	8.4	71	<1.0	0.16	4.9	12.7	-7.8	2.6	NAF
BH108_70	70	9.2	82	<1.0	0.15	4.6	23.0	-18.4	5.0	NAF

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
BH108_90	90	9.1	71	<1.0	0.23	7.0	16.6	-9.6	2.4	NAF
BH108_110	110	9.2	52	<1.0	<0.01	<0.306	14.9	-14.6	48.7	NAF
BH201_1	1	9.1	120	<1.0	0.41	12.5	78.6	-66.1	6.3	NAF
BH201_5	5	8.9	23	<1.0	<0.01	<0.306	<0.5	-	-	-
BH201_25	25	6	10	<1.0	<0.01	<0.306	4.0	-3.7	13.1	NAF
BH201_45	45	5.9	38	<1.0	0.01	0.3	0.5	-0.2	1.6	UNCERTAIN
BH201_65	65	6	16	<1.0	<0.01	<0.306	1.0	-0.7	3.3	NAF
BH201_85	85	8.1	52	1.8	0.02	0.6	18.9	-18.3	30.9	NAF
BH201_125	125	9.4	46	<1.0	0.17	5.2	18.1	-12.9	3.5	NAF
BH202_73	73	9.5	51	<1.0	0.06	1.8	8.8	-7.0	4.8	NAF
BH203_8	8	9	28	<1.0	0.07	2.1	9.3	-7.2	4.3	NAF
BH203_30	30	5.8	24	<1.0	<0.01	<0.306	0.8	-0.5	2.6	NAF
BH203_39	39	8	52	<1.0	<0.01	<0.306	3.3	-3.0	10.8	NAF
BH203_59	59	7.9	19	<1.0	<0.01	<0.306	3.6	-3.3	11.8	NAF
BH203_82.24	82.24	9.6	60	<1.0	<0.01	<0.306	11.2	-10.9	36.6	NAF

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
BH203_100	100	9.6	66	<1.0	0.01	0.3	20.1	-19.8	65.7	NAF
BH203_120	120	9	28	<1.0	<0.01	<0.306	10.1	-9.8	33.0	NAF
BH203_140	140	9.5	54	<1.0	0.03	0.9	13.8	-12.9	15.0	NAF
BH203_160	160	8.8	28	<1.0	0.01	0.3	8.4	-8.1	27.5	NAF
BH203_180	180	9.3	61	<1.0	0.02	0.6	16.4	-15.8	26.8	NAF
BH203_200	200	9.5	59	<1.0	0.01	0.3	16.9	-16.6	55.2	NAF
BH204_10	10	5.4	12	1.6	0.15	4.6	<0.5	4.1	0.1	PAF
BH204_30	30	4.8	70	2.3	0.07	2.1	<0.5	1.6	0.2	PAF
BH204_50	50	4.3	492	1.6	0.88	26.9	7.6	19.3	0.3	PAF
BH204_90	90	9.3	58	1.1	0.04	1.2	8.1	-6.9	6.6	NAF
BH204_110	110	8.8	22	<1.0	0.03	0.9	9.1	-8.2	9.9	NAF
BH204_130	130	9.5	60	<1.0	0.01	0.3	8.8	-8.5	28.8	NAF
BH204_150	150	7.3	50	<1.0	<0.01	<0.306	7.9	-7.6	25.8	NAF
BH204_170	170	9.4	58	<1.0	0.03	0.9	17.6	-16.7	19.2	NAF
BH204_190	190	9.6	60	1.2	0.07	2.1	55.1	-53.0	25.7	NAF

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
BH204_210	210	9.2	88	<1.0	0.6	18.4	12.2	6.2	0.7	PAF
BH204_230	230	8.9	186	<1.0	0.55	16.8	23.4	-6.6	1.4	UNCERTAIN
BH204_250	250	9.3	43	<1.0	0.05	1.5	15.7	-14.2	10.3	NAF
BH204_270	270	9.4	60	<1.0	0.03	0.9	23.3	-22.4	25.4	NAF
BH204_290	290	9.5	57	<1.0	0.02	0.6	80.9	-80.3	132.2	NAF
MB2201A_10	10	5.8	8	<1.0	-	-	-	-	-	-
MB2201A_30	30	5.7	8	-	-	-	-	-	-	-
MB2201A_50	50	4.1	116	6.3	-	-	-	-	-	-
MB2201A_70	70	6.6	82	-	-	-	-	-	-	-
MB2201A_90	90	6.9	54	4.1	-	-	-	-	-	-
MB2201A_110	110	9.2	51	3.6	-	-	-	-	-	-
MB2201A_130	130	9.2	62	2.5	-	-	-	-	-	-
MB2201A_150	150	9.2	70	1.7	-	-	-	-	-	-
MB2201A_170	170	9.1	49	2.9	-	-	-	-	-	-
MB2201A_190	190	9.2	66	4.7	-	-	-	-	-	-

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
MB2201B_10	10	5.6	9	-	-	-	-	-	-	-
MB2201B_30	30	6.5	9	-	-	-	-	-	-	-
MB2201B_50	50	5.6	19	-	-	-	-	-	-	-
MB2201B_70	70	7.2	105	-	-	-	-	-	-	-
MB2201B_90	90	7.4	124	-	-	-	-	-	-	-
MB2201B_110	110	8.8	42	-	-	-	-	-	-	-
MB2202A_10	10	5.5	72	4.6	-	-	-	-	-	-
MB2202A_30	30	6.5	16	5.9	-	-	-	-	-	-
MB2202A_50	50	8.8	34	3.8	-	-	-	-	-	-
MB2202A_70	70	8.8	33	5.4	-	-	-	-	-	-
MB2202A_90	90	9.1	46	4.9	-	-	-	-	-	-
MB2202A_110	110	9.4	65	-	-	-	-	-	-	-
MB2202A_130	130	9.1	57	4	-	-	-	-	-	-
MB2202A_150	150	9.2	52	5.5	-	-	-	-	-	-
MB2202B_10	10	5.3	20	1.2	-	-	-	-	-	-

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
MB2202B_30	30	6.2	20	8.8	-	-	-	-	-	-
MB2202B_50	50	8.7	34	10.4	-	-	-	-	-	-
MB2202B_70	70	8.8	36	9.7	-	-	-	-	-	-
MB2203A_10	10	9.1	58	<1.0	0.07	2.1	45.4	-43.3	21.2	NAF
MB2203A_30	30	9.3	58	<1.0	0.04	1.2	130.0	-128.8	106.2	NAF
MB2203A_50	50	9.1	85	<1.0	-	-	-	-	-	-
MB2203A_70	70	9.2	104	<1.0	-	-	-	-	-	-
MB2203A_90	90	9.3	59	1.7	-	-	-	-	-	-
MB2203A_110	110	9.4	62	<1.0	-	-	-	-	-	-
MB2203A_130	130	9.4	57	2.4	-	-	-	-	-	-
MB2203A_150	150	9.4	66	2.3	-	-	-	-	-	-
MB2203A_170	170	9.4	65	<1.0	-	-	-	-	-	-
MB2203B_10	10	9.2	65	5.1	-	-	-	-	-	-
MB2203B_30	30	9.4	56	8.3	-	-	-	-	-	-
MB2203B_50	50	9.1	44	8.7	-	-	-	-	-	-

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
MB2203B_65	65	9.2	106	3.3	-	-	-	-	-	-
MB2204A_7	7	7.7	40	<1.0	-	-	-	-	-	-
MB2204A_20	20	4.8	148	<1.0	-	-	-	-	-	-
MB2204A_40	40	3.7	166	<1.0	-	-	-	-	-	-
MB2204A_60	60	3	678	5.9	-	-	-	-	-	-
MB2204A_80	80	8.8	33	<1.0	-	-	-	-	-	-
MB2204A_100	100	9.2	86	1.3	-	-	-	-	-	-
MB2204A_120	120	9	82	3.9	-	-	-	-	-	-
MB2204A_140	140	9.2	86	2.2	-	-	-	-	-	-
MB2204A_160	160	9.2	69	7	-	-	-	-	-	-
MB2204A_180	180	8.8	72	<1.0	-	-	-	-	-	-
MB2204A_200	200	9	46	2.7	-	-	-	-	-	-
MB2204B_3	3	6.1	14	<1.0	-	-	-	-	-	-
MB2204B_8	8	6.8	41	5.4	-	-	-	-	-	-
MB2204B_40	40	3.4	700	1.5	-	-	-	-	-	-

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
MB2204B_60	60	3.6	387	2.4	-	-	-	-	-	-
MB2205A_10	10	5.4	10	<1.0	-	-	-	-	-	-
MB2205A_30	30	4.4	86	5.5	-	-	-	-	-	-
MB2205A_50	50	9.2	70	2.4	-	-	-	-	-	-
MB2205A_70	70	9.1	45	1.4	-	-	-	-	-	-
MB2205A_80	80	9.3	61	<1.0	-	-	-	-	-	-
MB2205A_110	110	9.3	85	3.2	-	-	-	-	-	-
MB2205A_130	130	9.2	66	2.8	-	-	-	-	-	-
MB2205A_150	150	9.2	59	2.7	-	-	-	-	-	-
MB2205A_170	170	9.1	41	6.8	-	-	-	-	-	-
MB2205A_190	190	8.7	48	4.2	-	-	-	-	-	-
MB2205B_10	10	5.3	23	2.5	-	-	-	-	-	-
MB2205B_30	30	2.9	1050	5.4	-	-	-	-	-	-
MB2205B_60	60	9.2	57	3.7	-	-	-	-	-	-
MB2206A_10	10	7.6	273	4.1	-	-	-	-	-	-

Table C.1 ABA laboratory testing results

Sample	Depth	pH (1:5)	Electrical conductivity (1:5)	Moisture content	Sulphur (as S)	MPA	ANC	NAPP	NPR	PRICE CLASS
	(m)	pH Unit	µS/cm		%	kg H2SO4/t	kg H2SO4/t	kg H2SO4/t		
MB2206A_30	30	7.8	292	5.9	-	-	-	-	-	-
MB2206A_50	50	7.9	294	5.5	-	-	-	-	-	-
MB2206A_70	70	-	-	3.5	-	-	-	-	-	-
MB2206B_10	10	6.9	8	<1.0	-	-	-	-	-	-
MB2206B_30	30	8.1	21	3.1	-	-	-	-	-	-
MB2206B_50	50	8.4	29	8.6	-	-	-	-	-	-
MB2206B_70	70	8.9	48	6	-	-	-	-	-	-

C.2 Whole sample metals and metalloids

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH101_10	0.2	14,300	4.1	<50	60.7	0.2	6.8	104	7.6	12,800	590	0.3	23.2	8.7	<0.1	3	73.8	5.4	0.5	41.8	0.7	11
BH101_19	0.1	1,880	0.7	<50	12.7	<0.1	0.5	4.8	0.5	1,390	22.8	<0.1	2.3	34.8	<0.1	<1	11.2	0.6	<0.1	5.6	0.1	1
BH101_49	<0.1	1,870	4.2	<50	8.6	<0.1	1.3	8.4	1.3	2,190	15.2	<0.1	3.8	0.4	0.2	<1	5.7	3.1	0.2	4.7	0.2	5
BH101_70	<0.1	2,720	0.9	<50	0.8	<0.1	1.6	11.4	4	3,270	30.7	<0.1	3.3	2.3	0.2	<1	27.2	4.7	0.1	10.7	0.3	6
BH102_19	<0.1	680	4.7	<50	7	<0.1	0.1	6.1	2	6,260	3.5	0.1	0.5	0.9	<0.1	2	1.3	<0.1	<0.1	2.7	0.6	8
BH103_19	<0.1	4,180	1.5	<50	5.6	<0.1	1.8	13	5.2	3,050	13.3	<0.1	6.6	0.7	<0.1	<1	20.1	5.4	0.3	8.3	0.3	8
BH103_50	<0.1	12,100	9	<50	26.8	<0.1	6.9	48.1	15.9	15,000	49	0.1	20.1	4.2	0.1	1	8.4	25.8	0.6	48	0.3	21
BH103_70	<0.1	9,040	1	<50	5.3	<0.1	0.5	9.1	1.2	14,100	49.1	<0.1	1.8	3.5	0.2	3	88.3	1.4	0.5	14.8	1.2	7
BH104_10	<0.1	16,300	35	<50	64.2	<0.1	11.7	83.1	16.2	26,700	114	<0.1	20.4	1.7	0.1	2	15	16.4	2.7	48.5	0.8	58
BH104_30	<0.1	5,940	25.1	<50	17	0.1	2.5	16.5	1.5	5,080	365	<0.1	6.3	9.7	0.3	2	18.8	1.4	0.4	21.1	0.6	5
BH104_50	<0.1	4,370	11.7	<50	4	<0.1	5	15.1	6.2	6,550	40.9	0.2	12.8	1.9	<0.1	<1	2.4	6.2	0.5	27.1	0.6	14
BH104_70	<0.1	10,400	58.4	<50	33.9	<0.1	8.3	45.3	11.6	19,000	341	0.1	22.1	6	0.9	6	23.3	13.7	1.2	41.6	0.8	31
BH104_80	<0.1	11,600	15.2	<50	13.7	<0.1	5.4	8.1	8.2	18,000	265	<0.1	11.1	3.8	0.1	2	16.3	2.2	0.2	18.7	0.3	8
BH104_100	<0.1	11,700	1,210	<50	14.9	<0.1	10.9	67	15.3	18,100	329	1.1	18.8	1.8	0.2	1	40.4	12.8	0.7	21	0.6	34

Table C.2 **Whole sample metals/metalloids concentrations summary**

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
BH104_120	0.2	10,600	17	<50	61.2	<0.1	4.7	78.3	12.7	14,000	92.7	0.2	10.7	1.9	0.2	2	35.5	9.5	0.4	14.5	0.7	11
BH104_140	<0.1	16,500	27.6	<50	36.5	<0.1	11	53.7	15.6	19,100	373	0.5	29.6	3.8	0.1	2	52.6	14.4	0.4	19.7	0.7	23
BH104_160	<0.1	5,270	48.6	<50	11.4	<0.1	4	80.8	4.7	10,200	318	0.5	12.2	2.9	0.1	2	15.8	10.7	0.3	20.2	0.8	12
BH104_180	<0.1	1,910	2.4	<50	6.2	<0.1	1.1	3.6	2.7	2,350	40.3	<0.1	3.1	0.8	<0.1	<1	11.7	2.2	<0.1	3	0.1	2
BH104_200	<0.1	15,900	22.6	<50	7.8	<0.1	18.1	42.6	20.6	43,700	1,040	0.2	11.1	3	0.1	4	90.2	17.2	0.5	57.6	0.1	99
BH104_220	<0.1	9,630	102	<50	3.3	0.1	0.9	63.4	2.2	4,800	674	13.7	2.8	2.2	2.2	1	85.8	1.9	0.4	10.6	0.3	2
BH104_240	<0.1	1,850	5.1	<50	4.3	<0.1	1	14.8	1.8	2,150	62	0.2	3.2	1.7	<0.1	<1	8.2	3.1	<0.1	4.7	0.2	4
BH104_249	<0.1	23,800	23	<50	12	<0.1	20.8	41.4	21.5	42,100	724	0.3	12.6	4.1	0.3	4	76.3	40.1	0.7	70.3	0.1	103
BH104_270	<0.1	3,340	42.1	<50	7.6	<0.1	2.8	40	3	18,900	141	14.6	8.8	0.8	1.5	<1	3.9	4.5	4.6	14.6	0.3	10
BH104_290	<0.1	710	57	<50	3	<0.1	3.6	7.3	6	7,070	49.9	0.2	10.4	2.9	1.1	<1	2.3	0.6	0.2	5	0.2	4
BH104_310	0.1	1,020	812	<50	5.5	<0.1	2.3	112	7	7,720	234	0.5	5.5	5.1	1.8	3	11	0.7	0.2	6.7	1	3
BH104_327	0.1	2,560	59.8	<50	15.3	<0.1	16.9	21.3	23	47,300	807	0.2	11.1	6.4	0.7	4	72.4	3	0.6	61.6	0.2	56
BH104_351	<0.1	2,670	14.1	<50	13.2	<0.1	4.6	19.6	5.1	5,200	166	<0.1	10.5	1.6	0.3	1	15	9	0.4	22.4	0.2	20
BH104_375	<0.1	1,870	164	<50	13.6	<0.1	5.6	56.9	1.2	16,500	433	<0.1	15.2	5.7	2.4	<1	12.6	2.2	0.6	43.9	0.5	23
BH105_10	<0.1	12,600	29	<50	35.9	<0.1	6.1	39.7	12.1	18,100	84.4	<0.1	11	2	0.6	<1	22.7	13.1	1.1	35.9	0.6	54
BH105_30	<0.1	2,460	18.8	<50	5.1	<0.1	3	26.2	3	8,020	149	<0.1	5.5	9.5	0.3	<1	3.7	3.4	61.2	15.6	0.4	6
BH105_50	<0.1	12,900	10.5	<50	8.4	<0.1	3.6	32.1	6.8	7,340	193	0.3	10.3	2.6	0.1	<1	59.9	7	1.2	16.4	0.7	19

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
BH105_70	<0.1	8,440	6.1	<50	7.5	<0.1	2.6	24.8	4	5,750	220	0.2	8	2	<0.1	<1	35.5	5.8	0.5	14.2	0.6	16
BH105_90	0.1	7,380	7.6	<50	2.5	<0.1	4.3	29.4	5.6	14,600	652	0.7	12.6	5.4	0.2	<1	44.8	5.4	0.4	13	0.5	8
BH105_110	<0.1	3,980	13.5	<50	3.5	<0.1	3.6	51.8	3.3	7,290	250	0.3	10.3	1.7	0.2	<1	20	8.6	0.6	14.1	0.7	12
BH105_130	<0.1	6,410	20.1	<50	24.2	<0.1	4.8	28.3	14.5	11,400	49.8	<0.1	13	1.2	<0.1	<1	3.4	14.9	14.9	13.9	0.4	19
BH105_150	<0.1	3,100	54.2	<50	1.9	<0.1	3.9	36	7.5	11,300	166	0.2	5.8	2.8	0.2	<1	22	5.9	0.3	10	0.6	7
BH105_170	0.6	23,900	64.5	<50	32.4	<0.1	13.8	38.8	54.8	27,000	199	0.2	17.1	2.2	0.1	<1	103	19.9	218	33.4	0.6	34
BH105_190	<0.1	4,440	19.6	<50	7.9	<0.1	2	17.5	5.6	4,620	86.7	0.2	5.8	1.2	<0.1	<1	20.9	8	3.3	12.8	0.6	14
BH105_210	<0.1	7,680	3.3	<50	4.7	0.1	2.5	18.1	9.9	6,970	467	<0.1	5.7	5.2	0.3	<1	48.5	6.2	0.3	20.1	0.6	3
BH105_230	<0.1	4,680	14.3	<50	3.2	<0.1	2.1	41.2	4.2	4,170	144	<0.1	5.2	2.5	<0.1	<1	23.3	6.1	0.2	19.6	0.3	6
BH105_250	0.2	3,300	105	<50	5	<0.1	4.6	54.4	3	11,800	405	0.2	12.4	5.1	4.4	<1	23	6.4	1.6	26.4	0.9	8
BH105_270	1.4	3,200	185	<50	8.5	<0.1	8.2	39.8	7.1	25,300	264	0.4	24.5	7.9	13	<1	22.2	5.1	0.7	30.1	0.5	8
BH105_290	<0.1	1,960	8.8	<50	8.2	<0.1	5.4	91.4	11.4	14,100	540	0.5	14	5.2	1	<1	26.2	3.5	8	19	0.4	8
BH105_310	<0.1	1,260	7	<50	1.4	<0.1	1.1	14.7	2.3	1,540	556	<0.1	4	1.4	<0.1	<1	36.8	0.5	<0.1	3.6	0.7	2
BH105_330	<0.1	2,950	40.9	<50	3.6	<0.1	3	107	11.8	11,100	265	0.4	9	2.4	0.4	<1	8.6	6.7	0.7	74.1	0.3	8
BH105_350	<0.1	3,300	70.5	<50	7.5	<0.1	2.5	60.9	6.3	12,100	642	0.7	7.1	2.8	0.2	<1	16.8	4.4	0.2	19.4	0.3	6
BH106_10	<0.1	25,300	10	<50	260	<0.1	7.3	60.5	22.4	37,800	230	0.1	83.4	32.3	<0.1	<1	1.6	12.2	2.6	54.8	3.3	71
BH106_30	0.1	5,490	16.3	<50	32.5	0.2	14.7	12	8	26,800	365	<0.1	19.8	40.6	0.2	<1	4	16.4	0.3	64.4	1.3	4

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
BH106_50	<0.1	6,200	0.7	<50	23	<0.1	3.4	24.1	24.6	7,780	309	0.3	8.1	1.3	<0.1	<1	8.2	11.7	0.1	22.9	0.2	9
BH106_70	<0.1	4,490	0.7	<50	6.5	<0.1	3.4	4.7	0.6	3,120	67.3	<0.1	6	1.2	<0.1	<1	8.9	16.9	0.2	20.1	0.2	2
BH106_90	<0.1	6,210	0.5	<50	7	<0.1	2.2	6.8	0.6	3,670	113	<0.1	5.2	0.9	<0.1	<1	20.2	12.6	<0.1	15.8	0.2	4
BH106_110	<0.1	18,000	2.1	<50	18.2	<0.1	5.3	46.1	15.3	17,100	349	0.4	13.8	1.9	<0.1	<1	58.2	32	57.9	43.4	0.4	20
BH106_130	<0.1	5,530	18.6	<50	9	<0.1	4.6	107	16.9	14,100	890	1.1	11	4.7	0.3	<1	18.8	13.1	1.2	18.9	0.5	16
BH106_150	<0.1	2,720	8.8	<50	4.9	<0.1	2.2	34.2	3.7	4,970	214	0.2	6	3.8	0.1	<1	4.4	6.4	19.1	15.2	0.3	6
BH106_170	<0.1	6,040	32.4	<50	18.5	<0.1	4.4	92.8	7.9	9,860	649	0.8	12.2	3.3	0.2	<1	69.4	11	5.8	15.7	0.4	9
BH106_190	<0.1	6,800	3.9	<50	6.8	<0.1	2.5	57.2	4.6	8,560	715	0.8	7.2	1.4	<0.1	<1	34.6	7	0.5	16.3	0.3	13
BH106_210	<0.1	7,550	1	<50	2.7	<0.1	0.8	15.5	1.9	2,690	1,110	0.1	2.4	1	<0.1	<1	110	2.1	0.2	7.8	0.4	4
BH107_10	<0.1	14,800	9.3	<50	57.3	<0.1	14.4	46.7	9.4	57,800	679	0.1	27.1	16.2	0.2	<1	13.5	24.8	1.5	74.5	0.5	30
BH107_30	<0.1	340	6.8	<50	4.4	<0.1	3.9	45.8	4.2	3,560	15.8	0.4	9.9	6.1	0.3	<1	1.4	0.3	0.4	11.7	0.3	2
BH108_10	<0.1	15,200	7.7	<50	80	<0.1	10.9	42.5	21.8	22,000	739	0.2	31.4	15.8	0.2	<1	13.2	32.6	7.7	140	0.9	41
BH108_30	<0.1	1,400	5.2	<50	6.6	<0.1	4.4	99.4	5.9	8,120	135	0.5	11	7.3	0.1	<1	3.1	2.8	3.4	27.2	0.4	5
BH108_50	<0.1	520	16.8	<50	5.3	<0.1	2.8	157	5.3	6,240	114	0.5	7.8	3.6	0.2	<1	2.6	0.7	11.7	12.4	0.3	3
BH108_70	0.1	6,990	21.3	<50	72.4	<0.1	4.5	202	6.7	12,200	394	0.5	12.4	4.8	0.3	<1	54	12.5	1.8	31.1	0.6	14
BH108_90	0.1	19,300	31.6	<50	22.6	<0.1	13.4	28.8	3.6	40,100	186	0.3	27.1	9.9	0.1	<1	21.2	59.6	73	140	0.5	27
BH108_110	<0.1	5,020	0.4	<50	6.2	<0.1	3.9	8	3	8,270	85	<0.1	7.4	4.1	<0.1	<1	8.4	16.9	1.5	23.2	0.7	7

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
BH201_1	<0.1	5,620	5.5	<50	0.5	<0.1	2.9	3.7	15.7	11,900	602	<0.1	6	1.9	0.5	3	14.3	19.8	0.2	19.4	0.1	5
BH201_5	<0.1	3,060	54.9	<50	19.7	<0.1	1.2	20.1	9.2	11,100	25.4	0.4	2.6	3.6	0.4	<1	2.1	1.3	0.4	7.1	0.8	6
BH201_25	<0.1	9,540	14.8	<50	30.3	<0.1	1.6	24.7	3.7	13,300	100	<0.1	15.9	1.9	0.2	3	7.9	7.3	0.7	25.7	0.7	10
BH201_45	1.2	3,800	20	<50	29.2	<0.1	41.1	14.9	7.1	43,400	236	0.1	94.2	32.9	0.8	10	18.4	1.7	0.7	179	1.5	20
BH201_65	<0.1	770	8.1	<50	1.9	<0.1	0.5	1.7	2.7	2,330	9.3	<0.1	0.7	0.6	<0.1	1	0.5	0.1	0.1	3.2	0.2	3
BH201_85	0.1	14,400	5	<50	8.9	0.3	8.2	72.3	4.6	23,400	2,670	0.1	17.1	33.8	<0.1	9	44.7	7.1	0.6	70.5	1.7	13
BH201_125	<0.1	5,720	2.2	<50	15.6	<0.1	2.3	37.2	13.8	7,430	254	0.3	6.7	5.1	<0.1	1	29.7	7.2	0.4	18.6	0.4	10
BH202_73	<0.1	4,430	0.9	<50	5	<0.1	2.3	7.6	3.1	4,830	25.9	<0.1	6.1	0.9	<0.1	<1	7.3	8	0.8	16.3	0.1	7
BH203_8	<0.1	18,800	1	<50	68.2	<0.1	8.5	32.1	9.6	29,400	102	0.1	23.5	1.5	<0.1	2	8.4	67.3	1.4	79.2	0.5	31
BH203_30	<0.1	16,900	3.8	<50	107	<0.1	33.5	37	18	40,300	845	<0.1	31.3	3.9	<0.1	6	1.3	54.3	1	138	0.8	46
BH203_39	<0.1	12,700	7.8	<50	58.2	<0.1	6.8	26.4	10.4	19,100	216	<0.1	13.2	8.8	<0.1	3	6	18.6	0.7	64.3	0.9	27
BH203_59	<0.1	9,380	2.2	<50	32.4	<0.1	11.5	15.5	7.8	15,700	206	<0.1	20	5.2	<0.1	2	11.2	27.7	0.3	37	1	16
BH203_82.24	<0.1	2,110	0.1	<50	6.4	<0.1	0.9	2.2	<0.1	1,480	57.4	<0.1	1.8	0.7	<0.1	<1	2.6	2.2	<0.1	6.1	0.1	4
BH203_100	<0.1	1,210	<0.1	<50	1.2	<0.1	0.7	0.9	1.1	1,440	18.2	<0.1	1.5	0.2	<0.1	<1	1.2	2.6	<0.1	4.5	0.1	<1
BH203_120	<0.1	15,000	0.6	<50	28.3	<0.1	9.6	19.5	2.2	22,900	90.5	<0.1	22.6	2.9	<0.1	2	8.7	33	0.4	77.5	0.8	24
BH203_140	0.2	4,650	0.4	<50	10.7	0.3	2.8	4.9	94.1	5,430	30.8	<0.1	5.2	1.1	<0.1	<1	8.2	10.4	0.1	21.8	0.2	5
BH203_160	<0.1	12,200	15.4	<50	39.8	<0.1	8.3	79.4	2.6	18,500	142	0.2	22.5	13.7	<0.1	2	4.3	23.6	0.5	47.1	0.6	18

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
BH203_180	<0.1	14,300	5.2	<50	34	<0.1	9.4	63.7	4.6	25,200	326	0.1	23.5	18	0.1	3	7	19.4	0.6	75.5	0.5	20
BH203_200	<0.1	710	31.4	<50	0.9	<0.1	2.3	2.2	0.2	1,040	48.9	<0.1	4	2.4	<0.1	<1	3.1	1.6	<0.1	5.9	0.2	1
BH204_10	<0.1	700	0.4	<50	17.6	<0.1	0.1	2.6	1.6	3,220	5.6	<0.1	0.2	3.7	<0.1	<1	5.5	<0.1	<0.1	1	<0.1	<1
BH204_30	0.2	730	45.1	<50	9.2	<0.1	0.5	15.8	4	4,540	6.8	0.2	1.6	6.2	1.6	1	10.3	<0.1	0.2	3	0.3	1
BH204_50	<0.1	22,100	3.6	<50	80.9	0.3	11.9	53.9	24.5	50,200	2,090	0.1	44.2	7.1	0.2	3	7.4	43.4	1.6	201	1	57
BH204_90	<0.1	16,600	1.2	<50	78.4	<0.1	9.7	36.6	30.1	26,100	163	<0.1	25.2	4.2	<0.1	2	53.2	35.8	0.9	59.2	0.6	30
BH204_110	<0.1	7,420	1.6	<50	10	<0.1	5.1	6.1	1.7	8,330	13.7	<0.1	15.4	1.8	<0.1	<1	9.6	9	0.1	14.6	0.2	3
BH204_130	<0.1	15,000	3.2	<50	38.5	<0.1	9.9	39	9.4	19,200	55.8	0.2	31	4.5	<0.1	2	26.6	49	0.8	56.4	0.7	18
BH204_150	<0.1	5,770	1.7	<50	34	<0.1	3.7	33.8	2	9,240	236	0.2	9.7	0.9	<0.1	<1	5.4	14.9	0.6	24	0.2	13
BH204_170	<0.1	7,100	8.4	<50	7.6	<0.1	6.3	19.5	1.3	13,500	124	<0.1	18.3	5.9	<0.1	2	16.6	25.5	0.5	46.5	0.2	13
BH204_190	<0.1	11,500	32	<50	46.3	0.1	7.8	45.4	24.7	20,100	420	0.1	19.9	8.7	0.3	3	71.2	27	0.9	44.2	0.8	27
BH204_210	0.9	6,810	2,850	<50	16.3	0.1	11.1	55.2	25.9	23,000	197	4.1	31.4	22.7	19.3	2	7.4	18.6	0.4	88.5	0.6	7
BH204_230	0.5	770	107	<50	6.4	<0.1	7.9	20.9	18.8	12,900	222	1.1	17.6	8	2	2	8.4	0.8	0.2	32.8	0.8	6
BH204_250	0.2	1,490	57.6	<50	4.4	<0.1	25.6	45.9	17.6	10,300	580	1.1	32.2	29.4	0.9	<1	7.7	3.5	<0.1	14.7	0.3	4
BH204_270	<0.1	340	3.4	<50	0.8	<0.1	0.8	3.9	0.8	1,170	96.3	<0.1	1.4	0.5	0.2	<1	5.8	1	<0.1	1.3	0.2	<1
BH204_290	<0.1	4,430	13.7	<50	10.1	<0.1	3.9	106	3.4	11,400	1,310	0.3	7.6	1.5	0.1	2	39.1	9.2	0.4	29.1	0.7	5
MB2201A_10	0.1	7,950	4.1	<50	37.2	<0.1	6.4	27	10.3	21,100	54.6	<0.1	12.1	1.6	<0.1	3	2.2	16.9	0.3	44.4	0.5	12

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
MB2201A_30	<0.1	6,000	17.7	<50	43.4	<0.1	2.9	22.6	14	24,400	44.3	1.4	10.2	4.1	<0.1	3	2.2	8.9	0.2	27.6	0.9	17
MB2201A_50	<0.1	2,410	8.1	<50	13.8	<0.1	3.4	8.6	9.7	12,200	54.8	0.2	7.1	4.2	0.1	3	2.1	3.4	<0.1	20.9	0.4	9
MB2201A_70	<0.1	5,380	2.3	<50	18.2	<0.1	5	19	10.2	14,500	160	<0.1	11.8	2.6	<0.1	2	1.4	9.5	0.1	30.2	0.4	13
MB2201A_90	<0.1	5,070	2.8	<50	8.5	<0.1	3.4	16	11.7	10,600	116	<0.1	8.2	2.8	<0.1	1	1.3	11.6	<0.1	39.4	0.3	11
MB2201A_110	<0.1	6,000	2.3	<50	2.6	<0.1	1.8	12.2	3.4	3,610	322	<0.1	3.4	9.9	<0.1	2	43.4	5.4	<0.1	13.6	2.4	10
MB2201A_130	<0.1	3,710	7	<50	5	<0.1	2.6	12.8	1.7	7,040	81	0.1	5	3.5	0.3	1	10.8	10.7	<0.1	16.9	0.3	8
MB2201A_150	<0.1	3,910	5.2	<50	3	<0.1	3.2	16.8	2.2	6,990	133	<0.1	6	3	<0.1	2	14.2	10.3	<0.1	15	0.4	9
MB2201A_170	<0.1	8,880	2.8	<50	14.3	<0.1	4.1	21.4	5	10,100	51.5	<0.1	9.8	1.9	<0.1	2	25.9	17.2	0.2	29.1	0.5	17
MB2201A_190	<0.1	8,210	1.3	<50	3.9	<0.1	1.8	11	3.7	3,820	131	<0.1	4.1	2.3	<0.1	2	99.7	6.3	0.1	20.8	2.6	7
MB2201B_10	<0.1	4,590	2.6	<50	19.4	<0.1	1.7	24.8	17.5	12,000	17.6	<0.1	4.5	11.2	<0.1	2	1.6	3.5	0.4	15.7	0.8	25
MB2201B_30	<0.1	5,400	4.2	<50	22	<0.1	3.3	21.1	15.1	21,700	53.5	<0.1	9	2.8	<0.1	4	1.3	7.5	0.1	36.9	0.7	16
MB2201B_50	<0.1	4,310	13.2	<50	35.1	<0.1	2.5	19.3	10	12,400	65	0.2	6.2	3.5	0.2	2	3.1	7.2	0.3	21.5	0.7	13
MB2201B_70	<0.1	1,920	2.7	<50	9.6	<0.1	3.2	10.5	7.6	12,600	97.3	<0.1	8	2	0.1	2	2.1	2.1	0.1	27.5	0.4	9
MB2201B_90	<0.1	5,980	12.7	<50	16.6	<0.1	6.3	18.5	14.1	13,800	160	0.1	13.2	2.7	<0.1	2	1.4	12.1	0.1	24.4	0.4	13
MB2201B_110	<0.1	4,850	3.1	<50	5	<0.1	2.4	9.8	3.8	6,630	107	<0.1	6.2	1.9	<0.1	<1	10.2	8.8	0.1	17.6	0.2	8
MB2202A_10	<0.1	2,570	38.3	<50	26.1	<0.1	0.4	12.2	11	16,300	4.5	0.1	1.1	6.3	0.3	2	10.9	0.5	0.4	7.8	3	16
MB2202A_30	<0.1	7,460	0.4	<50	60.7	<0.1	3.1	12.4	6.3	8,160	37.4	<0.1	8.5	0.9	<0.1	<1	6.5	18.3	0.5	26.2	0.4	12

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
MB2202A_50	<0.1	7,410	3.8	<50	10.2	0.1	3.9	5.4	2.5	4,890	149	<0.1	5.9	13.6	<0.1	3	26	17	<0.1	23.9	1.2	5
MB2202A_70	<0.1	7,820	0.3	<50	17.6	<0.1	4.6	7	12	8,330	134	<0.1	9.9	2.3	<0.1	1	13.6	24.1	<0.1	32	0.4	9
MB2202A_90	<0.1	5,390	0.2	<50	7.4	<0.1	3.8	3.8	0.2	4,140	100	<0.1	6.4	1.7	<0.1	<1	12.7	21.9	<0.1	24.4	0.3	3
MB2202A_110	<0.1	5,210	1.5	<50	5	<0.1	3.6	5.4	12	6,720	118	<0.1	7.4	1.7	<0.1	1	9.4	22.6	<0.1	24.6	0.3	4
MB2202A_130	<0.1	7,080	12.8	<50	14.8	<0.1	3	6.1	24.4	7,540	139	<0.1	5.3	7.2	<0.1	<1	16.3	24.3	0.2	20.8	0.3	8
MB2202A_150	<0.1	7,280	9.2	<50	11.1	<0.1	4.3	9.6	5.1	10,700	265	<0.1	8.8	4.1	<0.1	<1	21.5	22.2	0.3	21.5	0.3	10
MB2202B_10	<0.1	1,160	34.8	<50	2.7	<0.1	0.1	10	4.3	7,700	1.3	<0.1	0.3	3.2	0.2	<1	0.3	<0.1	0.2	3.4	1	15
MB2202B_30	<0.1	9,010	1.3	<50	58	<0.1	3.4	14.4	7.5	9,960	44.5	<0.1	8.9	2.1	<0.1	<1	7.3	17.4	0.3	30.6	0.4	15
MB2202B_50	<0.1	8,750	4.5	<50	10.9	<0.1	3.6	5.6	6.8	7,250	164	<0.1	9.5	23.4	<0.1	<1	15.5	19.9	0.2	28.7	0.4	8
MB2202B_70	<0.1	7,160	0.3	<50	14	<0.1	4.2	4	51.6	7,940	66.2	<0.1	8.7	2	<0.1	<1	15	19.5	<0.1	26.6	0.4	5
MB2203A_10	<0.1	8,040	5.8	<50	11.6	<0.1	2.3	14.2	8	6,620	66	<0.1	7.2	1.3	0.2	<1	34.4	8.4	0.3	20.8	0.3	13
MB2203A_30	<0.1	5,350	2.2	<50	6.7	<0.1	1.7	9.7	2.6	3,220	85.1	<0.1	5.1	1.7	<0.1	<1	39.4	5.6	0.2	15	0.4	8
MB2203A_50	<0.1	6,640	8	<50	27.8	<0.1	5.4	15.9	9.8	9,260	51.6	<0.1	14.4	2.5	0.1	<1	6.2	10.7	0.3	23.4	0.3	13
MB2203A_70	<0.1	5,540	1.9	<50	7.6	<0.1	2.5	12.2	4.4	4,840	33.4	<0.1	7.4	1.9	<0.1	<1	24.6	7.7	0.2	16.8	0.4	9
MB2203A_90	<0.1	3,560	3.2	<50	5.3	<0.1	1.6	13.1	4	3,910	34.5	<0.1	5.3	1.9	0.1	<1	17.1	5.8	0.2	11.3	0.4	8
MB2203A_110	<0.1	1,760	3.5	<50	1.7	<0.1	0.8	6.6	1.1	1,230	75.8	0.3	1.8	4.8	<0.1	<1	37	1.6	<0.1	8.7	0.4	2
MB2203A_130	<0.1	6,480	1.8	<50	6.1	<0.1	1.5	7.8	3.7	3,090	186	<0.1	4	1.4	<0.1	<1	41.3	3.5	0.2	9.4	0.4	7

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
MB2203A_150	<0.1	4,440	3	<50	5.1	<0.1	1.4	9.8	8	2,950	211	<0.1	3.4	1.4	<0.1	<1	23.1	3.1	0.2	12.1	0.7	7
MB2203A_170	<0.1	5,170	2	<50	5.6	<0.1	1.8	8.8	8.7	4,420	195	<0.1	4.1	1.4	<0.1	<1	22	5.1	0.1	14	0.5	8
MB2203B_10	<0.1	7,120	8	<50	12.2	<0.1	2.2	15.5	3.4	5,180	30.2	<0.1	7.7	1.2	<0.1	<1	20.1	7.5	0.2	12.8	0.3	13
MB2203B_30	<0.1	8,550	1.7	<50	10.2	<0.1	1.8	13	3.5	4,510	53.7	<0.1	6.7	1.8	<0.1	<1	41.3	5.7	0.1	10.8	0.4	9
MB2203B_50	<0.1	7,550	4.2	<50	14.6	<0.1	3.3	17.4	10.4	7,270	44.9	<0.1	8.3	1.4	0.1	<1	20.5	9.8	0.5	22	0.3	15
MB2203B_65	<0.1	6,230	1	<50	8.7	<0.1	1.4	8.9	5.1	2,890	56.4	<0.1	4.3	1.8	<0.1	<1	26.5	4.6	0.2	11.1	0.4	6
MB2204A_7	<0.1	13,500	5.5	<50	57.9	<0.1	6.2	24.8	13	15,500	198	0.1	12	5.3	<0.1	<1	39.9	25.2	1	42.6	0.3	32
MB2204A_20	<0.1	4,350	3.8	<50	37.4	<0.1	3.7	10	7.4	6,670	48.1	<0.1	11.2	3.4	<0.1	<1	7.4	13.9	0.2	18	0.2	8
MB2204A_40	<0.1	570	18.3	<50	3.5	<0.1	1.8	1.8	4.6	3,260	39.2	0.2	4.1	3.2	0.5	<1	1.4	0.4	<0.1	7	0.2	2
MB2204A_60	0.1	360	60.7	<50	2	<0.1	2.3	0.9	9.8	3,420	1.3	0.1	9	5	0.6	<1	0.9	<0.1	<0.1	3.1	0.3	<1
MB2204A_80	<0.1	8,910	6.5	<50	7.2	<0.1	3.2	11.3	7.3	7,560	68.7	<0.1	9.2	1.1	<0.1	<1	18.4	17.6	0.2	21	0.3	11
MB2204A_100	<0.1	5,660	11.3	<50	7	<0.1	4.4	9.6	11.2	8,140	141	0.2	11.1	8	0.1	<1	21.3	16.2	0.5	25.1	1.1	6
MB2204A_120	<0.1	11,300	9.1	<50	11.8	<0.1	8.3	20.8	21.8	24,000	107	0.2	26.9	4	0.3	<1	8.4	39.5	0.4	59.1	0.5	16
MB2204A_140	<0.1	10,200	10.7	<50	24.8	0.1	7.6	22.5	22.1	17,100	89.6	0.3	20.3	8.6	0.3	<1	13.7	31.6	0.5	49.6	0.8	17
MB2204A_160	<0.1	1,260	13.8	<50	1.7	<0.1	2.1	2.1	2.2	2,660	37.1	<0.1	5.3	6.4	0.2	<1	2.3	3.9	0.4	10	0.1	2
MB2204A_180	<0.1	5,900	2.9	<50	9.3	<0.1	2.8	6.1	5.7	10,800	43.9	<0.1	6.8	2.7	<0.1	<1	5.1	8.2	0.1	24.5	0.1	6
MB2204A_200	<0.1	6,450	0.2	<50	0.9	<0.1	0.2	0.5	0.4	10,600	2.5	<0.1	0.4	0.4	<0.1	<1	0.5	<0.1	<0.1	2.1	<0.1	<1

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
MB2204B_3	<0.1	840	8.5	<50	9.4	<0.1	0.7	5.3	4.7	3,830	9.5	0.1	2.8	5.1	<0.1	<1	3.8	2.9	0.2	7.7	0.3	5
MB2204B_8	<0.1	13,400	7.1	<50	77.9	<0.1	4	26.7	14	15,600	134	0.4	15.3	7.9	0.1	<1	31.4	18.1	0.9	41.5	0.5	27
MB2204B_40	0.1	720	23.2	<50	2.1	<0.1	5.8	2.4	14.6	5,950	59.2	0.2	14.2	15.6	0.6	<1	20.4	1.2	<0.1	15.8	0.3	3
MB2204B_60	<0.1	370	2	<50	2.1	<0.1	2.3	0.7	3.7	960	11.3	<0.1	5.2	2.1	0.1	<1	1.4	0.4	<0.1	7.3	0.3	<1
MB2205A_10	<0.1	920	4.7	<50	21.5	<0.1	0.2	4.1	2.9	5,050	2.8	0.1	0.4	15.2	0.3	<1	11.7	0.3	0.1	4.9	0.3	4
MB2205A_30	<0.1	670	15.9	<50	5.5	<0.1	2.3	2.2	2.8	19,900	1,280	<0.1	4.9	6.2	0.3	<1	3.1	0.6	0.1	9.7	0.6	4
MB2205A_50	<0.1	7,600	2.2	<50	26.4	<0.1	4	13.8	21.3	10,500	242	<0.1	11.7	5.1	0.1	<1	17.7	19.2	0.2	24.4	0.8	12
MB2205A_70	0.1	8,890	13.1	<50	12.1	<0.1	6.1	16.5	14.7	15,000	54.3	0.4	17.1	8.1	0.1	<1	11.5	25.6	0.3	35.8	0.3	12
MB2205A_80	<0.1	3,840	3.4	<50	3.6	<0.1	2.6	10.3	1.9	3,640	371	<0.1	5.3	2.5	<0.1	<1	39.2	7.2	0.3	15.1	0.2	8
MB2205A_110	<0.1	6,780	14.2	<50	10	<0.1	6.4	14.6	12.6	11,900	227	0.2	15.8	7	0.2	<1	24	19	0.6	40.4	0.3	11
MB2205A_130	<0.1	1,890	4.5	<50	1.4	<0.1	2.4	4.6	3.9	3,120	68.9	<0.1	6.2	4.5	0.3	<1	6.5	5.2	0.2	7.9	0.3	6
MB2205A_150	<0.1	1,260	8.9	<50	1.5	<0.1	1.3	2.9	2.2	2,810	175	<0.1	3.1	6	0.2	1	6	3.2	0.1	6.6	0.2	3
MB2205A_170	<0.1	5,940	3.8	<50	15.8	<0.1	3.1	9.4	4.7	6,660	79.1	<0.1	8.1	4	0.2	<1	8.8	19.6	0.5	27.3	0.2	11
MB2205A_190	<0.1	4,420	0.5	<50	9	<0.1	2.5	5.3	1.9	4,670	26.6	<0.1	5.8	1.2	0.1	<1	8.2	14.4	0.3	17.4	0.2	6
MB2205B_10	<0.1	320	3.9	<50	6	<0.1	<0.1	1	1.8	3,000	0.7	<0.1	0.1	2	0.3	<1	2.6	<0.1	<0.1	0.8	0.2	<1
MB2205B_30	<0.1	1,600	34.5	<50	26	<0.1	0.6	3.3	6.5	17,400	5.6	0.2	1.8	11.2	0.4	2	6.7	0.3	<0.1	3.9	1.1	10
MB2205B_60	<0.1	6,810	0.9	<50	26.9	<0.1	4.4	14.2	3.7	10,900	150	<0.1	9.7	4.9	<0.1	1	7.8	19.3	0.7	24	0.9	15

Table C.2 Whole sample metals/metalloids concentrations summary

	Silver	Aluminium	Arsenic	Boron	Barium	Cadmium	Cobalt	Chromium (III+VI)	Copper	Iron	Manganese	Molybdenum	Nickel	Lead	Antimony	Selenium	Strontium	Lithium	Tin	Zinc	Uranium	Vanadium
MB2206A_10	<0.1	6,040	0.5	<50	33.2	<0.1	4.2	3.9	0.6	4,740	120	<0.1	9	4.3	<0.1	1	5.7	15.2	0.3	20.5	0.6	5
MB2206A_30	<0.1	9,930	0.4	<50	12.5	<0.1	5.8	8.4	15.4	12,000	129	<0.1	12.9	4.7	<0.1	<1	17.8	25.4	0.2	50.5	0.4	11
MB2206A_50	<0.1	8,990	0.2	<50	13.8	<0.1	2.2	10.7	3.1	5,180	44.2	<0.1	5.8	0.7	<0.1	<1	10.3	9.8	0.3	16.2	0.2	13
MB2206A_70	<0.1	8,280	2.4	<50	15.5	<0.1	2	8.5	28	4,120	176	<0.1	3.5	5.7	<0.1	<1	14	9.8	0.2	21	0.3	10
MB2206B_10	<0.1	6,090	0.6	<50	42.4	<0.1	1.6	5.6	2	4,570	102	<0.1	6.4	1.7	<0.1	<1	3	6.6	0.4	18.5	0.6	7
MB2206B_30	<0.1	8,020	0.4	<50	4.8	<0.1	5.3	3.7	0.5	7,980	69	<0.1	8.6	3.3	<0.1	<1	12.6	22.8	<0.1	31.4	0.3	5
MB2206B_50	<0.1	15,500	2.1	<50	28.2	<0.1	3.2	15.2	182	7,880	96.1	<0.1	7.1	2.2	<0.1	1	26.2	10.6	0.6	27.5	0.3	19
MB2206B_70	<0.1	7,410	9	<50	7.7	<0.1	3.6	4	6.9	6,510	97.8	<0.1	7.9	2.3	<0.1	<1	9.6	18.1	0.1	20.8	0.4	6

Appendix D

Laboratory results and documentation

Mandatory Fields — CHAIN OF CUSTODY

Page ___of___

CoC # (if applicable)

CLIENT CODE	EMGAMM	*PROJECT MANAGER:	James Tuff	SAMPLER:	Ed Dawes
*CLIENT:	EMM CONSULTING PTY LTD	*PM MOBILE:	0450 340 432	SAMPLER MOBILE:	
OFFICE: (Invoiced Office)	Brisbane	ALS QUOTE # (Client PL if blank)		PURCHASE ORDER NO:	
PROJECT NO./PROJECT			E221111	SITE:	Lake Lyell
*INVOICE TO: (client default if nil)				X	CC Invoice to PM
*EMAIL REPORTS TO: (default to PM if blank)					

BIOSECURITY

Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** Please check box. Standard Storage time from receipt of samples: Waters - 3 weeks; Soils - 2 months

☐ Standard Storage
X Extended Storage
Specify Disposal Date: Please contact James Tuff and do not dispose
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box (Not all tests can be expedited, contact Client Services for more information)

X 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
Mark an X in the boxes below analysis to indicate the parameter listed above to be test sample.

Environmental Division
Sydney
Work Order Reference
ES2508095

Telephone: +61-2-8784 8555

	ALS Use Only Lab ID	Sample ID		Depth	Date/Time	No. Bottles	MATRIX: Soil (S) Water (W) Sediment (SD) Dust (D) Product (P) Biota (B)	EN020PR - Dry and store	EA032 - Conductivity - Saturated Paste	EA031 - pH (Saturated Paste)	ASS1 - NASP (includes ANC, Total S)	ME-025 - Total extractable metals via 2 acid digestion and ICP-MS (Full scan inc. Mercury)
	1		BH201	1		1	S	X	X	X	X	X
	2		BH201	5		1	S	X	X	X	X	X
	3		BH201	25		1	S	X	X	X	X	X
	4		BH201	45		1	S	X	X	X	X	X
	5		BH201	65		1	S	X	X	X	X	X
	6		BH201	85		1	S	X	X	X	X	X
	7		BH201	125		1	S	X	X	X	X	X
	8	SNR	BH202	63		1	S	X	X	X	X	X
8	9		BH202	73		1	S	X	X	X	X	X
9	10		BH203	8		1	S	X	X	X	X	X
10	11		BH203	30		1	S	X	X	X	X	X
11	12		BH203	50		1	S	X	X	X	X	X
12	13		BH203	60		1	S	X	X	X	X	X
13	14		BH203	82-84		1	S	X	X	X	X	X
14	15		BH203	100		1	S	X	X	X	X	X
15	16		BH203	120		1	S	X	X	X	X	X
16	17		BH203	140		1	S	X	X	X	X	X
17	18		BH203	160		1	S	X	X	X	X	X
18	19		BH203	180		1	S	X	X	X	X	X
19	20		BH203	200		1	S	X	X	X	X	X
	21	SNR	BH203	218		1	S	X	X	X	X	X
20	22		BH204	10		1	S	X	X	X	X	X
21	23		BH204	30		1	S	X	X	X	X	X
22	24		BH204	50		1	S	X	X	X	X	X
	25	SNR	BH204	70		1	S	X	X	X	X	X
23	26		BH204	90		1	S	X	X	X	X	X
24	27		BH204	110		1	S	X	X	X	X	X
25	28		BH204	130		1	S	X	X	X	X	X
26	29		BH204	150		1	S	X	X	X	X	X
27	30		BH204	170		1	S	X	X	X	X	X
88	31		BH204	190		1	S	X	X	X	X	X
29	32		BH204	210		1	S	X	X	X	X	X
30	33		BH204	230		1	S	X	X	X	X	X
31	34		BH204	250		1	S	X	X	X	X	X
32	35		BH204	270		1	S	X	X	X	X	X
33	36		BH204	290		1	S	X	X	X	X	X
34	37		BH101	10		1	S	X	X	X	X	X
35	38		BH101	18		1	S	X	X	X	X	X
36	39		BH101	40		1	S	X	X	X	X	X
37	40		BH101	70		1	S	X	X	X	X	X
38	41		BH102	19		1	S	X	X	X	X	X
	42	SNR	BH103	12		1	S	X	X	X	X	X
39	43		BH103	19		1	S	X	X	X	X	X
40	44		BH103	50		1	S	X	X	X	X	X
41	45		BH103	76		1	S	X	X	X	X	X
42	46		BH104	10		1	S	X	X	X	X	X
43	47		BH104	30		1	S	X	X	X	X	X
44	48		BH104	50		1	S	X	X	X	X	X

Subcon / Forward Lab / Split WO: ES2508174/8175
Lab / Analysis: Brisbane ALS-1
Organised By / Date: [illegible]
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

45	49		BH104		70		1	S	X	X	X	X	X							☐	☐	
46	50		BH104		80		1	S	X	X	X	X	X							☐	☐	
47	51		BH104		100		1	S	X	X	X	X	X							☐	☐	
48	52		BH104		120		1	S	X	X	X	X	X							☐	☐	
49	53		BH104		140		1	S	X	X	X	X	X							☐	☐	
50	54		BH104		160		1	S	X	X	X	X	X							☐	☐	
51	55		BH104		180		1	S	X	X	X	X	X							☐	☐	
52	56		BH104		200		1	S	X	X	X	X	X							☐	☐	
53	57		BH104		220		1	S	X	X	X	X	X							☐	☐	
54	58		BH104		240		1	S	X	X	X	X	X							☐	☐	
55	59		BH104		249		1	S	X	X	X	X	X							☐	☐	
56	60		BH104		270		1	S	X	X	X	X	X							☐	☐	
57			BH104		290		1	S	X	X	X	X	X							☐	☐	
58			BH104		310		1	S	X	X	X	X	X							☐	☐	
59			BH104		[illegible]		1	S	X	X	X	X	X							☐	☐	
60			BH104		359		1	S	X	X	X	X	X							☐	☐	
			BH104		375		1	S	X	X	X	X	X							☐	☐	
			BH105		10		1	S	X	X	X	X	X							☐	☐	
			BH105		30		1	S	X	X	X	X	X							☐	☐	
			BH105		50		1	S	X	X	X	X	X							☐	☐	
			BH105		70		1	S	X	X	X	X	X							☐	☐	
			BH105		90		1	S	X	X	X	X	X							☐	☐	
			BH105		110		1	S	X	X	X	X	X							☐	☐	
			BH105		130		1	S	X	X	X	X	X							☐	☐	
			BH105		150		1	S	X	X	X	X	X							☐	☐	
			BH105		170		1	S	X	X	X	X	X							☐	☐	
			BH105		190		1	S	X	X	X	X	X							☐	☐	
			BH105		210		1	S	X	X	X	X	X							☐	☐	
			BH105		230		1	S	X	X	X	X	X							☐	☐	
			BH105		250		1	S	X	X	X	X	X							☐	☐	
			BH105		270		1	S	X	X	X	X	X							☐	☐	
			BH105		290		1	S	X	X	X	X	X							☐	☐	
			BH105		310		1	S	X	X	X	X	X							☐	☐	
			BH105		330		1	S	X	X	X	X	X							☐	☐	
			BH105		350		1	S	X	X	X	X	X							☐	☐	
			BH106		10		1	S	X	X	X	X	X							☐	☐	
			BH106		30		1	S	X	X	X	X	X							☐	☐	
			BH106		50		1	S	X	X	X	X	X							☐	☐	
			BH106		70		1	S	X	X	X	X	X							☐	☐	
			BH106		90		1	S	X	X	X	X	X							☐	☐	
			BH106		110		1	S	X	X	X	X	X							☐	☐	
			BH106		130		1	S	X	X	X	X	X							☐	☐	
			BH106		150		1	S	X	X	X	X	X							☐	☐	
			BH106		170		1	S	X	X	X	X	X							☐	☐	
			BH106		190		1	S	X	X	X	X	X							☐	☐	
			BH106		210		1	S	X	X	X	X	X							☐	☐	
			BH107		10		1	S	X	X	X	X	X							☐	☐	
			BH107		24		1	S	X	X	X	X	X							☐	☐	
			BH108		10		1	S	X	X	X	X	X							☐	☐	
			BH108		30		1	S	X	X	X	X	X							☐	☐	
			BH108		50		1	S	X	X	X	X	X							☐	☐	
			BH108		70		1	S	X	X	X	X	X							☐	☐	
			BH108		90		1	S	X	X	X	X	X							☐	☐	
			BH108		110		1	S	X	X	X	X	X							☐	☐	
			MS2201A		10		1	S	X	X	X	X	X							☐	☐	
			MS2201A		30		1	S	X	X	X	X	X							☐	☐	
			MS2201A		50		1	S	X	X	X	X	X							☐	☐	
			MS2201A		70		1	S	X	X	X	X	X							☐	☐	
			MS2201A		90		1	S	X	X	X	X	X							☐	☐	
			MS2201A		110		1	S	X	X	X	X	X							☐	☐	
			MS2201A		130		1	S	X	X	X	X	X							☐	☐	
			MS2201A		150		1	S	X	X	X	X	X							☐	☐	
			MS2201A		170		1	S	X	X	X	X	X							☐	☐	
			MS2201A		190		1	S	X	X	X	X	X							☐	☐	
			MS2201B		10		1	S	X	X	X	X	X							☐	☐	
			MS2201B		30		1	S	X	X	X	X	X							☐	☐	

		MS2201B		50			1	$	X	X	X	X	X								☐	☐	
		MS2201B		70			1	$	X	X	X	X	X								☐	☐	
		MS2201B		90			1	$	X	X	X	X	X								☐	☐	
		MS2201B		110			1	$	X	X	X	X	X								☐	☐	
		MS2202A		10			1	$	X	X	X	X	X								☐	☐	
		MS2202A		30			1	$	X	X	X	X	X								☐	☐	
		MS2202A		50			1	$	X	X	X	X	X								☐	☐	
		MS2202A		70			1	$	X	X	X	X	X								☐	☐	
		MS2202A		90			1	$	X	X	X	X	X								☐	☐	
		MS2202A		110			1	$	X	X	X	X	X								☐	☐	
		MS2202A		130			1	$	X	X	X	X	X								☐	☐	
		MS2202A		150			1	$	X	X	X	X	X								☐	☐	
		MS2202B		10			1	$	X	X	X	X	X								☐	☐	
		MS2202B		30			1	$	X	X	X	X	X								☐	☐	
		MS2202B		50			1	$	X	X	X	X	X								☐	☐	
		MS2202B		70			1	$	X	X	X	X	X								☐	☐	
		MS2203A		10			1	$	X	X	X	X	X								☐	☐	
		MS2203A		30			1	$	X	X	X	X	X								☐	☐	
		MS2203A		50			1	$	X	X	X	X	X								☐	☐	
		MS2203A		70			1	$	X	X	X	X	X								☐	☐	
		MS2203A		90			1	$	X	X	X	X	X								☐	☐	
		MS2203A		110			1	$	X	X	X	X	X								☐	☐	
		MS2203A		130			1	$	X	X	X	X	X								☐	☐	
		MS2203A		150			1	$	X	X	X	X	X								☐	☐	
		MS2203A		170			1	$	X	X	X	X	X								☐	☐	
		MS2203B		10			1	$	X	X	X	X	X								☐	☐	
		MS2203B		30			1	$	X	X	X	X	X								☐	☐	
		MS2203B		50			1	$	X	X	X	X	X								☐	☐	
		MS2203B		66			1	$	X	X	X	X	X								☐	☐	
		MS2204A		7			1	$	X	X	X	X	X								☐	☐	
		MS2204A		20			1	$	X	X	X	X	X								☐	☐	
		MS2204A		40			1	$	X	X	X	X	X								☐	☐	
		MS2204A		60			1	$	X	X	X	X	X								☐	☐	
		MS2204A		80			1	$	X	X	X	X	X								☐	☐	
		MS2204A		100			1	$	X	X	X	X	X								☐	☐	
		MS2204A		120			1	$	X	X	X	X	X								☐	☐	
		MS2204A		140			1	$	X	X	X	X	X								☐	☐	
		MS2204A		160			1	$	X	X	X	X	X								☐	☐	
		MS2204A		183			1	$	X	X	X	X	X								☐	☐	
		MS2204A		200			1	$	X	X	X	X	X								☐	☐	
		MS2204B		5			1	$	X	X	X	X	X								☐	☐	
		MS2204B		8			1	$	X	X	X	X	X								☐	☐	
		MS2204B		40			1	$	X	X	X	X	X								☐	☐	
		MS2204B		60			1	$	X	X	X	X	X								☐	☐	
		MS2205A		10			1	$	X	X	X	X	X								☐	☐	
		MS2205A		30			1	$	X	X	X	X	X								☐	☐	
		MS2205A		50			1	$	X	X	X	X	X								☐	☐	
		MS2205A		70			1	$	X	X	X	X	X								☐	☐	
		MS2205A		90			1	$	X	X	X	X	X								☐	☐	
		MS2205A		110			1	$	X	X	X	X	X								☐	☐	
		MS2205A		130			1	$	X	X	X	X	X								☐	☐	
		MS2205A		150			1	$	X	X	X	X	X								☐	☐	
		MS2205A		170			1	$	X	X	X	X	X								☐	☐	
		MS2205A		190			1	$	X	X	X	X	X								☐	☐	
		MS2205B		10			1	$	X	X	X	X	X								☐	☐	
		MS2205B		30			1	$	X	X	X	X	X								☐	☐	
		MS2205B		50			1	$	X	X	X	X	X								☐	☐	
		MS2206A		10			1	$	X	X	X	X	X								☐	☐	
		MS2206A		30			1	$	X	X	X	X	X								☐	☐	
		MS2206A		50			1	$	X	X	X	X	X								☐	☐	
		MS2206A		70			1	$	X	X	X	X	X								☐	☐	
		MS2206B		10			1	$	X	X	X	X	X								☐	☐	
		MS2206B		30			1	$	X	X	X	X	X								☐	☐	
		MS2206B		50			1	$	X	X	X	X	X								☐	☐	
		MS2206B		70			1	$	X	X	X	X	X								☐	☐	

	BH202_30																					
	BH202_219																					
	BH203_60																					
	BH203_250																					
	Unlabelled_70																					
						15		X	X	X	X	X								☐	☐	

Receipt Detail (Lab Use ONLY) — Cooling Method: Ice Frozen / Melted; Ice Bricks Frozen / Thawed; None | Sample Temp at Receipt: °C °C °C | Security Seal Intact (circle): Yes / No / NA(None) | Carrier Details: ☐ Courier/Post ☐ Client; Con Note # | Packaging (Circle): Hard Esky / Foam Esky / Box/Bag/Other; Count # # #

Relinquished by: Edward Pelos	Signature:	Date/Time: 20/3/25 10:30am	Received by: I. Shawcross	Signature:	Date/Time: 20/03/25
Relinquished by:	Signature:	Date/Time:	Received by:	Signature:	Date/Time:

rec: FArc 21/3/25 11:32

CERTIFICATE OF ANALYSIS

Work Order	: **ES2508095**	Page	: 1 of 26
Client	: **EMM CONSULTING PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: JAMES TUFF	Contact	: Samiksha Sathish
Address	: The Forum Level 10 201 Pacific Highway St Leonards NSW NSW 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: E221111	Date Samples Received	: 21-Mar-2025 11:30
Order number	: ----	Date Analysis Commenced	: 28-Mar-2025
C-O-C number	: ----	Issue Date	: 23-Apr-2025 11:54
Sampler	: ED DAWES		
Site	: LAKE LYELL		
Quote number	: EN/111		
No. of samples received	: 60		
No. of samples analysed	: 60		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020T: Poor precision was obtained for Chromium, Copper and Manganese on sample ES2508095 # 001. Confirmed by redigestion and reanalysis.
- EG020: Poor precision was obtained for Zinc on sample ES2508095-#022. Confirmed by redigestion and reanalysis.
- EG005: Poor precision was obtained for Aluminium and Iron on sample ES2508095-#002 and #012. Confirmed by redigestion and reanalysis.
- EG020: Poor precision was obtained for Barium, Lithium and Manganese on sample ES2508095-#012. Confirmed by redigestion and reanalysis.
- EG020: Poor precision was obtained for Arsenic, Barium, Chromium, Copper, Thorium, Manganese, Nickel and Zinc on sample ES2508095-#002. Confirmed by redigestion and reanalysis.
- EG005: Poor precision was obtained for Aluminium and Iron for sample ES2508095 - #024 due to sample heterogenity. Results have been confirmed by redigestion and reanalysis.
- EG005: Poor precision was obtained for Aluminium on sample ES2508095-#010. Confirmed by redigestion and reanalysis.
- EG005: Poor precision was obtained for Iron on sample ES2508095-#060. Confirmed by redigestion and reanalysis.
- EG020T: Poor precision was obtained for some elements on sample ES2508095 # 024, #34, #41 and #51. Confirmed by redigestion and reanalysis.
- Split workorder - ES2508174 and ES2508175
- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH201_5	BH201_25	BH201_45	BH201_65	BH201_85
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-001	ES2508095-002	ES2508095-003	ES2508095-004	ES2508095-005
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**8.9**	**6.0**	**5.9**	**6.0**	**8.1**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**0.0**	**-4.0**	**-0.2**	**-1.0**	**-18.3**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**23**	**10**	**38**	**16**	**52**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	<0.5	**4.0**	**0.5**	**1.0**	**18.9**
ANC as CaCO3	----	0.1	% CaCO3	<0.1	**0.4**	<0.1	<0.1	**1.9**
Fizz Rating	----	0	Fizz Unit	**0**	**0**	**0**	**0**	**1**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	<1.0	**1.8**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	**0.01**	<0.01	**0.02**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**3060**	**9540**	**3800**	**770**	**14400**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**11100**	**13300**	**43400**	**2330**	**23400**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**54.9**	**14.8**	**20.0**	**8.1**	**5.0**
Selenium	7782-49-2	1	mg/kg	<1	**3**	**10**	**1**	**9**
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	**1.2**	<0.1	**0.1**
Barium	7440-39-3	0.1	mg/kg	**19.7**	**30.3**	**29.2**	**1.9**	**8.9**
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.2**	**0.2**	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	**0.3**	**3.1**	**0.1**	**0.9**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	**0.3**
Bismuth	7440-69-9	0.1	mg/kg	**0.3**	<0.1	**0.3**	<0.1	**0.3**
Cobalt	7440-48-4	0.1	mg/kg	**1.2**	**1.6**	**41.1**	**0.5**	**8.2**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH201_5	BH201_25	BH201_45	BH201_65	BH201_85
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-001	ES2508095-002	ES2508095-003	ES2508095-004	ES2508095-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**20.1**	**24.7**	**14.9**	**1.7**	**72.3**
Copper	7440-50-8	0.1	mg/kg	**9.2**	**3.7**	**7.1**	**2.7**	**4.6**
Thorium	7440-29-1	0.1	mg/kg	**6.3**	**5.5**	**9.1**	**1.0**	**23.4**
Manganese	7439-96-5	0.1	mg/kg	**25.4**	**100**	**236**	**9.3**	**2670**
Strontium	7440-24-6	0.1	mg/kg	**2.1**	**7.9**	**18.4**	**0.5**	**44.7**
Molybdenum	7439-98-7	0.1	mg/kg	**0.4**	<0.1	**0.1**	<0.1	**0.1**
Nickel	7440-02-0	0.1	mg/kg	**2.6**	**15.9**	**94.2**	**0.7**	**17.1**
Lead	7439-92-1	0.1	mg/kg	**3.6**	**1.9**	**32.9**	**0.6**	**33.8**
Antimony	7440-36-0	0.1	mg/kg	**0.4**	**0.2**	**0.8**	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.8**	**0.7**	**1.5**	**0.2**	**1.7**
Zinc	7440-66-6	0.5	mg/kg	**7.1**	**25.7**	**179**	**3.2**	**70.5**
Lithium	7439-93-2	0.1	mg/kg	**1.3**	**7.3**	**1.7**	**0.1**	**7.1**
Vanadium	7440-62-2	1	mg/kg	**6**	**10**	**20**	**3**	**13**
Tin	7440-31-5	0.1	mg/kg	**0.4**	**0.7**	**0.7**	**0.1**	**0.6**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH201_125	BH202_73	BH203_8	BH203_30	BH203_39
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-006	ES2508095-007	ES2508095-008	ES2508095-009	ES2508095-010
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.4**	**9.5**	**9.0**	**5.8**	**8.0**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-12.9**	**-7.0**	**-7.2**	**-0.8**	**-3.3**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**46**	**51**	**28**	**24**	**52**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**18.1**	**8.8**	**9.3**	**0.8**	**3.3**
ANC as CaCO3	----	0.1	% CaCO3	**1.8**	**0.9**	**1.0**	<0.1	**0.3**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**1**	**0**	**0**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.17**	**0.06**	**0.07**	<0.01	<0.01
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**5720**	**4430**	**18800**	**16900**	**12700**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**7430**	**4830**	**29400**	**40300**	**19100**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**2.2**	**0.9**	**1.0**	**3.8**	**7.8**
Selenium	7782-49-2	1	mg/kg	**1**	<1	**2**	**6**	**3**
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**15.6**	**5.0**	**68.2**	**107**	**58.2**
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	**0.4**	**1.3**	**0.5**
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	**0.5**	**1.8**	**1.6**	**1.1**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	**0.2**	**0.2**	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**2.3**	**2.3**	**8.5**	**33.5**	**6.8**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH201_125	BH202_73	BH203_8	BH203_30	BH203_39
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-006	ES2508095-007	ES2508095-008	ES2508095-009	ES2508095-010
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	37.2	7.6	32.1	37.0	26.4
Copper	7440-50-8	0.1	mg/kg	13.8	3.1	9.6	18.0	10.4
Thorium	7440-29-1	0.1	mg/kg	4.2	1.6	4.9	7.4	5.6
Manganese	7439-96-5	0.1	mg/kg	254	25.9	102	845	216
Strontium	7440-24-6	0.1	mg/kg	29.7	7.3	8.4	1.3	6.0
Molybdenum	7439-98-7	0.1	mg/kg	0.3	<0.1	0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	6.7	6.1	23.5	31.3	13.2
Lead	7439-92-1	0.1	mg/kg	5.1	0.9	1.5	3.9	8.8
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	0.4	0.1	0.5	0.8	0.9
Zinc	7440-66-6	0.5	mg/kg	18.6	16.3	79.2	138	64.3
Lithium	7439-93-2	0.1	mg/kg	7.2	8.0	67.3	54.3	18.6
Vanadium	7440-62-2	1	mg/kg	10	7	31	46	27
Tin	7440-31-5	0.1	mg/kg	0.4	0.8	1.4	1.0	0.7

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH203_59	BH203_82.24	BH203_100	BH203_120	BH203_140
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508095-011	ES2508095-012	ES2508095-013	ES2508095-014	ES2508095-015
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**7.9**	**9.6**	**9.6**	**9.0**	**9.5**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-3.6**	**-11.2**	**-19.8**	**-10.1**	**-12.9**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**19**	**60**	**66**	**28**	**54**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**3.6**	**11.2**	**20.1**	**10.1**	**13.8**
ANC as CaCO3	----	0.1	% CaCO3	**0.4**	**1.1**	**2.0**	**1.0**	**1.4**
Fizz Rating	----	0	Fizz Unit	**0**	**1**	**1**	**1**	**1**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	**0.01**	<0.01	**0.03**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**9380**	**2110**	**1210**	**15000**	**4650**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**15700**	**1480**	**1440**	**22900**	**5430**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**2.2**	**0.1**	<0.1	**0.6**	**0.4**
Selenium	7782-49-2	1	mg/kg	**2**	<1	<1	**2**	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	**0.2**
Barium	7440-39-3	0.1	mg/kg	**32.4**	**6.4**	**1.2**	**28.3**	**10.7**
Thallium	7440-28-0	0.1	mg/kg	**0.3**	**0.1**	<0.1	**0.3**	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**1.1**	<0.1	**0.2**	**1.8**	**0.5**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	**0.3**
Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	**0.4**
Cobalt	7440-48-4	0.1	mg/kg	**11.5**	**0.9**	**0.7**	**9.6**	**2.8**

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

			Sample ID	BH203_59	BH203_82.24	BH203_100	BH203_120	BH203_140
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508095-011	ES2508095-012	ES2508095-013	ES2508095-014	ES2508095-015
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**15.5**	**2.2**	**0.9**	**19.5**	**4.9**
Copper	7440-50-8	0.1	mg/kg	**7.8**	<0.1	**1.1**	**2.2**	**94.1**
Thorium	7440-29-1	0.1	mg/kg	**6.1**	**1.1**	**0.7**	**6.3**	**1.6**
Manganese	7439-96-5	0.1	mg/kg	**206**	**57.4**	**18.2**	**90.5**	**30.8**
Strontium	7440-24-6	0.1	mg/kg	**11.2**	**2.6**	**1.2**	**8.7**	**8.2**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**20.0**	**1.8**	**1.5**	**22.6**	**5.2**
Lead	7439-92-1	0.1	mg/kg	**5.2**	**0.7**	**0.2**	**2.9**	**1.1**
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**1.0**	**0.1**	**0.1**	**0.8**	**0.2**
Zinc	7440-66-6	0.5	mg/kg	**37.0**	**6.1**	**4.5**	**77.5**	**21.8**
Lithium	7439-93-2	0.1	mg/kg	**27.7**	**2.2**	**2.6**	**33.0**	**10.4**
Vanadium	7440-62-2	1	mg/kg	**16**	**4**	<1	**24**	**5**
Tin	7440-31-5	0.1	mg/kg	**0.3**	<0.1	<0.1	**0.4**	**0.1**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			*Sample ID*	BH201_1	BH203_160	BH203_180	BH203_200	BH204_10
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508095-016	ES2508095-017	ES2508095-018	ES2508095-019	ES2508095-020
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.1**	**8.8**	**9.3**	**9.5**	**5.4**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-66.0**	**-8.1**	**-15.8**	**-16.6**	**4.6**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**120**	**28**	**61**	**59**	**12**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**78.6**	**8.4**	**16.4**	**16.9**	<0.5
ANC as CaCO3	----	0.1	% CaCO3	**8.0**	**0.9**	**1.7**	**1.7**	<0.1
Fizz Rating	----	0	Fizz Unit	**2**	**0**	**1**	**1**	**0**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	<1.0	**1.6**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.41**	**0.01**	**0.02**	**0.01**	**0.15**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**5620**	**12200**	**14300**	**710**	**700**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**11900**	**18500**	**25200**	**1040**	**3220**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**5.5**	**15.4**	**5.2**	**31.4**	**0.4**
Selenium	7782-49-2	1	mg/kg	**3**	**2**	**3**	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**0.5**	**39.8**	**34.0**	**0.9**	**17.6**
Thallium	7440-28-0	0.1	mg/kg	**0.1**	**0.3**	**0.3**	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.3**	**1.3**	**1.4**	<0.1	<0.1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	**0.1**	**0.4**	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**2.9**	**8.3**	**9.4**	**2.3**	**0.1**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH201_1	BH203_160	BH203_180	BH203_200	BH204_10
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-016	ES2508095-017	ES2508095-018	ES2508095-019	ES2508095-020
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**3.7**	**79.4**	**63.7**	**2.2**	**2.6**
Copper	7440-50-8	0.1	mg/kg	**15.7**	**2.6**	**4.6**	**0.2**	**1.6**
Thorium	7440-29-1	0.1	mg/kg	**1.0**	**5.5**	**6.4**	**1.0**	**3.5**
Manganese	7439-96-5	0.1	mg/kg	**602**	**142**	**326**	**48.9**	**5.6**
Strontium	7440-24-6	0.1	mg/kg	**14.3**	**4.3**	**7.0**	**3.1**	**5.5**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	**0.2**	**0.1**	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**6.0**	**22.5**	**23.5**	**4.0**	**0.2**
Lead	7439-92-1	0.1	mg/kg	**1.9**	**13.7**	**18.0**	**2.4**	**3.7**
Antimony	7440-36-0	0.1	mg/kg	**0.5**	<0.1	**0.1**	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.1**	**0.6**	**0.5**	**0.2**	<0.1
Zinc	7440-66-6	0.5	mg/kg	**19.4**	**47.1**	**75.5**	**5.9**	**1.0**
Lithium	7439-93-2	0.1	mg/kg	**19.8**	**23.6**	**19.4**	**1.6**	<0.1
Vanadium	7440-62-2	1	mg/kg	**5**	**18**	**20**	**1**	<1
Tin	7440-31-5	0.1	mg/kg	**0.2**	**0.5**	**0.6**	<0.1	<0.1

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH204_30	BH204_50	BH204_90	BH204_110	BH204_130
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-021	ES2508095-022	ES2508095-023	ES2508095-024	ES2508095-025
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**4.8**	**4.3**	**9.3**	**8.8**	**9.5**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**2.1**	**19.3**	**-6.9**	**-8.2**	**-8.5**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**70**	**492**	**58**	**22**	**60**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	<0.5	**7.6**	**8.1**	**9.1**	**8.8**
ANC as CaCO3	----	0.1	% CaCO3	<0.1	**0.8**	**0.8**	**0.9**	**0.9**
Fizz Rating	----	0	Fizz Unit	**0**	**0**	**1**	**1**	**0**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**2.3**	**1.6**	**1.1**	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.07**	**0.88**	**0.04**	**0.03**	**0.01**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**730**	**22100**	**16600**	**7420**	**15000**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**4540**	**50200**	**26100**	**8330**	**19200**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**45.1**	**3.6**	**1.2**	**1.6**	**3.2**
Selenium	7782-49-2	1	mg/kg	**1**	**3**	**2**	<1	**2**
Silver	7440-22-4	0.1	mg/kg	**0.2**	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**9.2**	**80.9**	**78.4**	**10.0**	**38.5**
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.6**	**0.6**	<0.1	**0.3**
Beryllium	7440-41-7	0.1	mg/kg	<0.1	**2.3**	**1.3**	**0.7**	**2.0**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	**0.3**	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	**0.2**	**0.2**	<0.1	**0.1**
Cobalt	7440-48-4	0.1	mg/kg	**0.5**	**11.9**	**9.7**	**5.1**	**9.9**

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH204_30	BH204_50	BH204_90	BH204_110	BH204_130
Sampling date / time				19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508095-021	ES2508095-022	ES2508095-023	ES2508095-024	ES2508095-025
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	15.8	53.9	36.6	6.1	39.0
Copper	7440-50-8	0.1	mg/kg	4.0	24.5	30.1	1.7	9.4
Thorium	7440-29-1	0.1	mg/kg	3.2	8.7	7.0	1.4	9.0
Manganese	7439-96-5	0.1	mg/kg	6.8	2090	163	13.7	55.8
Strontium	7440-24-6	0.1	mg/kg	10.3	7.4	53.2	9.6	26.6
Molybdenum	7439-98-7	0.1	mg/kg	0.2	0.1	<0.1	<0.1	0.2
Nickel	7440-02-0	0.1	mg/kg	1.6	44.2	25.2	15.4	31.0
Lead	7439-92-1	0.1	mg/kg	6.2	7.1	4.2	1.8	4.5
Antimony	7440-36-0	0.1	mg/kg	1.6	0.2	<0.1	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	0.3	1.0	0.6	0.2	0.7
Zinc	7440-66-6	0.5	mg/kg	3.0	201	59.2	14.6	56.4
Lithium	7439-93-2	0.1	mg/kg	<0.1	43.4	35.8	9.0	49.0
Vanadium	7440-62-2	1	mg/kg	1	57	30	3	18
Tin	7440-31-5	0.1	mg/kg	0.2	1.6	0.9	0.1	0.8

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH204_150	BH204_170	BH204_190	BH204_210	BH204_230
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-026	ES2508095-027	ES2508095-028	ES2508095-029	ES2508095-030
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	7.3	9.4	9.6	9.2	8.9
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-7.9	-16.7	-53.0	6.2	-6.6
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	50	58	60	88	186
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	7.9	17.6	55.1	12.2	23.4
ANC as CaCO3	----	0.1	% CaCO3	0.8	1.8	5.6	1.2	2.4
Fizz Rating	----	0	Fizz Unit	0	1	2	1	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	1.2	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.03	0.07	0.60	0.55
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5770	7100	11500	6810	770
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	9240	13500	20100	23000	12900
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	1.7	8.4	32.0	2850	107
Selenium	7782-49-2	1	mg/kg	<1	2	3	2	2
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	0.9	0.5
Barium	7440-39-3	0.1	mg/kg	34.0	7.6	46.3	16.3	6.4
Thallium	7440-28-0	0.1	mg/kg	0.2	0.1	0.2	0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	0.3	0.8	1.4	0.8	0.5
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.1	0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	0.1	0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	3.7	6.3	7.8	11.1	7.9

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH204_150	BH204_170	BH204_190	BH204_210	BH204_230
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-026	ES2508095-027	ES2508095-028	ES2508095-029	ES2508095-030
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**33.8**	**19.5**	**45.4**	**55.2**	**20.9**
Copper	7440-50-8	0.1	mg/kg	**2.0**	**1.3**	**24.7**	**25.9**	**18.8**
Thorium	7440-29-1	0.1	mg/kg	**2.3**	**2.3**	**5.4**	**4.2**	**5.5**
Manganese	7439-96-5	0.1	mg/kg	**236**	**124**	**420**	**197**	**222**
Strontium	7440-24-6	0.1	mg/kg	**5.4**	**16.6**	**71.2**	**7.4**	**8.4**
Molybdenum	7439-98-7	0.1	mg/kg	**0.2**	<0.1	**0.1**	**4.1**	**1.1**
Nickel	7440-02-0	0.1	mg/kg	**9.7**	**18.3**	**19.9**	**31.4**	**17.6**
Lead	7439-92-1	0.1	mg/kg	**0.9**	**5.9**	**8.7**	**22.7**	**8.0**
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	**0.3**	**19.3**	**2.0**
Uranium	7440-61-1	0.1	mg/kg	**0.2**	**0.2**	**0.8**	**0.6**	**0.8**
Zinc	7440-66-6	0.5	mg/kg	**24.0**	**46.5**	**44.2**	**88.5**	**32.8**
Lithium	7439-93-2	0.1	mg/kg	**14.9**	**25.5**	**27.0**	**18.6**	**0.8**
Vanadium	7440-62-2	1	mg/kg	**13**	**13**	**27**	**7**	**6**
Tin	7440-31-5	0.1	mg/kg	**0.6**	**0.5**	**0.9**	**0.4**	**0.2**

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH204_250	BH204_270	BH204_290	BH101_10	BH101_19
Sampling date / time				19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508095-031	ES2508095-032	ES2508095-033	ES2508095-034	ES2508095-035
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.3**	**9.4**	**9.5**	**8.7**	**8.1**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-14.2**	**-22.4**	**-80.3**	**-18.8**	**-19.5**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**43**	**60**	**57**	**142**	**48**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**15.7**	**23.3**	**80.9**	**18.8**	**19.5**
ANC as CaCO3	----	0.1	% CaCO3	**1.6**	**2.4**	**8.2**	**1.9**	**2.0**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**2**	**1**	**1**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	**2.9**	**1.7**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.05**	**0.03**	**0.02**	<0.01	<0.01
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**1490**	**340**	**4430**	**14300**	**1880**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**10300**	**1170**	**11400**	**12800**	**1390**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**57.6**	**3.4**	**13.7**	**4.1**	**0.7**
Selenium	7782-49-2	1	mg/kg	<1	<1	**2**	**3**	<1
Silver	7440-22-4	0.1	mg/kg	**0.2**	<0.1	<0.1	**0.2**	**0.1**
Barium	7440-39-3	0.1	mg/kg	**4.4**	**0.8**	**10.1**	**60.7**	**12.7**
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.1**	<0.1	**0.6**	**0.9**	**0.2**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	**0.2**	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.5**	<0.1	<0.1	<0.1	**0.3**
Cobalt	7440-48-4	0.1	mg/kg	**25.6**	**0.8**	**3.9**	**6.8**	**0.5**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH204_250	BH204_270	BH204_290	BH101_10	BH101_19
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508095-031	ES2508095-032	ES2508095-033	ES2508095-034	ES2508095-035
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**45.9**	**3.9**	**106**	**104**	**4.8**
Copper	7440-50-8	0.1	mg/kg	**17.6**	**0.8**	**3.4**	**7.6**	**0.5**
Thorium	7440-29-1	0.1	mg/kg	**2.2**	**0.7**	**5.7**	**9.8**	**1.9**
Manganese	7439-96-5	0.1	mg/kg	**580**	**96.3**	**1310**	**590**	**22.8**
Strontium	7440-24-6	0.1	mg/kg	**7.7**	**5.8**	**39.1**	**73.8**	**11.2**
Molybdenum	7439-98-7	0.1	mg/kg	**1.1**	<0.1	**0.3**	**0.3**	<0.1
Nickel	7440-02-0	0.1	mg/kg	**32.2**	**1.4**	**7.6**	**23.2**	**2.3**
Lead	7439-92-1	0.1	mg/kg	**29.4**	**0.5**	**1.5**	**8.7**	**34.8**
Antimony	7440-36-0	0.1	mg/kg	**0.9**	**0.2**	**0.1**	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.3**	**0.2**	**0.7**	**0.7**	**0.1**
Zinc	7440-66-6	0.5	mg/kg	**14.7**	**1.3**	**29.1**	**41.8**	**5.6**
Lithium	7439-93-2	0.1	mg/kg	**3.5**	**1.0**	**9.2**	**5.4**	**0.6**
Vanadium	7440-62-2	1	mg/kg	**4**	<1	**5**	**11**	**1**
Tin	7440-31-5	0.1	mg/kg	<0.1	<0.1	**0.4**	**0.5**	<0.1

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH101_49	BH101_70	BH102_19	BH103_19	BH103_50
Sampling date / time				19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508095-036	ES2508095-037	ES2508095-038	ES2508095-039	ES2508095-040
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	7.5	9.3	6.2	7.1	9.3
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-8.6	-36.1	0.0	-17.2	-4.6
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	19	56	21	11	84
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	13.2	41.6	<0.5	20.6	9.2
ANC as CaCO3	----	0.1	% CaCO3	1.4	4.2	<0.1	2.1	0.9
Fizz Rating	----	0	Fizz Unit	1	2	0	1	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	4.3	<1.0	5.8
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.15	0.18	<0.01	0.11	0.15
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	1870	2720	680	4180	12100
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	2190	3270	6260	3050	15000
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	4.2	0.9	4.7	1.5	9.0
Selenium	7782-49-2	1	mg/kg	<1	<1	2	<1	1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	8.6	0.8	7.0	5.6	26.8
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3
Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.1	0.2	0.2	0.8
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	0.2	<0.1	<0.1	0.3
Cobalt	7440-48-4	0.1	mg/kg	1.3	1.6	0.1	1.8	6.9

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH101_49	BH101_70	BH102_19	BH103_19	BH103_50
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-036	ES2508095-037	ES2508095-038	ES2508095-039	ES2508095-040
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**8.4**	**11.4**	**6.1**	**13.0**	**48.1**
Copper	7440-50-8	0.1	mg/kg	**1.3**	**4.0**	**2.0**	**5.2**	**15.9**
Thorium	7440-29-1	0.1	mg/kg	**1.1**	**3.4**	**4.9**	**2.4**	**3.4**
Manganese	7439-96-5	0.1	mg/kg	**15.2**	**30.7**	**3.5**	**13.3**	**49.0**
Strontium	7440-24-6	0.1	mg/kg	**5.7**	**27.2**	**1.3**	**20.1**	**8.4**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	**0.1**
Nickel	7440-02-0	0.1	mg/kg	**3.8**	**3.3**	**0.5**	**6.6**	**20.1**
Lead	7439-92-1	0.1	mg/kg	**0.4**	**2.3**	**0.9**	**0.7**	**4.2**
Antimony	7440-36-0	0.1	mg/kg	**0.2**	**0.2**	<0.1	<0.1	**0.1**
Uranium	7440-61-1	0.1	mg/kg	**0.2**	**0.3**	**0.6**	**0.3**	**0.3**
Zinc	7440-66-6	0.5	mg/kg	**4.7**	**10.7**	**2.7**	**8.3**	**48.0**
Lithium	7439-93-2	0.1	mg/kg	**3.1**	**4.7**	<0.1	**5.4**	**25.8**
Vanadium	7440-62-2	1	mg/kg	**5**	**6**	**8**	**8**	**21**
Tin	7440-31-5	0.1	mg/kg	**0.2**	**0.1**	<0.1	**0.3**	**0.6**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH103_70	BH104_10	BH104_30	BH104_50	BH104_70
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-041	ES2508095-042	ES2508095-043	ES2508095-044	ES2508095-045
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.5**	**8.7**	**7.6**	**9.3**	**9.2**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-79.2**	**-8.0**	**-9.0**	**-47.6**	**-107**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**63**	**82**	**17**	**83**	**115**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**80.1**	**8.0**	**9.3**	**52.8**	**116**
ANC as CaCO3	----	0.1	% CaCO3	**8.2**	**0.8**	**0.9**	**5.4**	**11.9**
Fizz Rating	----	0	Fizz Unit	**2**	**0**	**1**	**2**	**3**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	**1.4**	<1.0	<1.0	**2.0**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.03**	<0.01	**0.01**	**0.17**	**0.29**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**9040**	**16300**	**5940**	**4370**	**10400**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**14100**	**26700**	**5080**	**6550**	**19000**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**1.0**	**35.0**	**25.1**	**11.7**	**58.4**
Selenium	7782-49-2	1	mg/kg	**3**	**2**	**2**	<1	**6**
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**5.3**	**64.2**	**17.0**	**4.0**	**33.9**
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.7**	<0.1	**0.2**	**0.3**
Beryllium	7440-41-7	0.1	mg/kg	**0.4**	**0.8**	**0.3**	**0.1**	**0.8**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	**0.2**	**0.3**	<0.1	**0.1**
Cobalt	7440-48-4	0.1	mg/kg	**0.5**	**11.7**	**2.5**	**5.0**	**8.3**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)

			Sample ID	BH103_70	BH104_10	BH104_30	BH104_50	BH104_70
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-041	ES2508095-042	ES2508095-043	ES2508095-044	ES2508095-045
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	9.1	83.1	16.5	15.1	45.3
Copper	7440-50-8	0.1	mg/kg	1.2	16.2	1.5	6.2	11.6
Thorium	7440-29-1	0.1	mg/kg	13.1	9.0	5.9	1.7	10.4
Manganese	7439-96-5	0.1	mg/kg	49.1	114	365	40.9	341
Strontium	7440-24-6	0.1	mg/kg	88.3	15.0	18.8	2.4	23.3
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	<0.1	0.2	0.1
Nickel	7440-02-0	0.1	mg/kg	1.8	20.4	6.3	12.8	22.1
Lead	7439-92-1	0.1	mg/kg	3.5	1.7	9.7	1.9	6.0
Antimony	7440-36-0	0.1	mg/kg	0.2	0.1	0.3	<0.1	0.9
Uranium	7440-61-1	0.1	mg/kg	1.2	0.8	0.6	0.6	0.8
Zinc	7440-66-6	0.5	mg/kg	14.8	48.5	21.1	27.1	41.6
Lithium	7439-93-2	0.1	mg/kg	1.4	16.4	1.4	6.2	13.7
Vanadium	7440-62-2	1	mg/kg	7	58	5	14	31
Tin	7440-31-5	0.1	mg/kg	0.5	2.7	0.4	0.5	1.2

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH104_80	BH104_100	BH104_120	BH104_140	BH104_160
Sampling date / time				19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508095-046	ES2508095-047	ES2508095-048	ES2508095-049	ES2508095-050
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	9.1	9.5	9.3	9.2	9.4
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-16.2	-16.8	-20.0	-11.9	-21.2
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	72	64	57	87	71
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	16.8	33.9	43.0	43.4	23.0
ANC as CaCO3	----	0.1	% CaCO3	1.7	3.5	4.4	4.4	2.3
Fizz Rating	----	0	Fizz Unit	1	2	2	2	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	1.9	<1.0	<1.0	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.02	0.56	0.75	1.03	0.06
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11600	11700	10600	16500	5270
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	18000	18100	14000	19100	10200
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	15.2	1210	17.0	27.6	48.6
Selenium	7782-49-2	1	mg/kg	2	1	2	2	2
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	13.7	14.9	61.2	36.5	11.4
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	0.4	0.4	0.4	0.6	0.3
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	0.4	0.7	1.1	0.6	0.1
Cobalt	7440-48-4	0.1	mg/kg	5.4	10.9	4.7	11.0	4.0

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH104_80	BH104_100	BH104_120	BH104_140	BH104_160
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-046	ES2508095-047	ES2508095-048	ES2508095-049	ES2508095-050
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**8.1**	**67.0**	**78.3**	**53.7**	**80.8**
Copper	7440-50-8	0.1	mg/kg	**8.2**	**15.3**	**12.7**	**15.6**	**4.7**
Thorium	7440-29-1	0.1	mg/kg	**4.2**	**8.4**	**6.9**	**9.0**	**5.8**
Manganese	7439-96-5	0.1	mg/kg	**265**	**329**	**92.7**	**373**	**318**
Strontium	7440-24-6	0.1	mg/kg	**16.3**	**40.4**	**35.5**	**52.6**	**15.8**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	**1.1**	**0.2**	**0.5**	**0.5**
Nickel	7440-02-0	0.1	mg/kg	**11.1**	**18.8**	**10.7**	**29.6**	**12.2**
Lead	7439-92-1	0.1	mg/kg	**3.8**	**1.8**	**1.9**	**3.8**	**2.9**
Antimony	7440-36-0	0.1	mg/kg	**0.1**	**0.2**	**0.2**	**0.1**	**0.1**
Uranium	7440-61-1	0.1	mg/kg	**0.3**	**0.6**	**0.7**	**0.7**	**0.8**
Zinc	7440-66-6	0.5	mg/kg	**18.7**	**21.0**	**14.5**	**19.7**	**20.2**
Lithium	7439-93-2	0.1	mg/kg	**2.2**	**12.8**	**9.5**	**14.4**	**10.7**
Vanadium	7440-62-2	1	mg/kg	**8**	**34**	**11**	**23**	**12**
Tin	7440-31-5	0.1	mg/kg	**0.2**	**0.7**	**0.4**	**0.4**	**0.3**

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH104_180	BH104_200	BH104_220	BH104_240	BH104_249
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508095-051	ES2508095-052	ES2508095-053	ES2508095-054	ES2508095-055
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	9.5	9.0	9.7	9.5	9.2
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-36.5	-159	-160	-33.8	-115
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	68	87	73	52	86
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	41.4	163	161	34.4	124
ANC as CaCO3	----	0.1	% CaCO3	4.2	16.6	16.4	3.5	12.6
Fizz Rating	----	0	Fizz Unit	2	3	3	2	3
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	6.2	<1.0	<1.0	3.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.16	0.12	0.02	0.02	0.29
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	1910	15900	9630	1850	23800
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	2350	43700	4800	2150	42100
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	2.4	22.6	102	5.1	23.0
Selenium	7782-49-2	1	mg/kg	<1	4	1	<1	4
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	6.2	7.8	3.3	4.3	12.0
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.7	0.3	<0.1	0.5
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Cobalt	7440-48-4	0.1	mg/kg	1.1	18.1	0.9	1.0	20.8

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH104_180	BH104_200	BH104_220	BH104_240	BH104_249
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-051	ES2508095-052	ES2508095-053	ES2508095-054	ES2508095-055
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**3.6**	**42.6**	**63.4**	**14.8**	**41.4**
Copper	7440-50-8	0.1	mg/kg	**2.7**	**20.6**	**2.2**	**1.8**	**21.5**
Thorium	7440-29-1	0.1	mg/kg	**1.5**	**1.5**	**2.3**	**1.4**	**1.6**
Manganese	7439-96-5	0.1	mg/kg	**40.3**	**1040**	**674**	**62.0**	**724**
Strontium	7440-24-6	0.1	mg/kg	**11.7**	**90.2**	**85.8**	**8.2**	**76.3**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	**0.2**	**13.7**	**0.2**	**0.3**
Nickel	7440-02-0	0.1	mg/kg	**3.1**	**11.1**	**2.8**	**3.2**	**12.6**
Lead	7439-92-1	0.1	mg/kg	**0.8**	**3.0**	**2.2**	**1.7**	**4.1**
Antimony	7440-36-0	0.1	mg/kg	<0.1	**0.1**	**2.2**	<0.1	**0.3**
Uranium	7440-61-1	0.1	mg/kg	**0.1**	**0.1**	**0.3**	**0.2**	**0.1**
Zinc	7440-66-6	0.5	mg/kg	**3.0**	**57.6**	**10.6**	**4.7**	**70.3**
Lithium	7439-93-2	0.1	mg/kg	**2.2**	**17.2**	**1.9**	**3.1**	**40.1**
Vanadium	7440-62-2	1	mg/kg	**2**	**99**	**2**	**4**	**103**
Tin	7440-31-5	0.1	mg/kg	<0.1	**0.5**	**0.4**	<0.1	**0.7**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH104_270	BH104_290	BH104_310	BH104_327	BH104_351
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-056	ES2508095-057	ES2508095-058	ES2508095-059	ES2508095-060
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.2**	**9.4**	**9.2**	**9.0**	**9.3**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-14.8**	**4.8**	**-37.0**	**-98.4**	**-29.6**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**86**	**56**	**94**	**138**	**87**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**44.2**	**16.0**	**49.2**	**110**	**32.1**
ANC as CaCO3	----	0.1	% CaCO3	**4.5**	**1.6**	**5.0**	**11.3**	**3.3**
Fizz Rating	----	0	Fizz Unit	**2**	**1**	**2**	**3**	**2**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	**1.9**	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.96**	**0.68**	**0.40**	**0.38**	**0.08**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**3340**	**710**	**1020**	**2560**	**2670**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**18900**	**7070**	**7720**	**47300**	**5200**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**42.1**	**57.0**	**812**	**59.8**	**14.1**
Selenium	7782-49-2	1	mg/kg	<1	<1	**3**	**4**	**1**
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	**0.1**	**0.1**	<0.1
Barium	7440-39-3	0.1	mg/kg	**7.6**	**3.0**	**5.5**	**15.3**	**13.2**
Thallium	7440-28-0	0.1	mg/kg	**0.1**	**0.3**	<0.1	**0.1**	**0.2**
Beryllium	7440-41-7	0.1	mg/kg	**0.3**	**0.1**	**0.2**	**1.3**	**0.3**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	**0.1**	**4.7**	**0.4**	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**2.8**	**3.6**	**2.3**	**16.9**	**4.6**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH104_270	BH104_290	BH104_310	BH104_327	BH104_351
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508095-056	ES2508095-057	ES2508095-058	ES2508095-059	ES2508095-060
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**40.0**	**7.3**	**112**	**21.3**	**19.6**
Copper	7440-50-8	0.1	mg/kg	**3.0**	**6.0**	**7.0**	**23.0**	**5.1**
Thorium	7440-29-1	0.1	mg/kg	**1.8**	**1.6**	**3.6**	**1.9**	**1.4**
Manganese	7439-96-5	0.1	mg/kg	**141**	**49.9**	**234**	**807**	**166**
Strontium	7440-24-6	0.1	mg/kg	**3.9**	**2.3**	**11.0**	**72.4**	**15.0**
Molybdenum	7439-98-7	0.1	mg/kg	**14.6**	**0.2**	**0.5**	**0.2**	<0.1
Nickel	7440-02-0	0.1	mg/kg	**8.8**	**10.4**	**5.5**	**11.1**	**10.5**
Lead	7439-92-1	0.1	mg/kg	**0.8**	**2.9**	**5.1**	**6.4**	**1.6**
Antimony	7440-36-0	0.1	mg/kg	**1.5**	**1.1**	**1.8**	**0.7**	**0.3**
Uranium	7440-61-1	0.1	mg/kg	**0.3**	**0.2**	**1.0**	**0.2**	**0.2**
Zinc	7440-66-6	0.5	mg/kg	**14.6**	**5.0**	**6.7**	**61.6**	**22.4**
Lithium	7439-93-2	0.1	mg/kg	**4.5**	**0.6**	**0.7**	**3.0**	**9.0**
Vanadium	7440-62-2	1	mg/kg	**10**	**4**	**3**	**56**	**20**
Tin	7440-31-5	0.1	mg/kg	**4.6**	**0.2**	**0.2**	**0.6**	**0.4**

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(SOIL) EA009: Net Acid Production Potential

(SOIL) ED042T: Total Sulfur by LECO

(SOIL) EA013: Acid Neutralising Capacity

QUALITY CONTROL REPORT

Work Order	: **ES2508095**	Page	: 1 of 18
Client	: **EMM CONSULTING PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: JAMES TUFF	Contact	: Samiksha Sathish
Address	: The Forum Level 10 201 Pacific Highway St Leonards NSW NSW 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: E221111	Date Samples Received	: 21-Mar-2025
Order number	: ----	Date Analysis Commenced	: 28-Mar-2025
C-O-C number	: ----	Issue Date	: 23-Apr-2025
Sampler	: ED DAWES		
Site	: LAKE LYELL		
Quote number	: EN/111		
No. of samples received	: 60		
No. of samples analysed	: 60		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	**Sample ID**	**Method: Compound**	**CAS Number**	**LOR**	**Unit**	**Original Result**	**Duplicate Result**	**RPD (%)**	**Acceptable RPD (%)**
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6473457)									
ES2508095-001	BH201_5	EG005T: Aluminium	7429-90-5	50	mg/kg	3060	2740	11.0	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	11100	12900	15.0	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6497766)									
ES2508095-002	BH201_25	EG005T: Aluminium	7429-90-5	50	mg/kg	9540	# 6970	31.1	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	13300	# 9520	33.1	0% - 20%
ES2508095-012	BH203_82.24	EG005T: Aluminium	7429-90-5	50	mg/kg	2110	# 1590	28.1	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	1480	1260	15.9	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6497770)									
ES2510115-004	Anonymous	EG005T: Aluminium	7429-90-5	50	mg/kg	730	700	4.0	0% - 50%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	9140	8600	6.1	0% - 20%
ES2508095-022	BH204_50	EG005T: Aluminium	7429-90-5	50	mg/kg	22100	20100	9.3	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	50200	41400	19.1	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6517324)									
ES2508095-024	BH204_110	EG005T: Aluminium	7429-90-5	50	mg/kg	7420	# 10300	32.3	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6517324) - continued									
ES2508095-024	BH204_110	EG005T: Iron	7439-89-6	50	mg/kg	8330	# 11200	29.6	0% - 20%
ES2508095-034	BH101_10	EG005T: Aluminium	7429-90-5	50	mg/kg	14300	16000	11.3	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	12800	14700	13.9	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6517329)									
ES2508095-050	BH104_160	EG005T: Aluminium	7429-90-5	50	mg/kg	5270	5170	1.9	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	10200	11200	10.1	0% - 20%
EB2512600-003	Anonymous	EG005T: Aluminium	7429-90-5	50	mg/kg	6790	5790	15.9	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	23200	23400	0.7	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6517335)									
ES2508095-060	BH104_351	EG005T: Aluminium	7429-90-5	50	mg/kg	2670	3180	17.3	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	5200	# 6940	28.6	0% - 20%
ES2510689-010	Anonymous	EG005T: Aluminium	7429-90-5	50	mg/kg	3250	# 4540	33.0	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	8390	8450	0.7	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 6514210)									
ES2508095-001	BH201_5	EA002: pH Value	----	0.1	pH Unit	8.9	9.0	0.0	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 6517316)									
ES2508095-009	BH203_30	EA002: pH Value	----	0.1	pH Unit	5.8	5.8	0.0	0% - 20%
ES2508095-019	BH203_200	EA002: pH Value	----	0.1	pH Unit	9.5	9.4	0.0	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 6517318)									
ES2508095-029	BH204_210	EA002: pH Value	----	0.1	pH Unit	9.2	9.0	2.4	0% - 20%
ES2508095-039	BH103_19	EA002: pH Value	----	0.1	pH Unit	7.1	8.2	15.3	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 6517336)									
ES2508095-041	BH103_70	EA002: pH Value	----	0.1	pH Unit	9.5	9.5	0.0	0% - 20%
ES2508095-051	BH104_180	EA002: pH Value	----	0.1	pH Unit	9.5	9.4	1.3	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 6514211)									
ES2508095-001	BH201_5	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	23	23	0.0	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 6517317)									
ES2508095-009	BH203_30	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	24	29	17.1	0% - 20%
ES2508095-019	BH203_200	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	59	64	7.5	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 6517319)									
ES2508095-029	BH204_210	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	88	89	0.0	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EA010: Conductivity (1:5) (QC Lot: 6517319) - continued									
ES2508095-039	BH103_19	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	11	16	35.5	0% - 50%
EA010: Conductivity (1:5) (QC Lot: 6517337)									
ES2508095-041	BH103_70	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	63	68	7.8	0% - 20%
ES2508095-051	BH104_180	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	68	69	0.0	0% - 20%
EA013: Acid Neutralising Capacity (QC Lot: 6509326)									
ES2508095-001	BH201_5	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	<0.5	<0.5	0.0	No Limit
ES2508095-011	BH203_59	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	3.6	3.4	8.3	No Limit
EA013: Acid Neutralising Capacity (QC Lot: 6509327)									
ES2508095-021	BH204_30	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	<0.5	<0.5	0.0	No Limit
ES2508095-031	BH204_250	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	15.7	14.7	6.6	0% - 20%
EA013: Acid Neutralising Capacity (QC Lot: 6509328)									
ES2508095-041	BH103_70	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	80.1	75.7	5.6	0% - 20%
ES2508095-051	BH104_180	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	41.4	42.4	2.3	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6473460)									
ES2508095-001	BH201_5	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6497777)									
ES2508095-002	BH201_25	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
ES2508095-010	BH203_39	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6497778)									
ES2508095-022	BH204_50	EA055: Moisture Content	----	0.1 (1.0)*	%	1.6	5.3	108	No Limit
ES2509932-006	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	10.3	10.1	1.9	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6517326)									
ES2508095-024	BH204_110	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
ES2508095-032	BH204_270	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6517338)									
EB2512600-003	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	7.6	8.6	13.0	No Limit
ES2508095-048	BH104_120	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6517339)									
ES2508095-060	BH104_351	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
ES2510689-009	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	20.0	18.8	6.5	0% - 20%
ED042T: Total Sulfur by LECO (QC Lot: 6519409)									

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
ED042T: Total Sulfur by LECO (QC Lot: 6519409) - continued									
ES2508095-001	BH201_5	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	0.0	No Limit
ES2508095-011	BH203_59	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	0.0	No Limit
ED042T: Total Sulfur by LECO (QC Lot: 6519410)									
ES2508095-021	BH204_30	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.07	0.06	16.2	No Limit
ES2508095-031	BH204_250	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.05	0.05	0.0	No Limit
ED042T: Total Sulfur by LECO (QC Lot: 6519430)									
ES2508095-041	BH103_70	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.03	0.03	0.0	No Limit
ES2508095-051	BH104_180	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.16	0.16	0.0	0% - 50%
EG020T: Total Metals by ICP-MS (QC Lot: 6473455)									
ES2508095-001	BH201_5	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.3	0.9	90.2	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	6.3	6.7	6.6	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6473456)									
ES2508095-001	BH201_5	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6473458)									
ES2508095-001	BH201_5	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	54.9	54.5	0.6	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	19.7	23.3	16.9	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.2	0.3	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	1.2	1.6	23.9	0% - 50%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	20.1	# 27.8	32.3	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	9.2	# 11.6	22.6	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	25.4	# 31.9	22.5	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	0.4	0.7	62.5	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	2.6	3.2	17.7	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	3.6	4.4	18.5	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.4	0.8	63.3	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.8	1.1	37.1	0% - 50%
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	1.3	1.7	25.9	0% - 50%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.4	0.5	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	7.1	8.6	19.2	0% - 50%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	6	10	45.2	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6497763)									
ES2508095-002	BH201_25	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	14.8	# 10.9	30.8	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	30.3	# 24.4	21.5	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.3	0.2	65.5	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 6497763) - continued									
ES2508095-002	BH201_25	EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	1.6	1.1	43.0	0% - 50%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	24.7	# 16.2	41.2	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	3.7	# 2.6	35.4	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	100	# 127	23.8	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	15.9	# 12.6	23.2	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	1.9	1.5	21.2	0% - 50%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.2	0.1	59.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.7	0.2	109	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	7.3	8.4	13.9	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.7	0.5	35.8	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	25.7	# 20.2	23.8	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	10	7	40.2	0% - 50%
ES2508095-012	BH203_82.24	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	0.1	0.2	0.0	No Limit
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	6.4	# 4.9	26.3	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	0.9	0.5	45.8	No Limit
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	2.2	2.1	6.9	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	57.4	# 29.7	63.4	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	1.8	2.1	16.0	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	0.7	0.5	33.2	No Limit
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.1	0.1	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	2.2	# 1.4	40.4	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	6.1	3.9	44.7	0% - 50%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	4	2	71.6	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6497764)									
ES2508095-002	BH201_25	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	0.2	<0.1	81.7	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	5.5	# 4.1	29.4	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	3	2	60.9	No Limit
ES2508095-012	BH203_82.24	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG020T: Total Metals by ICP-MS (QC Lot: 6497764) - continued									
ES2508095-012	BH203_82.24	EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	1.1	0.9	19.6	0% - 50%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6497765)									
ES2508095-002	BH201_25	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2508095-012	BH203_82.24	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6497767)									
ES2508095-022	BH204_50	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	3.6	4.2	13.5	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	80.9	78.5	3.0	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	2.3	2.3	0.0	0% - 20%
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	11.9	12.6	5.2	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	53.9	52.7	2.2	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	24.5	27.2	10.7	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	2090	2130	1.9	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	0.1	0.2	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	44.2	42.1	5.0	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	7.1	8.6	18.7	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	1.0	1.0	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	43.4	40.7	6.5	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	1.6	1.5	8.8	0% - 50%
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	201	# 265	27.1	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	57	57	0.0	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 6497768)									
ES2508095-022	BH204_50	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	0.6	0.6	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	0.3	0.4	32.4	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	8.7	8.8	0.0	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	3	4	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6497769)									
ES2508095-022	BH204_50	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6517321)									
ES2508095-024	BH204_110	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	1.6	# 3.5	72.5	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	10.0	# 19.4	64.0	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.7	1.1	41.6	0% - 50%
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	5.1	# 8.5	50.5	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	6.1	# 12.6	69.2	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	1.7	# 3.1	56.1	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG020T: Total Metals by ICP-MS (QC Lot: 6517321) - continued									
ES2508095-024	BH204_110	EG020X-T: Manganese	7439-96-5	0.1	mg/kg	13.7	# 36.9	91.9	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	0.2	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	15.4	# 25.2	48.1	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	1.8	# 3.5	62.5	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.2	0.8	129	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	9.0	# 16.5	58.7	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.1	0.5	129	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	14.6	# 24.4	50.7	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	3	6	55.9	No Limit
ES2508095-034	BH101_10	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	4.1	4.7	14.5	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	60.7	71.7	16.6	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.9	1.0	16.3	0% - 50%
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	6.8	7.6	10.8	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	104	86.9	18.0	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	7.6	# 5.0	40.8	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	590	570	3.4	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	23.2	24.2	4.5	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	8.7	9.5	8.4	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.7	0.8	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	5.4	6.2	13.5	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.5	0.6	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	41.8	50.5	18.9	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	11	13	16.0	0% - 50%
EG020T: Total Metals by ICP-MS (QC Lot: 6517322)									
ES2508095-024	BH204_110	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	0.2	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	1.4	# 3.5	83.6	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	1	0.0	No Limit
ES2508095-034	BH101_10	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	9.8	11.9	19.2	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	3	4	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 6517323)									
ES2508095-024	BH204_110	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2508095-034	BH101_10	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	0.2	0.2	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6517331)									
ES2508095-050	BH104_160	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.1	0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	5.8	5.5	4.7	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	2	2	0.0	No Limit
EB2512600-003	Anonymous	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.3	0.4	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	3.5	3.6	0.0	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	5	5	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6517332)									
ES2508095-041	BH103_70	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	1.0	# 3.7	111	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	5.3	# 9.3	54.8	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.4	0.3	36.8	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	0.5	1.0	63.1	No Limit
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	9.1	# 37.5	122	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	1.2	1.3	0.0	0% - 50%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	49.1	# 140	95.9	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	0.2	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	1.8	# 3.4	58.2	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	3.5	2.9	19.8	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.2	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	1.2	1.4	11.1	0% - 50%
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	1.4	0.9	42.8	0% - 50%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.5	0.1	122	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	14.8	# 9.2	46.3	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	7	3	73.1	No Limit
ES2508095-051	BH104_180	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	2.4	2.1	13.2	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	6.2	6.9	9.3	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	1.1	0.8	35.5	0% - 50%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	3.6	3.4	7.1	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	2.7	3.0	11.1	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	40.3	# 62.7	43.4	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG020T: Total Metals by ICP-MS (QC Lot: 6517332) - continued									
ES2508095-051	BH104_180	EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	3.1	# 2.2	34.6	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	0.8	0.5	36.5	No Limit
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.1	<0.1	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	2.2	2.4	6.9	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	3.0	1.1	88.7	No Limit
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	2	<1	70.3	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6517333)									
ES2508095-041	BH103_70	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2508095-051	BH104_180	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6517334)									
ES2508095-060	BH104_351	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	1.4	1.5	0.0	0% - 50%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	1	<1	0.0	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6473457)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	105	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	103	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6497766)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	114	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	106	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6497770)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	112	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	103	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6517324)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	106	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	106	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6517329)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	107	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	109	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6517335)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	110	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	112	89.0	112
EA002: pH 1:5 (Soils) (QCLot: 6514210)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	98.8	101
				----	7 pH Unit	101	98.8	101
EA002: pH 1:5 (Soils) (QCLot: 6517316)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	100	98.8	101
EA002: pH 1:5 (Soils) (QCLot: 6517318)								

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*	*Concentration*	*LCS*	*Low*	*High*
EA002: pH 1:5 (Soils) (QCLot: 6517318) - continued								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	101	98.8	101
EA002: pH 1:5 (Soils) (QCLot: 6517336)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	101	98.8	101
EA010: Conductivity (1:5) (QCLot: 6514211)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	103	92.0	108
EA010: Conductivity (1:5) (QCLot: 6517317)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	103	92.0	108
EA010: Conductivity (1:5) (QCLot: 6517319)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	103	92.0	108
EA010: Conductivity (1:5) (QCLot: 6517337)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	102	92.0	108
EA013: Acid Neutralising Capacity (QCLot: 6509326)								
EA013: ANC as H2SO4	----	----	kg H2SO4 equiv./t	----	9.9 kg H2SO4 equiv./t	109	82.0	120
EA013: Acid Neutralising Capacity (QCLot: 6509327)								
EA013: ANC as H2SO4	----	----	kg H2SO4 equiv./t	----	9.9 kg H2SO4 equiv./t	103	82.0	120
EA013: Acid Neutralising Capacity (QCLot: 6509328)								
EA013: ANC as H2SO4	----	----	kg H2SO4 equiv./t	----	49 kg H2SO4 equiv./t	97.4	82.0	120
ED042T: Total Sulfur by LECO (QCLot: 6519409)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.13 %	93.0	70.0	130
ED042T: Total Sulfur by LECO (QCLot: 6519410)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.51 %	102	70.0	130
ED042T: Total Sulfur by LECO (QCLot: 6519430)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.51 %	111	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6473455)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	100	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	104	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6473456)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6473458)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	112	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	104	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	108	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	104	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	97.6	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	108	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	110	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	105	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	110	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	106	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	112	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6497763)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	116	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	116	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	112	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	112	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	112	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	113	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	117	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	113	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	107	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	116	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	109	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6497764)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6497764) - continued								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	108	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	120	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6497765)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6497767)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	114	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	112	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	112	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	107	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	106	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	109	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	110	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	107	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	108	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	112	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	108	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6497768)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	101	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	114	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6497769)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6517321)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	119	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	124	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	128	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	120	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	122	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	118	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	126	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	121	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	129	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	127	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	109	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6517322)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	128	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	118	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6517323)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6517331)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	102	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	101	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6517332)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	107	75.0	125

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6517332) - continued								
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	103	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	110	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	106	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	112	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	108	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	110	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	109	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	117	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	111	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	101	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6517333)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6517334)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	116	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	102	78.0	122

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6473455)							
ES2508095-001	BH201_5	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	98.8	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6473458)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EG020T: Total Metals by ICP-MS (QCLot: 6473458) - continued							
ES2508095-001	BH201_5	EG020X-T: Arsenic	7440-38-2	50 mg/kg	120	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	105	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	103	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	102	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	101	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	103	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6497763)							
ES2508095-002	BH201_25	EG020X-T: Arsenic	7440-38-2	50 mg/kg	79.5	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	71.1	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	97.5	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	79.2	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	103	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	93.7	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6497764)							
ES2508095-002	BH201_25	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	94.1	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6497767)							
ES2508095-022	BH204_50	EG020X-T: Arsenic	7440-38-2	50 mg/kg	99.5	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	93.5	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	95.9	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	83.9	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	101	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	97.4	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6497768)							
ES2508095-022	BH204_50	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	92.6	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6517321)							
ES2508095-024	BH204_110	EG020X-T: Arsenic	7440-38-2	50 mg/kg	91.9	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	126	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	99.0	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	112	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	103	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	105	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6517322)							
ES2508095-024	BH204_110	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	96.2	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6517331)							
EB2512600-003	Anonymous	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	96.3	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6517332)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6517332) - continued							
ES2508095-041	BH103_70	EG020X-T: Arsenic	7440-38-2	50 mg/kg	83.9	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	91.9	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	95.2	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	92.1	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	97.9	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	87.6	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6517334)							
ES2508095-060	BH104_351	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	96.7	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2508095**	Page	: 1 of 16
Client	: **EMM CONSULTING PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: JAMES TUFF	Telephone	: +61-2-8784 8555
Project	: E221111	Date Samples Received	: 21-Mar-2025
Site	: LAKE LYELL	Issue Date	: 23-Apr-2025
Sampler	: ED DAWES	No. of samples received	: 60
Order number	: ----	No. of samples analysed	: 60

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2508095--002	BH201_25	**Aluminium**	7429-90-5	31.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	ES2508095--024	BH204_110	**Aluminium**	7429-90-5	32.3 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	ES2510689--010	Anonymous	**Aluminium**	7429-90-5	33.0 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	ES2508095--012	BH203_82.24	**Aluminium**	7429-90-5	28.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	ES2508095--060	BH104_351	**Iron**	7439-89-6	28.6 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	ES2508095--002	BH201_25	**Iron**	7439-89-6	33.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	ES2508095--024	BH204_110	**Iron**	7439-89-6	29.6 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--041	BH103_70	**Arsenic**	7440-38-2	111 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--002	BH201_25	**Arsenic**	7440-38-2	30.8 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Arsenic**	7440-38-2	72.5 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--041	BH103_70	**Barium**	7440-39-3	54.8 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--002	BH201_25	**Barium**	7440-39-3	21.5 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Barium**	7440-39-3	64.0 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--012	BH203_82.24	**Barium**	7440-39-3	26.3 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Cobalt**	7440-48-4	50.5 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--041	BH103_70	**Chromium**	7440-47-3	122 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--001	BH201_5	**Chromium**	7440-47-3	32.3 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--002	BH201_25	**Chromium**	7440-47-3	41.2 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Chromium**	7440-47-3	69.2 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--001	BH201_5	**Copper**	7440-50-8	22.6 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--002	BH201_25	**Copper**	7440-50-8	35.4 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Copper**	7440-50-8	56.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--034	BH101_10	**Copper**	7440-50-8	40.8 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--041	BH103_70	**Manganese**	7439-96-5	95.9 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--001	BH201_5	**Manganese**	7439-96-5	22.5 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--002	BH201_25	**Manganese**	7439-96-5	23.8 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Manganese**	7439-96-5	91.9 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--051	BH104_180	**Manganese**	7439-96-5	43.4 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--012	BH203_82.24	**Manganese**	7439-96-5	63.4 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--041	BH103_70	**Nickel**	7440-02-0	58.2 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--002	BH201_25	**Nickel**	7440-02-0	23.2 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Nickel**	7440-02-0	48.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--051	BH104_180	**Nickel**	7440-02-0	34.6 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Lead**	7439-92-1	62.5 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--041	BH103_70	**Zinc**	7440-66-6	46.3 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--002	BH201_25	**Zinc**	7440-66-6	23.8 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--022	BH204_50	**Zinc**	7440-66-6	27.1 %	0% - 20%	**RPD exceeds LOR based limits**

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs - Continued							
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Zinc**	7440-66-6	50.7 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Lithium**	7439-93-2	58.7 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--012	BH203_82.24	**Lithium**	7439-93-2	40.4 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--002	BH201_25	**Thorium**	7440-29-1	29.4 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508095--024	BH204_110	**Thorium**	7440-29-1	83.6 %	0% - 20%	**RPD exceeds LOR based limits**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA002: pH 1:5 (Soils)						
Snap Lock Bag						
BH201_5, BH201_25, BH201_45, BH201_65, BH201_85, BH201_125, BH202_73, BH203_8	17-Apr-2025	26-Mar-2025	**22**	----	----	----

Matrix: **SOIL**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA002: pH 1:5 (Soils) - Analysis Holding Time Compliance							
Snap Lock Bag							
BH203_30,	BH203_39,	17-Apr-2025	26-Mar-2025	**22**	22-Apr-2025	17-Apr-2025	**5**
BH203_59,	BH203_82.24,						
BH203_100,	BH203_120,						
BH203_140,	BH201_1,						
BH203_160,	BH203_180,						
BH203_200,	BH204_10,						
BH204_30,	BH204_50,						
BH204_90,	BH204_110,						
BH204_130,	BH204_150,						
BH204_170,	BH204_190,						
BH204_210,	BH204_230,						
BH204_250,	BH204_270,						
BH204_290,	BH101_10,						
BH101_19,	BH101_49,						
BH101_70,	BH102_19,						
BH103_19,	BH103_50,						
BH103_70,	BH104_10,						
BH104_30,	BH104_50,						
BH104_70,	BH104_80,						
BH104_100,	BH104_120,						
BH104_140,	BH104_160,						
BH104_180,	BH104_200,						
BH104_220,	BH104_240,						
BH104_249,	BH104_270,						
BH104_290,	BH104_310,						
BH104_327,	BH104_351						
EA010: Conductivity (1:5)							
Snap Lock Bag							
BH201_5,	BH201_25,	17-Apr-2025	26-Mar-2025	**22**	----	----	----
BH201_45,	BH201_65,						
BH201_85,	BH201_125,						
BH202_73,	BH203_8						

Matrix: **SOIL**

Method		*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA010: Conductivity (1:5) - Analysis Holding Time Compliance							
Snap Lock Bag							
BH203_30,	BH203_39,	17-Apr-2025	26-Mar-2025	**22**	----	----	----
BH203_59,	BH203_82.24,						
BH203_100,	BH203_120,						
BH203_140,	BH201_1,						
BH203_160,	BH203_180,						
BH203_200,	BH204_10,						
BH204_30,	BH204_50,						
BH204_90,	BH204_110,						
BH204_130,	BH204_150,						
BH204_170,	BH204_190,						
BH204_210,	BH204_230,						
BH204_250,	BH204_270,						
BH204_290,	BH101_10,						
BH101_19,	BH101_49,						
BH101_70,	BH102_19,						
BH103_19,	BH103_50,						
BH103_70,	BH104_10,						
BH104_30,	BH104_50,						
BH104_70,	BH104_80,						
BH104_100,	BH104_120,						
BH104_140,	BH104_160,						
BH104_180,	BH104_200,						
BH104_220,	BH104_240,						
BH104_249,	BH104_270,						
BH104_290,	BH104_310,						
BH104_327,	BH104_351						
EA055: Moisture Content (Dried @ 105-110°C)							
Snap Lock Bag							
BH201_25,	BH201_45,	----	----	----	09-Apr-2025	02-Apr-2025	**7**
BH201_65,	BH201_85,						
BH201_125,	BH202_73,						
BH203_8,	BH203_30,						
BH203_39,	BH203_59,						
BH203_82.24,	BH203_100,						
BH203_120,	BH203_140,						
BH201_1,	BH203_160,						
BH203_180,	BH203_200,						
BH204_10,	BH204_30,						
BH204_50,	BH204_90						

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	**Days overdue**	Date analysed	Due for analysis	**Days overdue**
EA055: Moisture Content (Dried @ 105-110°C) - Analysis Holding Time Compliance						
Snap Lock Bag						
BH204_110, BH204_130, BH204_150, BH204_170, BH204_190, BH204_210, BH204_230, BH204_250, BH204_270, BH204_290, BH101_10, BH101_19, BH101_49, BH101_70, BH102_19, BH103_19, BH103_50, BH103_70, BH104_10, BH104_30, BH104_50, BH104_70, BH104_80, BH104_100, BH104_120, BH104_140, BH104_160, BH104_180, BH104_200, BH104_220, BH104_240, BH104_249, BH104_270, BH104_290, BH104_310, BH104_327, BH104_351	----	----	----	17-Apr-2025	02-Apr-2025	**15**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)						
Total Metals by ICP-MS - Suite Z	EG020Z-T	0	60	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Total Metals by ICP-AES	EG005T	0	62	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002: pH 1:5 (Soils)								
Snap Lock Bag (EA002)								
BH201_5,	BH201_25,	**19-Mar-2025**	**17-Apr-2025**	26-Mar-2025	×	**17-Apr-2025**	17-Apr-2025	✓
BH201_45,	BH201_65,							
BH201_85,	BH201_125,							
BH202_73,	BH203_8							
Snap Lock Bag (EA002)								
BH203_30,	BH203_39,	**19-Mar-2025**	**17-Apr-2025**	26-Mar-2025	×	**22-Apr-2025**	17-Apr-2025	×
BH203_59,	BH203_82.24,							
BH203_100,	BH203_120,							
BH203_140,	BH201_1,							
BH203_160,	BH203_180,							
BH203_200,	BH204_10,							
BH204_30,	BH204_50,							
BH204_90,	BH204_110,							
BH204_130,	BH204_150,							
BH204_170,	BH204_190,							
BH204_210,	BH204_230,							
BH204_250,	BH204_270,							
BH204_290,	BH101_10,							
BH101_19,	BH101_49,							
BH101_70,	BH102_19,							
BH103_19,	BH103_50,							
BH103_70,	BH104_10,							
BH104_30,	BH104_50,							
BH104_70,	BH104_80,							
BH104_100,	BH104_120,							
BH104_140,	BH104_160,							
BH104_180,	BH104_200,							
BH104_220,	BH104_240,							
BH104_249,	BH104_270,							
BH104_290,	BH104_310,							
BH104_327,	BH104_351							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010: Conductivity (1:5)								
Snap Lock Bag (EA010)								
BH201_5,	BH201_25,	**19-Mar-2025**	**17-Apr-2025**	26-Mar-2025	×	**17-Apr-2025**	15-May-2025	✓
BH201_45,	BH201_65,							
BH201_85,	BH201_125,							
BH202_73,	BH203_8							
Snap Lock Bag (EA010)								
BH203_30,	BH203_39,	**19-Mar-2025**	**17-Apr-2025**	26-Mar-2025	×	**22-Apr-2025**	15-May-2025	✓
BH203_59,	BH203_82.24,							
BH203_100,	BH203_120,							
BH203_140,	BH201_1,							
BH203_160,	BH203_180,							
BH203_200,	BH204_10,							
BH204_30,	BH204_50,							
BH204_90,	BH204_110,							
BH204_130,	BH204_150,							
BH204_170,	BH204_190,							
BH204_210,	BH204_230,							
BH204_250,	BH204_270,							
BH204_290,	BH101_10,							
BH101_19,	BH101_49,							
BH101_70,	BH102_19,							
BH103_19,	BH103_50,							
BH103_70,	BH104_10,							
BH104_30,	BH104_50,							
BH104_70,	BH104_80,							
BH104_100,	BH104_120,							
BH104_140,	BH104_160,							
BH104_180,	BH104_200,							
BH104_220,	BH104_240,							
BH104_249,	BH104_270,							
BH104_290,	BH104_310,							
BH104_327,	BH104_351							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA013: Acid Neutralising Capacity								
Pulp Bag (EA013)								
BH201_5,	BH201_25,	**19-Mar-2025**	**15-Apr-2025**	19-Mar-2026	✓	**15-Apr-2025**	12-Oct-2025	✓
BH201_45,	BH201_65,							
BH201_85,	BH201_125,							
BH202_73,	BH203_8,							
BH203_30,	BH203_39,							
BH203_59,	BH203_82.24,							
BH203_100,	BH203_120,							
BH203_140,	BH201_1,							
BH203_160,	BH203_180,							
BH203_200,	BH204_10,							
BH204_30,	BH204_50,							
BH204_90,	BH204_110,							
BH204_130,	BH204_150,							
BH204_170,	BH204_190,							
BH204_210,	BH204_230,							
BH204_250,	BH204_270,							
BH204_290,	BH101_10,							
BH101_19,	BH101_49,							
BH101_70,	BH102_19,							
BH103_19,	BH103_50,							
BH103_70,	BH104_10,							
BH104_30,	BH104_50,							
BH104_70,	BH104_80,							
BH104_100,	BH104_120,							
BH104_140,	BH104_160,							
BH104_180,	BH104_200,							
BH104_220,	BH104_240,							
BH104_249,	BH104_270,							
BH104_290,	BH104_310,							
BH104_327,	BH104_351							

Matrix: **SOIL**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation Date extracted	Due for extraction	Evaluation	Analysis Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Snap Lock Bag (EA055) BH201_5		**19-Mar-2025**	**----**	----	----	**28-Mar-2025**	02-Apr-2025	✓
Snap Lock Bag (EA055) BH201_25, BH201_65, BH201_125, BH203_8, BH203_39, BH203_82.24, BH203_120, BH201_1, BH203_180, BH204_10, BH204_50,	BH201_45, BH201_85, BH202_73, BH203_30, BH203_59, BH203_100, BH203_140, BH203_160, BH203_200, BH204_30, BH204_90	**19-Mar-2025**	**----**	----	----	**09-Apr-2025**	02-Apr-2025	✗
Snap Lock Bag (EA055) BH204_110, BH204_150, BH204_190, BH204_230, BH204_270, BH101_10, BH101_49, BH102_19, BH103_50, BH104_10, BH104_50, BH104_80, BH104_120, BH104_160, BH104_200, BH104_240, BH104_270, BH104_310, BH104_351	BH204_130, BH204_170, BH204_210, BH204_250, BH204_290, BH101_19, BH101_70, BH103_19, BH103_70, BH104_30, BH104_70, BH104_100, BH104_140, BH104_180, BH104_220, BH104_249, BH104_290, BH104_327,	**19-Mar-2025**	**----**	----	----	**17-Apr-2025**	02-Apr-2025	✗

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED042T: Total Sulfur by LECO								
Pulp Bag (ED042T)								
BH201_5,	BH201_25,	**19-Mar-2025**	**17-Apr-2025**	15-Sep-2025	✓	**17-Apr-2025**	15-Sep-2025	✓
BH201_45,	BH201_65,							
BH201_85,	BH201_125,							
BH202_73,	BH203_8,							
BH203_30,	BH203_39,							
BH203_59,	BH203_82.24,							
BH203_100,	BH203_120,							
BH203_140,	BH201_1,							
BH203_160,	BH203_180,							
BH203_200,	BH204_10,							
BH204_30,	BH204_50,							
BH204_90,	BH204_110,							
BH204_130,	BH204_150,							
BH204_170,	BH204_190,							
BH204_210,	BH204_230,							
BH204_250,	BH204_270,							
BH204_290,	BH101_10,							
BH101_19,	BH101_49,							
BH101_70,	BH102_19,							
BH103_19,	BH103_50,							
BH103_70,	BH104_10,							
BH104_30,	BH104_50,							
BH104_70,	BH104_80,							
BH104_100,	BH104_120,							
BH104_140,	BH104_160,							
BH104_180,	BH104_200,							
BH104_220,	BH104_240,							
BH104_249,	BH104_270,							
BH104_290,	BH104_310,							
BH104_327,	BH104_351							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES								
Snap Lock Bag (EG005T)								
BH201_5		**19-Mar-2025**	**03-Apr-2025**	15-Sep-2025	✓	**03-Apr-2025**	15-Sep-2025	✓
Snap Lock Bag (EG005T)								
BH201_25,	BH201_45,	**19-Mar-2025**	**10-Apr-2025**	15-Sep-2025	✓	**10-Apr-2025**	15-Sep-2025	✓
BH201_65,	BH201_85,							
BH201_125,	BH202_73,							
BH203_8,	BH203_30,							
BH203_39,	BH203_59,							
BH203_82.24,	BH203_100,							
BH203_120,	BH203_140,							
BH201_1,	BH203_160,							
BH203_180,	BH203_200,							
BH204_10,	BH204_30,							
BH204_50,	BH204_90							
Snap Lock Bag (EG005T)								
BH204_110,	BH204_130,	**19-Mar-2025**	**17-Apr-2025**	15-Sep-2025	✓	**22-Apr-2025**	15-Sep-2025	✓
BH204_150,	BH204_170,							
BH204_190,	BH204_210,							
BH204_230,	BH204_250,							
BH204_270,	BH204_290,							
BH101_10,	BH101_19,							
BH101_49,	BH101_70,							
BH102_19,	BH103_19,							
BH103_50,	BH103_70,							
BH104_10,	BH104_30,							
BH104_50,	BH104_70,							
BH104_80,	BH104_100,							
BH104_120,	BH104_140,							
BH104_160,	BH104_180,							
BH104_200,	BH104_220,							
BH104_240,	BH104_249,							
BH104_270,	BH104_290,							
BH104_310,	BH104_327,							
BH104_351								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS								
Snap Lock Bag (EG020Z-T)								
BH201_5		**19-Mar-2025**	**03-Apr-2025**	15-Sep-2025	✓	**03-Apr-2025**	15-Sep-2025	✓
Snap Lock Bag (EG020Z-T)								
BH201_25,	BH201_45,	**19-Mar-2025**	**10-Apr-2025**	15-Sep-2025	✓	**10-Apr-2025**	15-Sep-2025	✓
BH201_65,	BH201_85,							
BH201_125,	BH202_73,							
BH203_8,	BH203_30,							
BH203_39,	BH203_59,							
BH203_82.24,	BH203_100,							
BH203_120,	BH203_140,							
BH201_1,	BH203_160,							
BH203_180,	BH203_200,							
BH204_10,	BH204_30,							
BH204_50,	BH204_90							
Snap Lock Bag (EG020Z-T)								
BH204_110,	BH204_130,	**19-Mar-2025**	**17-Apr-2025**	15-Sep-2025	✓	**22-Apr-2025**	15-Sep-2025	✓
BH204_150,	BH204_170,							
BH204_190,	BH204_210,							
BH204_230,	BH204_250,							
BH204_270,	BH204_290,							
BH101_10,	BH101_19,							
BH101_49,	BH101_70,							
BH102_19,	BH103_19,							
BH103_50,	BH103_70,							
BH104_10,	BH104_30,							
BH104_50,	BH104_70,							
BH104_80,	BH104_100,							
BH104_120,	BH104_140,							
BH104_160,	BH104_180,							
BH104_200,	BH104_220,							
BH104_240,	BH104_249,							
BH104_270,	BH104_290,							
BH104_310,	BH104_327,							
BH104_351								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type / Analytical Methods	Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Evaluation	Quality Control Specification
Laboratory Duplicates (DUP)							
Acid Neutralising Capacity (ANC)	EA013	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	7	65	**10.77**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	11	101	**10.89**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	7	65	**10.77**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	11	62	**17.74**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	8	61	**13.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	9	62	**14.52**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Z	EG020Z-T	8	60	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acid Neutralising Capacity (ANC)	EA013	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	4	65	**6.15**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	8	65	**12.31**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	62	**9.68**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	5	61	**8.20**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	6	62	**9.68**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Z	EG020Z-T	0	60	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	4	65	**6.15**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	62	**9.68**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	5	61	**8.20**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	6	62	**9.68**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Z	EG020Z-T	5	60	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Metals by ICP-AES	EG005T	0	62	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	5	61	**8.20**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	6	62	**9.68**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Net Acid Production Potential	EA009	SOIL	In house: Referenced to Coastech Research (Canada)(Mod.). NAPP = Acid Production Potential (APP or MAP-Maximum Acid Potential) minus Neutralising Capacity (ANC). NAPP may be +ve, zero or -ve.
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Acid Neutralising Capacity (ANC)	EA013	SOIL	In house: Referenced to USEPA 600/2-78-054, I. Miller (2000). A fizz test is done to semiquanititatively estimate the likely reactivity. The soil is then reacted with an known excess quanitity of an appropriate acid. Titration determines the acid remaining, and the ANC can be calculated from comparison with a blank titration.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Sulfur - Total as S (LECO)	ED042T	SOIL	In house: Dried and pulverised sample is combusted in a high temperature furnace in the presence of strong oxidants / catalysts. The evolved S (as SO2) is measured by infra-red detector
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Metals by ICP-MS - Suite X	EG020X-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Y	EG020Y-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Z	EG020Z-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Dry and Pulverise (up to 100g)	GEO30	SOIL	#

Mandatory Fields

CHAIN OF CUSTODY

CLIENT CODE	EMGAMM	*PROJECT MANAGER:	James Tuff	SAMPLER	Ed Dawes
*CLIENT:	EMM CONSULTING PTY LTD	*PM MOBILE:	0450 340 432	SAMPLER MOBILE	
OFFICE (Invoiced Office)	Brisbane	ALS QUOTE # (Client PL if blank)		PURCHASE ORDER NO	
PROJECT NO./PROJECT			E221111	SITE	Lake Lyell
*INVOICE TO (client default if blank)					X CC Invoice to PM
*EMAIL REPORTS TO (default to PM if blank)					

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CoC # (if applicable)

BIOSECURITY

Country of Origin (if not Australia)

*** STORAGE REQUIREMENTS** Please check box →

Standard Storage time from receipt of samples: Water - 3 weeks; Soils - 2 months

☐ Standard Storage

X Extended Storage

Specify Disposal Date: Please contact James Tuff and do not dispose

Note: Extended Storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box →

(Not all tests can be expedited, contact Client Services for more information)

X 5+ days (no surcharge)

☐ 3 day (+15%)

☐ 2 day (+30%)

☐ 1 day (+50%)

***ANALYSIS REQUIRED**

Mark an X in the boxes below analysis to indicate the parameter listed above * sample.

Environmental Division
Sydney
Work Order Reference
ES2508174

Telephone : + 61-2-8784 8555

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid (S) Water (W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EN020PR - Dry and store	EA032 - Conductivity - Saturated Paste	EA031 - pH (Saturated Paste)	ASS 1 - NAPP (Includes ANC Tota S)	ME 025 - Total extractable metals via 2-acid digest and ICP-MS (Full scan inc Mercury)
	BH201	1		1	S	X	X	X	X	X
	BH201	5		1	S	X	X	X	X	X
	BH201	25		1	S	X	X	X	X	X
	BH201	45		1	S	X	X	X	X	X
	BH201	65		1	S	X	X	X	X	X
	BH201	85		1	S	X	X	X	X	X
	BH201	125		1	S	X	X	X	X	X
	BH202	63		1	S	X	X	X	X	X
	BH202	73		1	S	X	X	X	X	X
	BH203	5		1	S	X	X	X	X	X
	BH203	30		1	S	X	X	X	X	X
	BH203	39		1	S	X	X	X	X	X
	BH203	60		1	S	X	X	X	X	X
	BH202	[illegible]		1	S	X	X	X	X	X
	BH203	100		1	S	X	X	X	X	X
	BH203	120		1	S	X	X	X	X	X
	BH203	140		1	S	X	X	X	X	X
	BH203	153		1	S	X	X	X	X	X
	BH203	185		1	S	X	X	X	X	X
	BH203	200		1	S	X	X	X	X	X
	BH203	210		1	S	X	X	X	X	X
	BH204	10		1	S	X	X	X	X	X
	BH204	30		1	S	X	X	X	X	X
	BH204	50		1	S	X	X	X	X	X
	BH204	70		1	S	X	X	X	X	X
	BH204	90		1	S	X	X	X	X	X
	BH204	110		1	S	X	X	X	X	X
	BH204	130		1	S	X	X	X	X	X
	BH204	160		1	S	X	X	X	X	X
	BH204	170		1	S	X	X	X	X	X
	BH204	185		1	S	X	X	X	X	X
	BH204	210		1	S	X	X	X	X	X
	BH204	230		1	S	X	X	X	X	X
	BH204	250		1	S	X	X	X	X	X
	BH204	270		1	S	X	X	X	X	X
	BH204	290		1	S	X	X	X	X	X
	BH101	15		1	S	X	X	X	X	X
	[illegible]	10		1	S	X	X	X	X	X
	BH101	40		1	S	X	X	X	X	X
	BH101	30		1	S	X	X	X	X	X
	BH152	10		1	S	X	X	X	X	X
	BH103	10		1	S	X	X	X	X	X
	BH103	30		1	S	X	X	X	X	X
	BH103	52		1	S	X	X	X	X	X
	BH103	73		1	S	X	X	X	X	X
	BH104	10		1	S	X	X	X	X	X
	BH104	30		1	S	X	X	X	X	X
	BH104	50		1	S	X	X	X	X	X

Subcon / Forward Lab / Split WO: ES2508095/8175

Lab / Analysis: Brisbane - ASS-1

Organised By / Date: EM Hagan - Cosling

Relinquished By / Date:

Connote / Courier:

WO No:

Attached By PO / Internal Sheet:

	BH104	70	1	S	X	X	X	X	X	☐	☐
	BH104	80	1	S	X	X	X	X	X	☐	☐
	BH104	100	1	S	X	X	X	X	X	☐	☐
	BH104	120	1	S	X	X	X	X	X	☐	☐
	BH104	140	1	S	X	X	X	X	X	☐	☐
	BH104	160	1	S	X	X	X	X	X	☐	☐
	BH104	180	1	S	X	X	X	X	X	☐	☐
	BH104	200	1	S	X	X	X	X	X	☐	☐
	BH104	220	1	S	X	X	X	X	X	☐	☐
	BH104	240	1	S	X	X	X	X	X	☐	☐
	BH104	260	1	S	X	X	X	X	X	☐	☐
	BH104	270	1	S	X	X	X	X	X	☐	☐
	BH104	290	1	S	X	X	X	X	X	☐	☐
	BH104	310	1	S	X	X	X	X	X	☐	☐
	BH104	323	1	S	X	X	X	X	X	☐	☐
	BH104	331	1	S	X	X	X	X	X	☐	☐
1	BH104	375	1	S	X	X	X	X	X	☐	☐
2	BH105	10	1	S	X	X	X	X	X	☐	☐
3	BH105	30	1	S	X	X	X	X	X	☐	☐
4	BH105	50	1	S	X	X	X	X	X	☐	☐
5	BH105	70	1	S	X	X	X	X	X	☐	☐
6	BH105	90	1	S	X	X	X	X	X	☐	☐
7	BH105	117	1	S	X	X	X	X	X	☐	☐
8	BH105	120	1	S	X	X	X	X	X	☐	☐
9	BH105	150	1	S	X	X	X	X	X	☐	☐
10	BH105	170	1	S	X	X	X	X	X	☐	☐
11	BH105	190	1	S	X	X	X	X	X	☐	☐
12	BH105	210	1	S	X	X	X	X	X	☐	☐
13	BH105	230	1	S	X	X	X	X	X	☐	☐
14	BH105	250	1	S	X	X	X	X	X	☐	☐
15	BH105	270	1	S	X	X	X	X	X	☐	☐
16	BH105	290	1	S	X	X	X	X	X	☐	☐
17	BH105	310	1	S	X	X	X	X	X	☐	☐
18	BH105	330	1	S	X	X	X	X	X	☐	☐
19	BH105	350	1	S	X	X	X	X	X	☐	☐
20	BH106	10	1	S	X	X	X	X	X	☐	☐
21	BH106	30	1	S	X	X	X	X	X	☐	☐
22	BH106	50	1	S	X	X	X	X	X	☐	☐
23	BH106	70	1	S	X	X	X	X	X	☐	☐
24	BH106	90	1	S	X	X	X	X	X	☐	☐
25	BH106	110	1	S	X	X	X	X	X	☐	☐
26	BH106	130	1	S	X	X	X	X	X	☐	☐
27	BH106	150	1	S	X	X	X	X	X	☐	☐
28	BH106	170	1	S	X	X	X	X	X	☐	☐
29	BH106	190	1	S	X	X	X	X	X	☐	☐
30	BH106	210	1	S	X	X	X	X	X	☐	☐
31	BH107	10	1	S	X	X	X	X	X	☐	☐
32	BH107	30	1	S	X	X	X	X	X	☐	☐
33	BH108	10	1	S	X	X	X	X	X	☐	☐
34	BH108	30	1	S	X	X	X	X	X	☐	☐
35	BH108	50	1	S	X	X	X	X	X	☐	☐
36	BH108	70	1	S	X	X	X	X	X	☐	☐
37	BH108	90	1	S	X	X	X	X	X	☐	☐
38	BH108	110	1	S	X	X	X	X	X	☐	☐
39	MB2201A	10	1	S	X	X	X	X	X	☐	☐
40	MB2201A	30	1	S	X	X	X	X	X	☐	☐
41	MB2201A	50	1	S	X	X	X	X	X	☐	☐
42	MB2201A	70	1	S	X	X	X	X	X	☐	☐
43	MB2201A	90	1	S	X	X	X	X	X	☐	☐
44	MB2201A	110	1	S	X	X	X	X	X	☐	☐
45	MB2201A	130	1	S	X	X	X	X	X	☐	☐
46	MB2201A	150	1	S	X	X	X	X	X	☐	☐
47	MB2201A	170	1	S	X	X	X	X	X	☐	☐
48	MB2201A	190	1	S	X	X	X	X	X	☐	☐
49	MB2201B	10	1	S	X	X	X	X	X	☐	☐
50	MB2201B	30	1	S	X	X	X	X	X	☐	☐

51		MBZ201B		50		1	S	X	X	X	X	X								☐	☐	
52		MBZ201B		70		1	S	X	X	X	X	X								☐	☐	
53		MBZ201B		90		1	S	X	X	X	X	X								☐	☐	
54		MBZ201B		110		1	S	X	X	X	X	X								☐	☐	
55		MBZ202A		10		1	S	X	X	X	X	X								☐	☐	
56		MBZ202A		20		1	S	X	X	X	X	X								☐	☐	
57		MBZ202A		40		1	S	X	X	X	X	X								☐	☐	
58		MBZ202A		80		1	S	X	X	X	X	X								☐	☐	
59		MBZ202A		90		1	S	X	X	X	X	X								☐	☐	
60		MBZ202A		110		1	S	X	X	X	X	X								☐	☐	
		MBZ202A		130		1	S	X	X	X	X	X								☐	☐	
		MBZ202A		150		1	S	X	X	X	X	X								☐	☐	
		MBZ202B		10		1	S	X	X	X	X	X								☐	☐	
		MBZ202B		30		1	S	X	X	X	X	X								☐	☐	
		MBZ202B		50		1	S	X	X	X	X	X								☐	☐	
		MBZ202B		70		1	S	X	X	X	X	X								☐	☐	
		MBZ203A		10		1	S	X	X	X	X	X								☐	☐	
		MBZ203A		30		1	S	X	X	X	X	X								☐	☐	
		MBZ203A		50		1	S	X	X	X	X	X								☐	☐	
		MBZ203A		75		1	S	X	X	X	X	X								☐	☐	
		MBZ203A		90		1	S	X	X	X	X	X								☐	☐	
		MBZ203A		110		1	S	X	X	X	X	X								☐	☐	
		MBZ203A		130		1	S	X	X	X	X	X								☐	☐	
		MBZ203A		150		1	S	X	X	X	X	X								☐	☐	
		MBZ203A		170		1	S	X	X	X	X	X								☐	☐	
		MBZ203B		10		1	S	X	X	X	X	X								☐	☐	
		MBZ203B		30		1	S	X	X	X	X	X								☐	☐	
		MBZ203B		50		1	S	X	X	X	X	X								☐	☐	
		MBZ203B		65		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		7		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		20		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		40		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		60		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		80		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		100		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		120		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		140		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		160		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		180		1	S	X	X	X	X	X								☐	☐	
		MBZ204A		200		1	S	X	X	X	X	X								☐	☐	
		MBZ204B		3		1	S	X	X	X	X	X								☐	☐	
		MBZ204B		8		1	S	X	X	X	X	X								☐	☐	
		MBZ204B		40		1	S	X	X	X	X	X								☐	☐	
		MBZ204B		60		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		10		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		20		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		50		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		80		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		90		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		110		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		100		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		150		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		170		1	S	X	X	X	X	X								☐	☐	
		MBZ205A		180		1	S	X	X	X	X	X								☐	☐	
		MBZ205B		10		1	S	X	X	X	X	X								☐	☐	
		MBZ205B		30		1	S	X	X	X	X	X								☐	☐	
		MBZ205B		60		1	S	X	X	X	X	X								☐	☐	
		MBZ206A		10		1	S	X	X	X	X	X								☐	☐	
		MBZ206A		30		1	S	X	X	X	X	X								☐	☐	
		MBZ206A		50		1	S	X	X	X	X	X								☐	☐	
		MBZ206A		70		1	S	X	X	X	X	X								☐	☐	
		MBZ206B		10		1	S	X	X	X	X	X								☐	☐	
		MBZ206B		30		1	S	X	X	X	X	X								☐	☐	
		MBZ206B		50		1	S	X	X	X	X	X								☐	☐	
		MBZ206B		70		1	S	X	X	X	X	X								☐	☐	

	BH702_30																					
	BH202_219																					
	BH703_60																					
	BH203_250																					
	Unlabelled _70																					
							1 5	X	X	X	X	X								☐	☐	

Receipt Detail Lab Use ONLY	Cooling Method	Ice Frozen / Melted	Ice Bricks Frozen / Thawed	None	Sample Temp at Receipt °C °C °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☐ Client Con Note #	Packaging (Circle) Hard Esky Foam Esky Box/Bag/Other Count # # #
Relinquished by: Edward Peles	Signature: Edward Peles	Date/Time: 20/3/25 10:30am		Received by: L Shawcross	Signature: [signature]	Date/Time: 20/03/25		
Relinquished by:	Signature:	Date/Time:		Received by:	Signature:	Date/Time:		

rec: Fhre [signature] 21/3/25 11:32

CERTIFICATE OF ANALYSIS

Work Order	: **ES2508174**	Page	: 1 of 28
Client	: **EMM CONSULTING PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: JAMES TUFF	Contact	: Samiksha Sathish
Address	: The Forum Level 10 201 Pacific Highway St Leonards NSW NSW 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: E221111	Date Samples Received	: 21-Mar-2025 11:30
Order number	: ----	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 17-Apr-2025 16:17
Sampler	: ED DAWES		
Site	: ----		
Quote number	: EN/111		
No. of samples received	: 60		
No. of samples analysed	: 60		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020T: Poor precision was obtained for Arsenic on sample ES2508174 # 049. Confirmed by redigestion and reanalysis.
- EG020: Poor precision was obtained for Barium, Cobalt, Nickel and Tin on sample ES2508174-#011. Confirmed by redigestion and reanalysis.
- EG020: Poor precision was obtained for Arsenic, Manganese and Lead on sample ES2508174-#021. Confirmed by redigestion and reanalysis.
- EG020: Poor precision was obtained for Chromium, Copper and Tin on sample ES2508174-#031. Confirmed by redigestion and reanalysis.
- EG020T: Poor matrix spike recovery was obtained for Arsenic on sample ES2508174 # 001. Confirmed by reanalysis.
- EG020: Poor precision was obtained for Arsenic on sample ES2508174-#039. Confirmed by redigestion and reanalysis.
- EG020: Poor precision was obtained for Manganese, Lead and Zinc on sample ES2508174-#012. Confirmed by redigestion and reanalysis.
- Split workorder - ES2508095, ES2508175
- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH104_375	BH105_10	BH105_30	BH105_50	BH105_70
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-001	ES2508174-002	ES2508174-003	ES2508174-004	ES2508174-005
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.1**	**7.3**	**8.6**	**9.3**	**9.4**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-31.4**	**-18.8**	**-8.4**	**-16.1**	**-27.5**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**58**	**22**	**24**	**66**	**58**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**34.2**	**18.8**	**8.4**	**17.9**	**32.4**
ANC as CaCO3	----	0.1	% CaCO3	**3.5**	**1.9**	**0.9**	**1.8**	**3.3**
Fizz Rating	----	0	Fizz Unit	**2**	**1**	**1**	**1**	**1**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	**2.2**	<1.0	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.09**	<0.01	<0.01	**0.06**	**0.16**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**1870**	**12600**	**2460**	**12900**	**8440**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**16500**	**18100**	**8020**	**7340**	**5750**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**164**	**29.0**	**18.8**	**10.5**	**6.1**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**13.6**	**35.9**	**5.1**	**8.4**	**7.5**
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.2**	<0.1	**0.1**	**0.1**
Beryllium	7440-41-7	0.1	mg/kg	**0.3**	**0.8**	**0.3**	**0.6**	**0.4**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.1**	**0.1**	<0.1	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**5.6**	**6.1**	**3.0**	**3.6**	**2.6**

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH104_375	BH105_10	BH105_30	BH105_50	BH105_70
Sampling date / time				19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508174-001	ES2508174-002	ES2508174-003	ES2508174-004	ES2508174-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**56.9**	**39.7**	**26.2**	**32.1**	**24.8**
Copper	7440-50-8	0.1	mg/kg	**1.2**	**12.1**	**3.0**	**6.8**	**4.0**
Thorium	7440-29-1	0.1	mg/kg	**5.0**	**4.4**	**7.0**	**7.4**	**5.8**
Manganese	7439-96-5	0.1	mg/kg	**433**	**84.4**	**149**	**193**	**220**
Strontium	7440-24-6	0.1	mg/kg	**12.6**	**22.7**	**3.7**	**59.9**	**35.5**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	<0.1	**0.3**	**0.2**
Nickel	7440-02-0	0.1	mg/kg	**15.2**	**11.0**	**5.5**	**10.3**	**8.0**
Lead	7439-92-1	0.1	mg/kg	**5.7**	**2.0**	**9.5**	**2.6**	**2.0**
Antimony	7440-36-0	0.1	mg/kg	**2.4**	**0.6**	**0.3**	**0.1**	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.5**	**0.6**	**0.4**	**0.7**	**0.6**
Zinc	7440-66-6	0.5	mg/kg	**43.9**	**35.9**	**15.6**	**16.4**	**14.2**
Lithium	7439-93-2	0.1	mg/kg	**2.2**	**13.1**	**3.4**	**7.0**	**5.8**
Vanadium	7440-62-2	1	mg/kg	**23**	**54**	**6**	**19**	**16**
Tin	7440-31-5	0.1	mg/kg	**0.6**	**1.1**	**61.2**	**1.2**	**0.5**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH105_90	BH105_110	BH105_130	BH105_150	BH105_170
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-006	ES2508174-007	ES2508174-008	ES2508174-009	ES2508174-010
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.4**	**9.4**	**9.5**	**9.4**	**9.4**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-30.1**	**-27.0**	**-6.4**	**2.1**	**31.2**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**58**	**55**	**75**	**58**	**81**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**46.3**	**29.5**	**22.0**	**35.2**	**29.7**
ANC as CaCO3	----	0.1	% CaCO3	**4.7**	**3.0**	**2.2**	**3.6**	**3.0**
Fizz Rating	----	0	Fizz Unit	**2**	**1**	**1**	**2**	**1**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.53**	**0.08**	**0.51**	**1.22**	**1.99**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**7380**	**3980**	**6410**	**3100**	**23900**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**14600**	**7290**	**11400**	**11300**	**27000**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**7.6**	**13.5**	**20.1**	**54.2**	**64.5**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	**0.6**
Barium	7440-39-3	0.1	mg/kg	**2.5**	**3.5**	**24.2**	**1.9**	**32.4**
Thallium	7440-28-0	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	**0.3**
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	**0.2**	**0.3**	**0.1**	**1.0**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**1.4**	**0.3**	**0.2**	**0.9**	**0.8**
Cobalt	7440-48-4	0.1	mg/kg	**4.3**	**3.6**	**4.8**	**3.9**	**13.8**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH105_90	BH105_110	BH105_130	BH105_150	BH105_170
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-006	ES2508174-007	ES2508174-008	ES2508174-009	ES2508174-010
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**29.4**	**51.8**	**28.3**	**36.0**	**38.8**
Copper	7440-50-8	0.1	mg/kg	**5.6**	**3.3**	**14.5**	**7.5**	**54.8**
Thorium	7440-29-1	0.1	mg/kg	**6.8**	**6.9**	**3.8**	**8.5**	**5.8**
Manganese	7439-96-5	0.1	mg/kg	**652**	**250**	**49.8**	**166**	**199**
Strontium	7440-24-6	0.1	mg/kg	**44.8**	**20.0**	**3.4**	**22.0**	**103**
Molybdenum	7439-98-7	0.1	mg/kg	**0.7**	**0.3**	<0.1	**0.2**	**0.2**
Nickel	7440-02-0	0.1	mg/kg	**12.6**	**10.3**	**13.0**	**5.8**	**17.1**
Lead	7439-92-1	0.1	mg/kg	**5.4**	**1.7**	**1.2**	**2.8**	**2.2**
Antimony	7440-36-0	0.1	mg/kg	**0.2**	**0.2**	<0.1	**0.2**	**0.1**
Uranium	7440-61-1	0.1	mg/kg	**0.5**	**0.7**	**0.4**	**0.6**	**0.6**
Zinc	7440-66-6	0.5	mg/kg	**13.0**	**14.1**	**13.9**	**10.0**	**33.4**
Lithium	7439-93-2	0.1	mg/kg	**5.4**	**8.6**	**14.9**	**5.9**	**19.9**
Vanadium	7440-62-2	1	mg/kg	**8**	**12**	**19**	**7**	**34**
Tin	7440-31-5	0.1	mg/kg	**0.4**	**0.6**	**14.9**	**0.3**	**218**

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

			Sample ID	BH105_190	BH105_210	BH105_230	BH105_250	BH105_270
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-011	ES2508174-012	ES2508174-013	ES2508174-014	ES2508174-015
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.4**	**9.4**	**9.4**	**8.9**	**8.7**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-33.0**	**-53.7**	**-290**	**-58.4**	**-7.2**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**47**	**61**	**53**	**199**	**214**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**38.2**	**59.5**	**292**	**74.9**	**40.0**
ANC as CaCO3	----	0.1	% CaCO3	**3.9**	**6.1**	**29.8**	**7.6**	**4.1**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**3**	**2**	**2**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.17**	**0.19**	**0.07**	**0.54**	**1.07**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**4440**	**7680**	**4680**	**3300**	**3200**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**4620**	**6970**	**4170**	**11800**	**25300**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**19.6**	**3.3**	**14.3**	**105**	**185**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	**0.2**	**1.4**
Barium	7440-39-3	0.1	mg/kg	**7.9**	**4.7**	**3.2**	**5.0**	**8.5**
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	**0.6**	**1.4**
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	**0.3**	**0.2**	**0.4**	**0.4**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	**0.1**	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.1**	**0.4**	**0.4**	**0.1**	**0.7**
Cobalt	7440-48-4	0.1	mg/kg	**2.0**	**2.5**	**2.1**	**4.6**	**8.2**

Analytical Results

Sub-Matrix: **CONCRETE**
(Matrix: **SOIL**)

			Sample ID	BH105_190	BH105_210	BH105_230	BH105_250	BH105_270
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2508174-011**	**ES2508174-012**	**ES2508174-013**	**ES2508174-014**	**ES2508174-015**
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**17.5**	**18.1**	**41.2**	**54.4**	**39.8**
Copper	7440-50-8	0.1	mg/kg	**5.6**	**9.9**	**4.2**	**3.0**	**7.1**
Thorium	7440-29-1	0.1	mg/kg	**5.5**	**5.1**	**3.7**	**5.5**	**6.8**
Manganese	7439-96-5	0.1	mg/kg	**86.7**	**467**	**144**	**405**	**264**
Strontium	7440-24-6	0.1	mg/kg	**20.9**	**48.5**	**23.3**	**23.0**	**22.2**
Molybdenum	7439-98-7	0.1	mg/kg	**0.2**	<0.1	<0.1	**0.2**	**0.4**
Nickel	7440-02-0	0.1	mg/kg	**5.8**	**5.7**	**5.2**	**12.4**	**24.5**
Lead	7439-92-1	0.1	mg/kg	**1.2**	**5.2**	**2.5**	**5.1**	**7.9**
Antimony	7440-36-0	0.1	mg/kg	<0.1	**0.3**	<0.1	**4.4**	**13.0**
Uranium	7440-61-1	0.1	mg/kg	**0.6**	**0.6**	**0.3**	**0.9**	**0.5**
Zinc	7440-66-6	0.5	mg/kg	**12.8**	**20.1**	**19.6**	**26.4**	**30.1**
Lithium	7439-93-2	0.1	mg/kg	**8.0**	**6.2**	**6.1**	**6.4**	**5.1**
Vanadium	7440-62-2	1	mg/kg	**14**	**3**	**6**	**8**	**8**
Tin	7440-31-5	0.1	mg/kg	**3.3**	**0.3**	**0.2**	**1.6**	**0.7**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH105_290	BH105_310	BH105_330	BH105_350	BH106_10
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-016	ES2508174-017	ES2508174-018	ES2508174-019	ES2508174-020
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.4**	**9.8**	**9.4**	**9.2**	**5.1**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-26.6**	**-207**	**-8.9**	**-15.8**	**-3.8**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**67**	**80**	**56**	**75**	**90**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**37.6**	**208**	**22.7**	**32.0**	**3.8**
ANC as CaCO3	----	0.1	% CaCO3	**3.8**	**21.2**	**2.3**	**3.3**	**0.4**
Fizz Rating	----	0	Fizz Unit	**2**	**3**	**1**	**2**	**0**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	<1.0	**2.9**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.36**	**0.02**	**0.45**	**0.53**	<0.01
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**1960**	**1260**	**2950**	**3300**	**25300**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**14100**	**1540**	**11100**	**12100**	**37800**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**8.8**	**7.0**	**40.9**	**70.5**	**10.0**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**8.2**	**1.4**	**3.6**	**7.5**	**260**
Thallium	7440-28-0	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	**0.4**
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	**0.1**	**0.2**	**0.2**	**1.7**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.4**	<0.1	**0.2**	**0.2**	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**5.4**	**1.1**	**3.0**	**2.5**	**7.3**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH105_290	BH105_310	BH105_330	BH105_350	BH106_10
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-016	ES2508174-017	ES2508174-018	ES2508174-019	ES2508174-020
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**91.4**	**14.7**	**107**	**60.9**	**60.5**
Copper	7440-50-8	0.1	mg/kg	**11.4**	**2.3**	**11.8**	**6.3**	**22.4**
Thorium	7440-29-1	0.1	mg/kg	**3.6**	**5.2**	**3.2**	**3.0**	**17.7**
Manganese	7439-96-5	0.1	mg/kg	**540**	**556**	**265**	**642**	**230**
Strontium	7440-24-6	0.1	mg/kg	**26.2**	**36.8**	**8.6**	**16.8**	**1.6**
Molybdenum	7439-98-7	0.1	mg/kg	**0.5**	<0.1	**0.4**	**0.7**	**0.1**
Nickel	7440-02-0	0.1	mg/kg	**14.0**	**4.0**	**9.0**	**7.1**	**83.4**
Lead	7439-92-1	0.1	mg/kg	**5.2**	**1.4**	**2.4**	**2.8**	**32.3**
Antimony	7440-36-0	0.1	mg/kg	**1.0**	<0.1	**0.4**	**0.2**	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.4**	**0.7**	**0.3**	**0.3**	**3.3**
Zinc	7440-66-6	0.5	mg/kg	**19.0**	**3.6**	**74.1**	**19.4**	**54.8**
Lithium	7439-93-2	0.1	mg/kg	**3.5**	**0.5**	**6.7**	**4.4**	**12.2**
Vanadium	7440-62-2	1	mg/kg	**8**	**2**	**8**	**6**	**71**
Tin	7440-31-5	0.1	mg/kg	**8.0**	<0.1	**0.7**	**0.2**	**2.6**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			*Sample ID*	BH106_30	BH106_50	BH106_70	BH106_90	BH106_110
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508174-021	ES2508174-022	ES2508174-023	ES2508174-024	ES2508174-025
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**7.9**	**9.0**	**9.2**	**9.5**	**9.4**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-8.5**	**-11.8**	**-18.9**	**-38.0**	**-15.8**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**23**	**31**	**47**	**88**	**73**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**8.5**	**12.1**	**18.9**	**38.0**	**15.8**
ANC as CaCO3	----	0.1	% CaCO3	**0.9**	**1.2**	**1.9**	**3.9**	**1.6**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**1**	**2**	**1**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	**0.01**	<0.01	<0.01	<0.01
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**5490**	**6200**	**4490**	**6210**	**18000**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**26800**	**7780**	**3120**	**3670**	**17100**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**16.3**	**0.7**	**0.7**	**0.5**	**2.1**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**32.5**	**23.0**	**6.5**	**7.0**	**18.2**
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.1**	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**1.2**	**0.5**	**0.6**	**0.5**	**1.0**
Cadmium	7440-43-9	0.1	mg/kg	**0.2**	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.2**	**0.2**	**0.2**	<0.1	**0.1**
Cobalt	7440-48-4	0.1	mg/kg	**14.7**	**3.4**	**3.4**	**2.2**	**5.3**

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

			Sample ID	BH106_30	BH106_50	BH106_70	BH106_90	BH106_110
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-021	ES2508174-022	ES2508174-023	ES2508174-024	ES2508174-025
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**12.0**	**24.1**	**4.7**	**6.8**	**46.1**
Copper	7440-50-8	0.1	mg/kg	**8.0**	**24.6**	**0.6**	**0.6**	**15.3**
Thorium	7440-29-1	0.1	mg/kg	**6.8**	**2.1**	**2.1**	**1.8**	**4.4**
Manganese	7439-96-5	0.1	mg/kg	**365**	**309**	**67.3**	**113**	**349**
Strontium	7440-24-6	0.1	mg/kg	**4.0**	**8.2**	**8.9**	**20.2**	**58.2**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	**0.3**	<0.1	<0.1	**0.4**
Nickel	7440-02-0	0.1	mg/kg	**19.8**	**8.1**	**6.0**	**5.2**	**13.8**
Lead	7439-92-1	0.1	mg/kg	**40.6**	**1.3**	**1.2**	**0.9**	**1.9**
Antimony	7440-36-0	0.1	mg/kg	**0.2**	<0.1	<0.1	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**1.3**	**0.2**	**0.2**	**0.2**	**0.4**
Zinc	7440-66-6	0.5	mg/kg	**64.4**	**22.9**	**20.1**	**15.8**	**43.4**
Lithium	7439-93-2	0.1	mg/kg	**16.4**	**11.7**	**16.9**	**12.6**	**32.0**
Vanadium	7440-62-2	1	mg/kg	**4**	**9**	**2**	**4**	**20**
Tin	7440-31-5	0.1	mg/kg	**0.3**	**0.1**	**0.2**	<0.1	**57.9**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			*Sample ID*	BH106_130	BH106_150	BH106_170	BH106_190	BH106_210
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508174-026	ES2508174-027	ES2508174-028	ES2508174-029	ES2508174-030
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.3**	**9.3**	**9.4**	**9.3**	**9.6**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-16.3**	**-16.3**	**-19.2**	**-20.9**	**-214**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**51**	**56**	**54**	**45**	**89**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**20.3**	**16.9**	**21.6**	**23.7**	**216**
ANC as CaCO3	----	0.1	% CaCO3	**2.1**	**1.7**	**2.2**	**2.4**	**22.1**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**1**	**1**	**3**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.13**	**0.02**	**0.08**	**0.09**	**0.05**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**5530**	**2720**	**6040**	**6800**	**7550**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**14100**	**4970**	**9860**	**8560**	**2690**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**18.6**	**8.8**	**32.4**	**3.9**	**1.0**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**9.0**	**4.9**	**18.5**	**6.8**	**2.7**
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	**0.2**	**0.4**	**0.4**	**0.3**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.1**	**0.1**	<0.1	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**4.6**	**2.2**	**4.4**	**2.5**	**0.8**

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH106_130	BH106_150	BH106_170	BH106_190	BH106_210
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508174-026	ES2508174-027	ES2508174-028	ES2508174-029	ES2508174-030
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**107**	**34.2**	**92.8**	**57.2**	**15.5**
Copper	7440-50-8	0.1	mg/kg	**16.9**	**3.7**	**7.9**	**4.6**	**1.9**
Thorium	7440-29-1	0.1	mg/kg	**4.2**	**2.3**	**3.2**	**3.5**	**3.8**
Manganese	7439-96-5	0.1	mg/kg	**890**	**214**	**649**	**715**	**1110**
Strontium	7440-24-6	0.1	mg/kg	**18.8**	**4.4**	**69.4**	**34.6**	**110**
Molybdenum	7439-98-7	0.1	mg/kg	**1.1**	**0.2**	**0.8**	**0.8**	**0.1**
Nickel	7440-02-0	0.1	mg/kg	**11.0**	**6.0**	**12.2**	**7.2**	**2.4**
Lead	7439-92-1	0.1	mg/kg	**4.7**	**3.8**	**3.3**	**1.4**	**1.0**
Antimony	7440-36-0	0.1	mg/kg	**0.3**	**0.1**	**0.2**	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.5**	**0.3**	**0.4**	**0.3**	**0.4**
Zinc	7440-66-6	0.5	mg/kg	**18.9**	**15.2**	**15.7**	**16.3**	**7.8**
Lithium	7439-93-2	0.1	mg/kg	**13.1**	**6.4**	**11.0**	**7.0**	**2.1**
Vanadium	7440-62-2	1	mg/kg	**16**	**6**	**9**	**13**	**4**
Tin	7440-31-5	0.1	mg/kg	**1.2**	**19.1**	**5.8**	**0.5**	**0.2**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)			Sample ID	BH107_10	BH107_30	BH108_10	BH108_30	BH108_50
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-031	ES2508174-032	ES2508174-033	ES2508174-034	ES2508174-035
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	8.3	6.4	6.9	5.6	8.4
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-15.6	-2.1	-10.3	1.1	-7.8
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	55	131	20	182	71
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	16.8	6.7	10.3	5.3	12.7
ANC as CaCO3	----	0.1	% CaCO3	1.7	0.7	1.0	0.5	1.3
Fizz Rating	----	0	Fizz Unit	1	1	1	0	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	1.1	<1.0	4.9	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.04	0.15	<0.01	0.21	0.16
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	14800	340	15200	1400	520
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	57800	3560	22000	8120	6240
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	9.3	6.8	7.7	5.2	16.8
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	57.3	4.4	80.0	6.6	5.3
Thallium	7440-28-0	0.1	mg/kg	0.3	<0.1	0.4	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	1.8	<0.1	1.1	0.2	<0.1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	0.3	<0.1	0.3	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	14.4	3.9	10.9	4.4	2.8

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH107_10	BH107_30	BH108_10	BH108_30	BH108_50
Sampling date / time				19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508174-031	ES2508174-032	ES2508174-033	ES2508174-034	ES2508174-035
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**46.7**	**45.8**	**42.5**	**99.4**	**157**
Copper	7440-50-8	0.1	mg/kg	**9.4**	**4.2**	**21.8**	**5.9**	**5.3**
Thorium	7440-29-1	0.1	mg/kg	**5.2**	**1.8**	**9.2**	**3.8**	**2.2**
Manganese	7439-96-5	0.1	mg/kg	**679**	**15.8**	**739**	**135**	**114**
Strontium	7440-24-6	0.1	mg/kg	**13.5**	**1.4**	**13.2**	**3.1**	**2.6**
Molybdenum	7439-98-7	0.1	mg/kg	**0.1**	**0.4**	**0.2**	**0.5**	**0.5**
Nickel	7440-02-0	0.1	mg/kg	**27.1**	**9.9**	**31.4**	**11.0**	**7.8**
Lead	7439-92-1	0.1	mg/kg	**16.2**	**6.1**	**15.8**	**7.3**	**3.6**
Antimony	7440-36-0	0.1	mg/kg	**0.2**	**0.3**	**0.2**	**0.1**	**0.2**
Uranium	7440-61-1	0.1	mg/kg	**0.5**	**0.3**	**0.9**	**0.4**	**0.3**
Zinc	7440-66-6	0.5	mg/kg	**74.5**	**11.7**	**140**	**27.2**	**12.4**
Lithium	7439-93-2	0.1	mg/kg	**24.8**	**0.3**	**32.6**	**2.8**	**0.7**
Vanadium	7440-62-2	1	mg/kg	**30**	**2**	**41**	**5**	**3**
Tin	7440-31-5	0.1	mg/kg	**1.5**	**0.4**	**7.7**	**3.4**	**11.7**

Analytical Results

Sub-Matrix: CONCRETE (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	BH108_70	BH108_90	BH108_110	----	----
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	----	----
				ES2508174-036	ES2508174-037	ES2508174-038	--------	--------
				Result	Result	Result	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.2**	**9.1**	**9.2**	----	----
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-18.4**	**-9.6**	**-14.9**	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**82**	**71**	**52**	----	----
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**23.0**	**16.6**	**14.9**	----	----
ANC as CaCO3	----	0.1	% CaCO3	**2.3**	**1.7**	**1.5**	----	----
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**1**	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	<1.0	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.15**	**0.23**	<0.01	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**6990**	**19300**	**5020**	----	----
Boron	7440-42-8	50	mg/kg	<50	<50	<50	----	----
Iron	7439-89-6	50	mg/kg	**12200**	**40100**	**8270**	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**21.3**	**31.6**	**0.4**	----	----
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	----	----
Silver	7440-22-4	0.1	mg/kg	**0.1**	**0.1**	<0.1	----	----
Barium	7440-39-3	0.1	mg/kg	**72.4**	**22.6**	**6.2**	----	----
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.2**	<0.1	----	----
Beryllium	7440-41-7	0.1	mg/kg	**0.4**	**1.4**	**0.7**	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
Bismuth	7440-69-9	0.1	mg/kg	<0.1	**0.1**	**0.2**	----	----
Cobalt	7440-48-4	0.1	mg/kg	**4.5**	**13.4**	**3.9**	----	----

Analytical Results

Sub-Matrix: CONCRETE
(Matrix: SOIL)

			Sample ID	BH108_70	BH108_90	BH108_110	----	----
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2508174-036	ES2508174-037	ES2508174-038	--------	--------
				Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**202**	**28.8**	**8.0**	----	----
Copper	7440-50-8	0.1	mg/kg	**6.7**	**3.6**	**3.0**	----	----
Thorium	7440-29-1	0.1	mg/kg	**5.4**	**5.2**	**4.1**	----	----
Manganese	7439-96-5	0.1	mg/kg	**394**	**186**	**85.0**	----	----
Strontium	7440-24-6	0.1	mg/kg	**54.0**	**21.2**	**8.4**	----	----
Molybdenum	7439-98-7	0.1	mg/kg	**0.5**	**0.3**	<0.1	----	----
Nickel	7440-02-0	0.1	mg/kg	**12.4**	**27.1**	**7.4**	----	----
Lead	7439-92-1	0.1	mg/kg	**4.8**	**9.9**	**4.1**	----	----
Antimony	7440-36-0	0.1	mg/kg	**0.3**	**0.1**	<0.1	----	----
Uranium	7440-61-1	0.1	mg/kg	**0.6**	**0.5**	**0.7**	----	----
Zinc	7440-66-6	0.5	mg/kg	**31.1**	**140**	**23.2**	----	----
Lithium	7439-93-2	0.1	mg/kg	**12.5**	**59.6**	**16.9**	----	----
Vanadium	7440-62-2	1	mg/kg	**14**	**27**	**7**	----	----
Tin	7440-31-5	0.1	mg/kg	**1.8**	**73.0**	**1.5**	----	----

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2201A_10	MB2201A_30	MB2201A_50	MB2201A_70	MB2201A_90
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-039	ES2508174-040	ES2508174-041	ES2508174-042	ES2508174-043
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**5.8**	**5.7**	**4.1**	**6.6**	**6.9**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**8**	**8**	**116**	**82**	**54**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	----	**6.3**	----	**4.1**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**7950**	**6000**	**2410**	**5380**	**5070**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**21100**	**24400**	**12200**	**14500**	**10600**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**4.1**	**17.7**	**8.1**	**2.3**	**2.8**
Selenium	7782-49-2	1	mg/kg	**3**	**3**	**3**	**2**	**1**
Silver	7440-22-4	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**37.2**	**43.4**	**13.8**	**18.2**	**8.5**
Thallium	7440-28-0	0.1	mg/kg	**0.6**	**0.2**	**0.2**	**0.2**	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.4**	**0.9**	**0.2**	**0.4**	**0.3**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.1**	<0.1	<0.1	**0.2**	**0.2**
Cobalt	7440-48-4	0.1	mg/kg	**6.4**	**2.9**	**3.4**	**5.0**	**3.4**
Chromium	7440-47-3	0.1	mg/kg	**27.0**	**22.6**	**8.6**	**19.0**	**16.0**
Copper	7440-50-8	0.1	mg/kg	**10.3**	**14.0**	**9.7**	**10.2**	**11.7**
Thorium	7440-29-1	0.1	mg/kg	**7.6**	**4.4**	**2.6**	**3.8**	**3.1**
Manganese	7439-96-5	0.1	mg/kg	**54.6**	**44.3**	**54.8**	**160**	**116**
Strontium	7440-24-6	0.1	mg/kg	**2.2**	**2.2**	**2.1**	**1.4**	**1.3**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	**1.4**	**0.2**	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**12.1**	**10.2**	**7.1**	**11.8**	**8.2**
Lead	7439-92-1	0.1	mg/kg	**1.6**	**4.1**	**4.2**	**2.6**	**2.8**

Analytical Results

Sub-Matrix: **ROCK**
(Matrix: **SOIL)**

			Sample ID	MB2201A_10	MB2201A_30	MB2201A_50	MB2201A_70	MB2201A_90
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-039	ES2508174-040	ES2508174-041	ES2508174-042	ES2508174-043
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.5**	**0.9**	**0.4**	**0.4**	**0.3**
Zinc	7440-66-6	0.5	mg/kg	**44.4**	**27.6**	**20.9**	**30.2**	**39.4**
Lithium	7439-93-2	0.1	mg/kg	**16.9**	**8.9**	**3.4**	**9.5**	**11.6**
Vanadium	7440-62-2	1	mg/kg	**12**	**17**	**9**	**13**	**11**
Tin	7440-31-5	0.1	mg/kg	**0.3**	**0.2**	<0.1	**0.1**	<0.1

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2201A_110	MB2201A_130	MB2201A_150	MB2201A_170	MB2201A_190
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-044	ES2508174-045	ES2508174-046	ES2508174-047	ES2508174-048
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.2**	**9.2**	**9.2**	**9.1**	**9.2**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**51**	**62**	**70**	**49**	**66**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**3.6**	**2.5**	**1.7**	**2.9**	**4.7**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**6000**	**3710**	**3910**	**8880**	**8210**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**3610**	**7040**	**6990**	**10100**	**3820**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**2.3**	**7.0**	**5.2**	**2.8**	**1.3**
Selenium	7782-49-2	1	mg/kg	**2**	**1**	**2**	**2**	**2**
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**2.6**	**5.0**	**3.0**	**14.3**	**3.9**
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	**0.2**	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.3**	**0.2**	**0.2**	**0.4**	**0.4**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**1.8**	**2.6**	**3.2**	**4.1**	**1.8**
Chromium	7440-47-3	0.1	mg/kg	**12.2**	**12.8**	**16.8**	**21.4**	**11.0**
Copper	7440-50-8	0.1	mg/kg	**3.4**	**1.7**	**2.2**	**5.0**	**3.7**
Thorium	7440-29-1	0.1	mg/kg	**23.0**	**3.4**	**4.7**	**5.0**	**19.9**
Manganese	7439-96-5	0.1	mg/kg	**322**	**81.0**	**133**	**51.5**	**131**
Strontium	7440-24-6	0.1	mg/kg	**43.4**	**10.8**	**14.2**	**25.9**	**99.7**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	**0.1**	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**3.4**	**5.0**	**6.0**	**9.8**	**4.1**
Lead	7439-92-1	0.1	mg/kg	**9.9**	**3.5**	**3.0**	**1.9**	**2.3**

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

			Sample ID	MB2201A_110	MB2201A_130	MB2201A_150	MB2201A_170	MB2201A_190
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-044	ES2508174-045	ES2508174-046	ES2508174-047	ES2508174-048
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	<0.1	**0.3**	<0.1	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**2.4**	**0.3**	**0.4**	**0.5**	**2.6**
Zinc	7440-66-6	0.5	mg/kg	**13.6**	**16.9**	**15.0**	**29.1**	**20.8**
Lithium	7439-93-2	0.1	mg/kg	**5.4**	**10.7**	**10.3**	**17.2**	**6.3**
Vanadium	7440-62-2	1	mg/kg	**10**	**8**	**9**	**17**	**7**
Tin	7440-31-5	0.1	mg/kg	<0.1	<0.1	<0.1	**0.2**	**0.1**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2201B_10	MB2201B_30	MB2201B_50	MB2201B_70	MB2201B_90
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-049	ES2508174-050	ES2508174-051	ES2508174-052	ES2508174-053
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**5.6**	**6.5**	**5.6**	**7.2**	**7.4**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**9**	**9**	**19**	**105**	**124**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**4590**	**5400**	**4310**	**1920**	**5980**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**12000**	**21700**	**12400**	**12600**	**13800**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**2.6**	**4.2**	**13.2**	**2.7**	**12.7**
Selenium	7782-49-2	1	mg/kg	**2**	**4**	**2**	**2**	**2**
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**19.4**	**22.0**	**35.1**	**9.6**	**16.6**
Thallium	7440-28-0	0.1	mg/kg	**0.2**	**0.3**	**0.2**	**0.1**	**0.2**
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	**0.7**	**0.4**	**0.3**	**0.4**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.1**	**0.2**	**0.1**	<0.1	**0.2**
Cobalt	7440-48-4	0.1	mg/kg	**1.7**	**3.3**	**2.5**	**3.2**	**6.3**
Chromium	7440-47-3	0.1	mg/kg	**24.8**	**21.1**	**19.3**	**10.5**	**18.5**
Copper	7440-50-8	0.1	mg/kg	**17.5**	**15.1**	**10.0**	**7.6**	**14.1**
Thorium	7440-29-1	0.1	mg/kg	**6.8**	**7.5**	**5.1**	**3.8**	**4.9**
Manganese	7439-96-5	0.1	mg/kg	**17.6**	**53.5**	**65.0**	**97.3**	**160**
Strontium	7440-24-6	0.1	mg/kg	**1.6**	**1.3**	**3.1**	**2.1**	**1.4**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	**0.2**	<0.1	**0.1**
Nickel	7440-02-0	0.1	mg/kg	**4.5**	**9.0**	**6.2**	**8.0**	**13.2**
Lead	7439-92-1	0.1	mg/kg	**11.2**	**2.8**	**3.5**	**2.0**	**2.7**
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	**0.2**	**0.1**	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.8**	**0.7**	**0.7**	**0.4**	**0.4**

Analytical Results

Sub-Matrix: **ROCK**
(Matrix: **SOIL)**

			Sample ID	MB2201B_10	MB2201B_30	MB2201B_50	MB2201B_70	MB2201B_90
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-049	ES2508174-050	ES2508174-051	ES2508174-052	ES2508174-053
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.5	mg/kg	**15.7**	**36.9**	**21.5**	**27.5**	**24.4**
Lithium	7439-93-2	0.1	mg/kg	**3.5**	**7.5**	**7.2**	**2.1**	**12.1**
Vanadium	7440-62-2	1	mg/kg	**25**	**16**	**13**	**9**	**13**
Tin	7440-31-5	0.1	mg/kg	**0.4**	**0.1**	**0.3**	**0.1**	**0.1**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2201B_110	MB2202A_10	MB2202A_30	MB2202A_50	MB2202A_70
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-054	ES2508174-055	ES2508174-056	ES2508174-057	ES2508174-058
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	8.8	5.5	6.5	8.8	8.8
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	42	72	16	34	33
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	4.6	5.9	3.8	5.4
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	4850	2570	7460	7410	7820
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	6630	16300	8160	4890	8330
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	3.1	38.3	0.4	3.8	0.3
Selenium	7782-49-2	1	mg/kg	<1	2	<1	3	1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	5.0	26.1	60.7	10.2	17.6
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	0.1
Beryllium	7440-41-7	0.1	mg/kg	0.2	0.6	0.8	0.6	0.9
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	0.6	0.1	<0.1	0.2
Cobalt	7440-48-4	0.1	mg/kg	2.4	0.4	3.1	3.9	4.6
Chromium	7440-47-3	0.1	mg/kg	9.8	12.2	12.4	5.4	7.0
Copper	7440-50-8	0.1	mg/kg	3.8	11.0	6.3	2.5	12.0
Thorium	7440-29-1	0.1	mg/kg	2.8	4.0	2.6	2.8	2.7
Manganese	7439-96-5	0.1	mg/kg	107	4.5	37.4	149	134
Strontium	7440-24-6	0.1	mg/kg	10.2	10.9	6.5	26.0	13.6
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	6.2	1.1	8.5	5.9	9.9
Lead	7439-92-1	0.1	mg/kg	1.9	6.3	0.9	13.6	2.3

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

			Sample ID	MB2201B_110	MB2202A_10	MB2202A_30	MB2202A_50	MB2202A_70
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508174-054	ES2508174-055	ES2508174-056	ES2508174-057	ES2508174-058
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	<0.1	**0.3**	<0.1	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.2**	**3.0**	**0.4**	**1.2**	**0.4**
Zinc	7440-66-6	0.5	mg/kg	**17.6**	**7.8**	**26.2**	**23.9**	**32.0**
Lithium	7439-93-2	0.1	mg/kg	**8.8**	**0.5**	**18.3**	**17.0**	**24.1**
Vanadium	7440-62-2	1	mg/kg	**8**	**16**	**12**	**5**	**9**
Tin	7440-31-5	0.1	mg/kg	**0.1**	**0.4**	**0.5**	<0.1	<0.1

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2202A_90	MB2202A_110	----	----	----
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2508174-059	ES2508174-060	--------	--------	--------
				Result	Result	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.1**	**9.4**	----	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**46**	**65**	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**4.9**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**5390**	**5210**	----	----	----
Boron	7440-42-8	50	mg/kg	<50	<50	----	----	----
Iron	7439-89-6	50	mg/kg	**4140**	**6720**	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**0.2**	**1.5**	----	----	----
Selenium	7782-49-2	1	mg/kg	<1	**1**	----	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	----	----	----
Barium	7440-39-3	0.1	mg/kg	**7.4**	**5.0**	----	----	----
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	----	----	----
Beryllium	7440-41-7	0.1	mg/kg	**0.8**	**0.7**	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	----
Bismuth	7440-69-9	0.1	mg/kg	**0.1**	<0.1	----	----	----
Cobalt	7440-48-4	0.1	mg/kg	**3.8**	**3.6**	----	----	----
Chromium	7440-47-3	0.1	mg/kg	**3.8**	**5.4**	----	----	----
Copper	7440-50-8	0.1	mg/kg	**0.2**	**12.0**	----	----	----
Thorium	7440-29-1	0.1	mg/kg	**1.9**	**2.4**	----	----	----
Manganese	7439-96-5	0.1	mg/kg	**100**	**118**	----	----	----
Strontium	7440-24-6	0.1	mg/kg	**12.7**	**9.4**	----	----	----
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	----	----	----
Nickel	7440-02-0	0.1	mg/kg	**6.4**	**7.4**	----	----	----
Lead	7439-92-1	0.1	mg/kg	**1.7**	**1.7**	----	----	----

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2202A_90	MB2202A_110	----	----	----
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2508174-059	ES2508174-060	--------	--------	--------
				Result	Result	----	----	----
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	----	----	----
Uranium	7440-61-1	0.1	mg/kg	**0.3**	**0.3**	----	----	----
Zinc	7440-66-6	0.5	mg/kg	**24.4**	**24.6**	----	----	----
Lithium	7439-93-2	0.1	mg/kg	**21.9**	**22.6**	----	----	----
Vanadium	7440-62-2	1	mg/kg	**3**	**4**	----	----	----
Tin	7440-31-5	0.1	mg/kg	<0.1	<0.1	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(SOIL) EA009: Net Acid Production Potential

(SOIL) ED042T: Total Sulfur by LECO

(SOIL) EA013: Acid Neutralising Capacity

QUALITY CONTROL REPORT

Work Order	: **ES2508175**	Page	: 1 of 12
Client	: **EMM CONSULTING PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: JAMES TUFF	Contact	: Samiksha Sathish
Address	: The Forum Level 10 201 Pacific Highway St Leonards NSW NSW 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: E221111	Date Samples Received	: 21-Mar-2025
Order number	: ----	Date Analysis Commenced	: 24-Mar-2025
C-O-C number	: ----	Issue Date	: 23-Apr-2025
Sampler	: ED DAWES		
Site	: ----		
Quote number	: EN/111		
No. of samples received	: 60		
No. of samples analysed	: 55		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6458046)									
ES2508175-001	MB2202A_130	EG005T: Aluminium	7429-90-5	50	mg/kg	7080	8090	13.4	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	7540	9010	17.8	0% - 20%
ES2508175-011	MB2203A_90	EG005T: Aluminium	7429-90-5	50	mg/kg	3560	3370	5.4	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	3910	3620	7.6	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6458050)									
ES2508175-021	MB2204A_20	EG005T: Aluminium	7429-90-5	50	mg/kg	4350	4950	12.9	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	6670	7470	11.3	0% - 20%
ES2508175-033	MB2204B_40	EG005T: Aluminium	7429-90-5	50	mg/kg	720	# 1020	35.1	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	5950	# 3660	47.8	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6462797)									
ES2508175-041	MB2205A_130	EG005T: Aluminium	7429-90-5	50	mg/kg	1890	1840	2.8	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	3120	3200	2.5	0% - 20%
ES2508175-051	MB2206A_70	EG005T: Aluminium	7429-90-5	50	mg/kg	8280	8540	3.0	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	4120	4490	8.6	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EA002: pH 1:5 (Soils) (QC Lot: 6500235)									
ES2508175-001	MB2202A_130	EA002: pH Value	----	0.1	pH Unit	9.1	9.2	1.2	0% - 20%
ES2508175-011	MB2203A_90	EA002: pH Value	----	0.1	pH Unit	9.3	9.3	0.0	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 6500237)									
ES2508175-021	MB2204A_20	EA002: pH Value	----	0.1	pH Unit	4.8	4.6	2.1	0% - 20%
ES2508175-031	MB2204B_3	EA002: pH Value	----	0.1	pH Unit	6.1	6.0	1.7	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 6500239)									
ES2508175-041	MB2205A_130	EA002: pH Value	----	0.1	pH Unit	9.2	9.2	0.0	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 6500236)									
ES2508175-001	MB2202A_130	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	57	56	0.0	0% - 20%
ES2508175-011	MB2203A_90	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	59	59	0.0	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 6500238)									
ES2508175-021	MB2204A_20	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	148	132	11.3	0% - 20%
ES2508175-031	MB2204B_3	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	14	15	0.0	0% - 50%
EA010: Conductivity (1:5) (QC Lot: 6500240)									
ES2508175-041	MB2205A_130	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	66	71	7.2	0% - 20%
EA013: Acid Neutralising Capacity (QC Lot: 6469177)									
EM2504923-006	Anonymous	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	22.6	23.4	3.0	0% - 20%
EM2504923-016	Anonymous	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	15.5	15.3	1.0	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6458052)									
ES2508175-001	MB2202A_130	EA055: Moisture Content	----	0.1 (1.0)*	%	4.0	4.1	0.0	No Limit
ES2508175-009	MB2203A_50	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6458053)									
ES2508175-021	MB2204A_20	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
ES2508175-029	MB2204A_180	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6462800)									
ES2508175-041	MB2205A_130	EA055: Moisture Content	----	0.1 (1.0)*	%	2.8	2.5	11.9	No Limit
ES2508175-049	MB2206A_30	EA055: Moisture Content	----	0.1 (1.0)*	%	5.9	4.7	22.4	No Limit
ED042T: Total Sulfur by LECO (QC Lot: 6468938)									
EM2504923-001	Anonymous	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.12	0.12	0.0	0% - 50%
EM2504923-011	Anonymous	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.10	0.12	16.9	0% - 50%
EG020T: Total Metals by ICP-MS (QC Lot: 6458043)									
ES2508175-001	MB2202A_130	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	12.8	# 9.7	28.0	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	14.8	13.5	9.8	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.5	0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG020T: Total Metals by ICP-MS (QC Lot: 6458043) - continued									
ES2508175-001	MB2202A_130	EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	3.0	3.4	10.7	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	6.1	7.1	14.9	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	24.4	# 17.5	33.1	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	139	148	6.3	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	5.3	6.2	15.8	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	7.2	# 5.0	34.8	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	0.2	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.3	0.4	28.9	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	24.3	26.8	9.6	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.2	0.3	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	20.8	24.2	15.0	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	8	10	20.2	0% - 50%
ES2508175-011	MB2203A_90	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	3.2	2.6	18.1	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	5.3	5.1	4.8	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.2	0.1	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	1.6	1.7	6.3	0% - 50%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	13.1	11.8	10.7	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	4.0	# 2.9	32.4	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	34.5	30.7	11.8	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	5.3	5.0	5.8	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	1.9	1.4	29.5	0% - 50%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.4	0.4	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	5.8	5.6	3.8	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	11.3	11.4	1.1	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	8	8	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6458044)									
ES2508175-001	MB2202A_130	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.1	0.7	143	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	1.1	1.6	34.3	0% - 50%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
ES2508175-011	MB2203A_90	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 6458044) - continued									
ES2508175-011	MB2203A_90	EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	3.8	3.4	10.5	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6458045)									
ES2508175-001	MB2202A_130	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2508175-011	MB2203A_90	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6458047)									
ES2508175-021	MB2204A_20	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	3.8	3.8	0.0	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	37.4	37.1	0.8	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.3	0.4	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	3.7	3.6	0.0	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	10.0	11.0	9.4	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	7.4	8.4	12.1	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	48.1	58.2	18.9	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	0.2	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	11.2	11.3	0.0	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	3.4	3.4	0.0	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	13.9	15.0	7.8	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.2	0.3	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	18.0	20.2	12.0	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	8	8	0.0	No Limit
ES2508175-033	MB2204B_40	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	23.2	27.2	15.6	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	2.1	2.0	0.0	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.1	0.2	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	5.8	5.5	4.3	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	2.4	2.6	8.6	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	14.6	13.5	7.8	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	59.2	60.5	2.3	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	0.2	0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	14.2	13.3	6.8	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	15.6	15.7	0.9	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.6	0.2	80.5	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	1.2	1.3	9.3	0% - 50%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	0.2	66.7	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	15.8	14.7	7.1	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 6458047) - continued									
ES2508175-033	MB2204B_40	EG020X-T: Vanadium	7440-62-2	1	mg/kg	3	3	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6458048)									
ES2508175-021	MB2204A_20	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	0.1	0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.1	0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	2.0	2.2	13.5	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
ES2508175-033	MB2204B_40	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	0.2	0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.2	0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	3.3	3.1	4.5	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6458049)									
ES2508175-021	MB2204A_20	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2508175-033	MB2204B_40	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6462794)									
ES2508175-041	MB2205A_130	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	4.5	4.2	7.1	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	1.4	1.7	16.1	0% - 50%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	2.4	2.4	0.0	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	4.6	4.2	9.5	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	3.9	# 2.8	32.0	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	68.9	74.2	7.4	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	6.2	5.8	7.8	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	4.5	3.8	16.7	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.3	0.2	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.3	0.2	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	5.2	5.8	10.7	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.2	<0.1	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	7.9	8.8	11.3	0% - 50%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	6	3	71.1	No Limit
ES2508175-051	MB2206A_70	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	2.4	2.9	19.2	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	15.5	16.8	8.2	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.4	0.4	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	2.0	# 2.8	31.5	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	8.5	9.5	11.1	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG020T: Total Metals by ICP-MS (QC Lot: 6462794) - continued									
ES2508175-051	MB2206A_70	EG020X-T: Copper	7440-50-8	0.1	mg/kg	28.0	25.2	10.6	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	176	209	17.0	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	3.5	# 4.8	30.7	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	5.7	6.4	12.8	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.3	0.4	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	9.8	11.4	15.2	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	21.0	22.6	7.4	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	10	12	19.0	0% - 50%
EG020T: Total Metals by ICP-MS (QC Lot: 6462795)									
ES2508175-041	MB2205A_130	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	1.8	1.4	29.5	0% - 50%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
ES2508175-051	MB2206A_70	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	1.7	2.0	15.3	0% - 50%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6462796)									
ES2508175-041	MB2205A_130	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2508175-051	MB2206A_70	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*	*Concentration*	*LCS*	*Low*	*High*
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6458046)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	115	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	106	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6458050)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	118	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	109	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6462797)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	110	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	93.3	89.0	112
EA002: pH 1:5 (Soils) (QCLot: 6500235)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	98.8	101
EA002: pH 1:5 (Soils) (QCLot: 6500237)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	100	98.8	101
EA002: pH 1:5 (Soils) (QCLot: 6500239)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	101	98.8	101
EA010: Conductivity (1:5) (QCLot: 6500236)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	101	92.0	108
EA010: Conductivity (1:5) (QCLot: 6500238)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	102	92.0	108
EA010: Conductivity (1:5) (QCLot: 6500240)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	103	92.0	108
EA013: Acid Neutralising Capacity (QCLot: 6469177)								
EA013: ANC as H2SO4	----	----	kg H2SO4 equiv./t	----	9.9 kg H2SO4 equiv./t	90.3	82.0	120
ED042T: Total Sulfur by LECO (QCLot: 6468938)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.13 %	94.8	70.0	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6458043)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	111	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	108	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	114	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	106	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	110	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	108	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	110	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	107	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	112	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	115	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	110	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6458044)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	1.24 mg/kg	85.3	70.0	130
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	107	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	111	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6458045)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	2.4 mg/kg	99.9	80.0	120
EG020T: Total Metals by ICP-MS (QCLot: 6458047)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	109	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	108	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	110	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	107	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	112	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	109	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	108	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EG020T: Total Metals by ICP-MS (QCLot: 6458047) - continued								
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	109	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	113	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	117	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	111	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6458048)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	1.24 mg/kg	84.2	70.0	130
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	111	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	109	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6458049)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	2.4 mg/kg	102	80.0	120
EG020T: Total Metals by ICP-MS (QCLot: 6462794)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	104	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	105	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	109	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	105	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	113	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	106	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	109	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	97.8	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	99.5	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	99.7	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	115	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EG020T: Total Metals by ICP-MS (QCLot: 6462795)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	103	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	102	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6462796)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EG020T: Total Metals by ICP-MS (QCLot: 6458043)							
ES2508175-001	MB2202A_130	EG020X-T: Arsenic	7440-38-2	50 mg/kg	82.8	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	107	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	95.5	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	103	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	99.8	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	102	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6458044)							
ES2508175-001	MB2202A_130	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	99.7	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6458047)							
ES2508175-021	MB2204A_20	EG020X-T: Arsenic	7440-38-2	50 mg/kg	101	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	110	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	102	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	106	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	99.4	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	105	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6458048)							
ES2508175-021	MB2204A_20	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	97.9	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6462794)							
ES2508175-041	MB2205A_130	EG020X-T: Arsenic	7440-38-2	50 mg/kg	91.7	70.0	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6462794) - continued							
ES2508175-041	MB2205A_130	EG020X-T: Chromium	7440-47-3	50 mg/kg	110	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	108	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	89.6	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	108	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	90.2	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6462795)							
ES2508175-041	MB2205A_130	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	95.7	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2508174**	Page	: 1 of 15
Client	: **EMM CONSULTING PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: JAMES TUFF	Telephone	: +61-2-8784 8555
Project	: E221111	Date Samples Received	: 21-Mar-2025
Site	: ----	Issue Date	: 17-Apr-2025
Sampler	: ED DAWES	No. of samples received	: 60
Order number	: ----	No. of samples analysed	: 60

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG020T: Total Metals by ICP-MS	ES2508174--039	MB2201A_10	**Arsenic**	7440-38-2	48.9 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--021	BH106_30	**Arsenic**	7440-38-2	29.7 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--049	MB2201B_10	**Arsenic**	7440-38-2	43.9 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--011	BH105_190	**Barium**	7440-39-3	35.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--011	BH105_190	**Cobalt**	7440-48-4	29.2 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--031	BH107_10	**Chromium**	7440-47-3	23.3 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--039	MB2201A_10	**Copper**	7440-50-8	31.4 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--031	BH107_10	**Copper**	7440-50-8	22.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--021	BH106_30	**Manganese**	7439-96-5	22.6 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--012	BH105_210	**Manganese**	7439-96-5	30.3 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--011	BH105_190	**Nickel**	7440-02-0	52.5 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--021	BH106_30	**Lead**	7439-92-1	27.5 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--012	BH105_210	**Lead**	7439-92-1	24.2 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--012	BH105_210	**Zinc**	7440-66-6	44.2 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--011	BH105_190	**Tin**	7440-31-5	38.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508174--031	BH107_10	**Tin**	7440-31-5	55.2 %	0% - 20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EG020T: Total Metals by ICP-MS	ES2508174--001	BH104_375	**Arsenic**	7440-38-2	45.6 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA002: pH 1:5 (Soils)						
Snap Lock Bag MB2201A_10	15-Apr-2025	26-Mar-2025	**20**	----	----	----

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	**Days overdue**	Date analysed	Due for analysis	**Days overdue**
EA002: pH 1:5 (Soils) - Analysis Holding Time Compliance						
Snap Lock Bag						
BH104_375, BH105_10, BH105_30, BH105_50, BH105_70, BH105_90, BH105_110, BH105_130, BH105_150, BH105_170, BH105_190, BH105_210, BH105_230, BH105_250, BH105_270, BH105_290, BH105_310, BH105_330, BH105_350, BH106_10, BH106_30, BH106_50, BH106_70, BH106_90, BH106_110, BH106_130, BH106_150, BH106_170, BH106_190, BH106_210, BH107_10, BH107_30, BH108_10, BH108_30, BH108_50, BH108_70, BH108_90, BH108_110, MB2201A_30, MB2201A_50, MB2201A_70, MB2201A_90, MB2201A_110, MB2201A_130, MB2201A_150, MB2201A_170, MB2201A_190, MB2201B_10, MB2201B_30, MB2201B_50, MB2201B_70, MB2201B_90, MB2201B_110, MB2202A_10, MB2202A_30, MB2202A_50, MB2202A_70, MB2202A_90, MB2202A_110	15-Apr-2025	28-Mar-2025	**18**	----	----	----
EA010: Conductivity (1:5)						
Snap Lock Bag						
MB2201A_10	15-Apr-2025	26-Mar-2025	**20**	----	----	----

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Due for extraction	Days overdue	Analysis: Date analysed	Due for analysis	Days overdue
EA010: Conductivity (1:5) - Analysis Holding Time Compliance							
Snap Lock Bag							
BH104_375,	BH105_10,	15-Apr-2025	28-Mar-2025	**18**	----	----	----
BH105_30,	BH105_50,						
BH105_70,	BH105_90,						
BH105_110,	BH105_130,						
BH105_150,	BH105_170,						
BH105_190,	BH105_210,						
BH105_230,	BH105_250,						
BH105_270,	BH105_290,						
BH105_310,	BH105_330,						
BH105_350,	BH106_10,						
BH106_30,	BH106_50,						
BH106_70,	BH106_90,						
BH106_110,	BH106_130,						
BH106_150,	BH106_170,						
BH106_190,	BH106_210,						
BH107_10,	BH107_30,						
BH108_10,	BH108_30,						
BH108_50,	BH108_70,						
BH108_90,	BH108_110,						
MB2201A_30,	MB2201A_50,						
MB2201A_70,	MB2201A_90,						
MB2201A_110,	MB2201A_130,						
MB2201A_150,	MB2201A_170,						
MB2201A_190,	MB2201B_10,						
MB2201B_30,	MB2201B_50,						
MB2201B_70,	MB2201B_90,						
MB2201B_110,	MB2202A_10,						
MB2202A_30,	MB2202A_50,						
MB2202A_70,	MB2202A_90,						
MB2202A_110							
EA055: Moisture Content (Dried @ 105-110°C)							
Snap Lock Bag							
BH105_210,	BH105_230,	----	----	----	15-Apr-2025	04-Apr-2025	**11**
BH105_310,	BH105_350,						
BH106_10							

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type / Analytical Methods	Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification

Matrix: **SOIL**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)						
Total Metals by ICP-MS - Suite Z	EG020Z-T	0	60	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Total Metals by ICP-AES	EG005T	0	60	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EA002: pH 1:5 (Soils)							
Snap Lock Bag (EA002) MB2201A_10	**19-Mar-2025**	**15-Apr-2025**	26-Mar-2025	×	**16-Apr-2025**	16-Apr-2025	✓
Snap Lock Bag (EA002)							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002: pH 1:5 (Soils) - Continued								
BH104_375,	BH105_10,	21-Mar-2025	15-Apr-2025	28-Mar-2025	×	16-Apr-2025	16-Apr-2025	✓
BH105_30,	BH105_50,							
BH105_70,	BH105_90,							
BH105_110,	BH105_130,							
BH105_150,	BH105_170,							
BH105_190,	BH105_210,							
BH105_230,	BH105_250,							
BH105_270,	BH105_290,							
BH105_310,	BH105_330,							
BH105_350,	BH106_10,							
BH106_30,	BH106_50,							
BH106_70,	BH106_90,							
BH106_110,	BH106_130,							
BH106_150,	BH106_170,							
BH106_190,	BH106_210,							
BH107_10,	BH107_30,							
BH108_10,	BH108_30,							
BH108_50,	BH108_70,							
BH108_90,	BH108_110,							
MB2201A_30,	MB2201A_50,							
MB2201A_70,	MB2201A_90,							
MB2201A_110,	MB2201A_130,							
MB2201A_150,	MB2201A_170,							
MB2201A_190,	MB2201B_10,							
MB2201B_30,	MB2201B_50,							
MB2201B_70,	MB2201B_90,							
MB2201B_110,	MB2202A_10,							
MB2202A_30,	MB2202A_50,							
MB2202A_70,	MB2202A_90,							
MB2202A_110								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010: Conductivity (1:5)								
Snap Lock Bag (EA010)								
MB2201A_10		**19-Mar-2025**	**15-Apr-2025**	26-Mar-2025	×	**16-Apr-2025**	13-May-2025	✓
Snap Lock Bag (EA010)								
BH104_375,	BH105_10,	**21-Mar-2025**	**15-Apr-2025**	28-Mar-2025	×	**16-Apr-2025**	13-May-2025	✓
BH105_30,	BH105_50,							
BH105_70,	BH105_90,							
BH105_110,	BH105_130,							
BH105_150,	BH105_170,							
BH105_190,	BH105_210,							
BH105_230,	BH105_250,							
BH105_270,	BH105_290,							
BH105_310,	BH105_330,							
BH105_350,	BH106_10,							
BH106_30,	BH106_50,							
BH106_70,	BH106_90,							
BH106_110,	BH106_130,							
BH106_150,	BH106_170,							
BH106_190,	BH106_210,							
BH107_10,	BH107_30,							
BH108_10,	BH108_30,							
BH108_50,	BH108_70,							
BH108_90,	BH108_110,							
MB2201A_30,	MB2201A_50,							
MB2201A_70,	MB2201A_90,							
MB2201A_110,	MB2201A_130,							
MB2201A_150,	MB2201A_170,							
MB2201A_190,	MB2201B_10,							
MB2201B_30,	MB2201B_50,							
MB2201B_70,	MB2201B_90,							
MB2201B_110,	MB2202A_10,							
MB2202A_30,	MB2202A_50,							
MB2202A_70,	MB2202A_90,							
MB2202A_110								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA013: Acid Neutralising Capacity								
Pulp Bag (EA013)								
BH104_375,	BH105_10,	**21-Mar-2025**	**15-Apr-2025**	21-Mar-2026	✓	**15-Apr-2025**	12-Oct-2025	✓
BH105_30,	BH105_50,							
BH105_70,	BH105_90,							
BH105_110,	BH105_130,							
BH105_150,	BH105_170,							
BH105_190,	BH105_210,							
BH105_230,	BH105_250,							
BH105_270,	BH105_290,							
BH105_310,	BH105_330,							
BH105_350,	BH106_10,							
BH106_30,	BH106_50,							
BH106_70,	BH106_90,							
BH106_110,	BH106_130,							
BH106_150,	BH106_170,							
BH106_190,	BH106_210,							
BH107_10,	BH107_30,							
BH108_10,	BH108_30,							
BH108_50,	BH108_70,							
BH108_90,	BH108_110							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Snap Lock Bag (EA055) MB2201A_10		**19-Mar-2025**	----	----	----	**26-Mar-2025**	02-Apr-2025	✓
Snap Lock Bag (EA055) BH104_375, BH105_30, BH105_70, BH105_110, BH105_150, BH105_190	BH105_10, BH105_50, BH105_90, BH105_130, BH105_170,	**21-Mar-2025**	----	----	----	**04-Apr-2025**	04-Apr-2025	✓
Snap Lock Bag (EA055) BH105_210,	BH105_230	**21-Mar-2025**	----	----	----	**15-Apr-2025**	04-Apr-2025	×
Snap Lock Bag (EA055) BH105_250, BH105_290	BH105_270,	**21-Mar-2025**	----	----	----	**04-Apr-2025**	04-Apr-2025	✓
Snap Lock Bag (EA055) BH105_310		**21-Mar-2025**	----	----	----	**15-Apr-2025**	04-Apr-2025	×
Snap Lock Bag (EA055) BH105_330		**21-Mar-2025**	----	----	----	**04-Apr-2025**	04-Apr-2025	✓
Snap Lock Bag (EA055) BH105_350,	BH106_10	**21-Mar-2025**	----	----	----	**15-Apr-2025**	04-Apr-2025	×
Snap Lock Bag (EA055) BH106_30, BH106_70, BH106_110, BH106_150, BH106_190, BH107_10, BH108_10, BH108_50, BH108_90,	BH106_50, BH106_90, BH106_130, BH106_170, BH106_210, BH107_30, BH108_30, BH108_70, BH108_110	**21-Mar-2025**	----	----	----	**04-Apr-2025**	04-Apr-2025	✓
Snap Lock Bag (EA055) MB2201A_50, MB2201A_110, MB2201A_150, MB2201A_190, MB2202A_30, MB2202A_70,	MB2201A_90, MB2201A_130, MB2201A_170, MB2202A_10, MB2202A_50, MB2202A_90	**21-Mar-2025**	----	----	----	**26-Mar-2025**	04-Apr-2025	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED042T: Total Sulfur by LECO								
Pulp Bag (ED042T)								
BH104_375,	BH105_10,	**21-Mar-2025**	**14-Apr-2025**	17-Sep-2025	✓	**14-Apr-2025**	17-Sep-2025	✓
BH105_30,	BH105_50,							
BH105_70,	BH105_90,							
BH105_110,	BH105_130,							
BH105_150,	BH105_170,							
BH105_190,	BH105_210,							
BH105_230,	BH105_250,							
BH105_270,	BH105_290,							
BH105_310,	BH105_330,							
BH105_350,	BH106_10,							
BH106_30,	BH106_50,							
BH106_70,	BH106_90,							
BH106_110,	BH106_130,							
BH106_150,	BH106_170,							
BH106_190,	BH106_210,							
BH107_10,	BH107_30,							
BH108_10,	BH108_30,							
BH108_50,	BH108_70,							
BH108_90,	BH108_110							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation Date extracted	 Due for extraction	 Evaluation	Analysis Date analysed	 Due for analysis	 Evaluation
EG005(ED093)T: Total Metals by ICP-AES								
Snap Lock Bag (EG005T) MB2201A_10		19-Mar-2025	27-Mar-2025	15-Sep-2025	✓	27-Mar-2025	15-Sep-2025	✓
Snap Lock Bag (EG005T) BH104_375, BH105_30, BH105_70, BH105_110, BH105_150, BH105_190, BH105_270, BH105_330, BH106_50, BH106_90, BH106_130, BH106_170, BH106_210, BH107_30, BH108_30, BH108_70, BH108_110	BH105_10, BH105_50, BH105_90, BH105_130, BH105_170, BH105_250, BH105_290, BH106_30, BH106_70, BH106_110, BH106_150, BH106_190, BH107_10, BH108_10, BH108_50, BH108_90,	21-Mar-2025	04-Apr-2025	17-Sep-2025	✓	07-Apr-2025	17-Sep-2025	✓
Snap Lock Bag (EG005T) BH105_210, BH105_310, BH106_10,	BH105_230, BH105_350, MB2201B_110	21-Mar-2025	15-Apr-2025	17-Sep-2025	✓	16-Apr-2025	17-Sep-2025	✓
Snap Lock Bag (EG005T) MB2201A_30, MB2201A_70, MB2201A_110, MB2201A_150, MB2201A_190, MB2201B_30, MB2201B_70, MB2202A_10, MB2202A_50, MB2202A_90,	MB2201A_50, MB2201A_90, MB2201A_130, MB2201A_170, MB2201B_10, MB2201B_50, MB2201B_90, MB2202A_30, MB2202A_70, MB2202A_110	21-Mar-2025	27-Mar-2025	17-Sep-2025	✓	27-Mar-2025	17-Sep-2025	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS								
Snap Lock Bag (EG020Z-T)								
MB2201A_10		**19-Mar-2025**	**27-Mar-2025**	15-Sep-2025	✓	**27-Mar-2025**	15-Sep-2025	✓
Snap Lock Bag (EG020Z-T)								
BH104_375,	BH105_10,	**21-Mar-2025**	**04-Apr-2025**	17-Sep-2025	✓	**07-Apr-2025**	17-Sep-2025	✓
BH105_30,	BH105_50,							
BH105_70,	BH105_90,							
BH105_110,	BH105_130,							
BH105_150,	BH105_170,							
BH105_190,	BH105_250,							
BH105_270,	BH105_290,							
BH105_330,	BH106_30,							
BH106_50,	BH106_70,							
BH106_90,	BH106_110,							
BH106_130,	BH106_150,							
BH106_170,	BH106_190,							
BH106_210,	BH107_10,							
BH107_30,	BH108_10,							
BH108_30,	BH108_50,							
BH108_70,	BH108_90,							
BH108_110								
Snap Lock Bag (EG020Z-T)								
BH105_210,	BH105_230,	**21-Mar-2025**	**15-Apr-2025**	17-Sep-2025	✓	**16-Apr-2025**	17-Sep-2025	✓
BH105_310,	BH105_350,							
BH106_10,	MB2201B_110							
Snap Lock Bag (EG020Z-T)								
MB2201A_30,	MB2201A_50,	**21-Mar-2025**	**27-Mar-2025**	17-Sep-2025	✓	**27-Mar-2025**	17-Sep-2025	✓
MB2201A_70,	MB2201A_90,							
MB2201A_110,	MB2201A_130,							
MB2201A_150,	MB2201A_170,							
MB2201A_190,	MB2201B_10,							
MB2201B_30,	MB2201B_50,							
MB2201B_70,	MB2201B_90,							
MB2202A_10,	MB2202A_30,							
MB2202A_50,	MB2202A_70,							
MB2202A_90,	MB2202A_110							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Acid Neutralising Capacity (ANC)	EA013	4	38	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	8	68	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	4	38	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	8	60	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	9	60	**15.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	8	60	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Z	EG020Z-T	8	60	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acid Neutralising Capacity (ANC)	EA013	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	6	60	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	5	60	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	5	60	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	5	60	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Z	EG020Z-T	0	60	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	3	60	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	5	60	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	5	60	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	5	60	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Z	EG020Z-T	5	60	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Metals by ICP-AES	EG005T	0	60	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	6	60	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	5	60	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
pH (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Net Acid Production Potential	EA009	SOIL	In house: Referenced to Coastech Research (Canada)(Mod.). NAPP = Acid Production Potential (APP or MAP-Maximum Acid Potential) minus Neutralising Capacity (ANC). NAPP may be +ve, zero or -ve.
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Acid Neutralising Capacity (ANC)	EA013	SOIL	In house: Referenced to USEPA 600/2-78-054, I. Miller (2000). A fizz test is done to semiquanititatively estimate the likely reactivity. The soil is then reacted with an known excess quanitity of an appropriate acid. Titration determines the acid remaining, and the ANC can be calculated from comparison with a blank titration.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Sulfur - Total as S (LECO)	ED042T	SOIL	In house: Dried and pulverised sample is combusted in a high temperature furnace in the presence of strong oxidants / catalysts. The evolved S (as SO2) is measured by infra-red detector
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Metals by ICP-MS - Suite X	EG020X-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Y	EG020Y-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Z	EG020Z-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Dry and Pulverise (up to 100g)	GEO30	SOIL	#

Mandatory Fields	CHAIN OF CUSTODY			Page ___of___
CLIENT CODE: EMGAMM	*PROJECT MANAGER: James Tuff	SAMPLER: Ed Dawes		CoC # (if applicable)
*CLIENT: EMM CONSULTING PTY LTD	*PM MOBILE: 0450 340 432	SAMPLER MOBILE:		
OFFICE (Invoiced Office): Brisbane	ALS QUOTE # (Client PL if blank)	PURCHASE ORDER NO.:		
PROJECT NO./PROJECT: E221111		SITE: Lake Lyell		
*INVOICE TO: (Client default if nil)		X CC Invoice to PM		BIOSECURITY
*EMAIL REPORTS TO: (defaults to PM if blank)		*ANALYSIS REQUIRED		Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** Please check box → Standard Storage time from receipt of samples: Waters - 3 weeks; Soils - 2 months

- ☐ Standard Storage
- X Extended Storage

Specify Disposal Date: Please contact James Tuff and do not dispose

Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box → (Not all tests can be expedited, contact Client Services for more information)

- X 5+ days (no surcharge)
- ☐ 3 day (+15%)
- ☐ 2 day (+30%)
- ☐ 1 day (+50%)

*ANALYSIS REQUIRED: NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted prices. Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). Mark an X in the boxes below analysis to indicate the parameter listed above to sample.

Environmental Division
Sydney
Work Order Reference
ES2508175

Telephone : + 61-2-8784 8555

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid (S) Water (W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EN020PR - Dry and store	EA032 - Conductivity - Saturated Paste	EA031 - pH (Saturated Paste)	ASS1 - MAEP (includes ANC, Total S)	ME-02S - Total extractable metals via 2 acid digest and ICP MS (For scan inc Mercury)
	BH201	1		1	S	X	X	X	X	X
	BH201	5		1	S	X	X	X	X	X
	BH201	25		1	S	X	X	X	X	X
	BH201	45		1	S	X	X	X	X	X
	BH201	65		1	S	X	X	X	X	X
	BH201	85		1	S	X	X	X	X	X
	BH201	125		1	S	X	X	X	X	X
	BH202	61		1	S	X	X	X	X	X
	BH202	75		1	S	X	X	X	X	X
	BH203	4		1	S	X	X	X	X	X
	BH203	30		1	S	X	X	X	X	X
	BH203	30		1	S	X	X	X	X	X
	BH203	50		1	S	X	X	X	X	X
	BH203	82.24		1	S	X	X	X	X	X
	BH203	100		1	S	X	X	X	X	X
	BH203	120		1	S	X	X	X	X	X
	BH203	140		1	S	X	X	X	X	X
	BH203	160		1	S	X	X	X	X	X
	BH203	180		1	S	X	X	X	X	X
	BH203	200		1	S	X	X	X	X	X
	BH203	210		1	S	X	X	X	X	X
	BH204	10		1	S	X	X	X	X	X
	BH204	30		1	S	X	X	X	X	X
	BH204	50		1	S	X	X	X	X	X
	BH204	70		1	S	X	X	X	X	X
	BH204	90		1	S	X	X	X	X	X
	BH204	110		1	S	X	X	X	X	X
	BH204	130		1	S	X	X	X	X	X
	BH204	150		1	S	X	X	X	X	X
	BH204	170		1	S	X	X	X	X	X
	BH204	185		1	S	X	X	X	X	X
	BH204	210		1	S	X	X	X	X	X
	BH204	230		1	S	X	X	X	X	X
	BH204	250		1	S	X	X	X	X	X
	BH204	270		1	S	X	X	X	X	X
	BH204	290		1	S	X	X	X	X	X
	BH101	10		1	S	X	X	X	X	X
	BH101	19		1	S	X	X	X	X	X
	BH101	50		1	S	X	X	X	X	X
	BH101	70		1	S	X	X	X	X	X
	BH102	10		1	S	X	X	X	X	X
	BH103	10		1	S	X	X	X	X	X
	BH103	30		1	S	X	X	X	X	X
	BH103	50		1	S	X	X	X	X	X
	BH103	70		1	S	X	X	X	X	X
	BH104	10		1	S	X	X	X	X	X
	BH104	30		1	S	X	X	X	X	X
	BH104	50		1	S	X	X	X	X	X

Subcontract Lab / Split WO: ES2508175/817
Lab / Analysis: Brisbane ASS-1
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

		BH104		70		1	S	X	X	X	X	X								☐	☐	
		BH104		90		1	S	X	X	X	X	X								☐	☐	
		BH104		100		1	S	X	X	X	X	X								☐	☐	
		BH104		120		1	S	X	X	X	X	X								☐	☐	
		BH104		140		1	S	X	X	X	X	X								☐	☐	
		BH104		160		1	S	X	X	X	X	X								☐	☐	
		BH104		180		1	S	X	X	X	X	X								☐	☐	
		BH104		200		1	S	X	X	X	X	X								☐	☐	
		BH104		220		1	S	X	X	X	X	X								☐	☐	
		BH104		240		1	S	X	X	X	X	X								☐	☐	
		BH104		249		1	S	X	X	X	X	X								☐	☐	
		BH104		270		1	S	X	X	X	X	X								☐	☐	
		BH104		290		1	S	X	X	X	X	X								☐	☐	
		BH104		310		1	S	X	X	X	X	X								☐	☐	
		BH104		327		1	S	X	X	X	X	X								☐	☐	
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		BH105		10		1	S	X	X	X	X	X								☐	☐	
		BH105		30		1	S	X	X	X	X	X								☐	☐	
		BH105		50		1	S	X	X	X	X	X								☐	☐	
		BH105		70		1	S	X	X	X	X	X								☐	☐	
		BH105		88		1	S	X	X	X	X	X								☐	☐	
		BH105		110		1	S	X	X	X	X	X								☐	☐	
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		BH105		170		1	S	X	X	X	X	X								☐	☐	
		BH105		190		1	S	X	X	X	X	X								☐	☐	
		BH105		210		1	S	X	X	X	X	X								☐	☐	
		BH105		230		1	S	X	X	X	X	X								☐	☐	
		BH105		250		1	S	X	X	X	X	X								☐	☐	
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		BH106		150		1	S	X	X	X	X	X								☐	☐	
		BH106		170		1	S	X	X	X	X	X								☐	☐	
		BH106		190		1	S	X	X	X	X	X								☐	☐	
		BH106		210		1	S	X	X	X	X	X								☐	☐	
		BH107		10		1	S	X	X	X	X	X								☐	☐	
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		BH108		90		1	S	X	X	X	X	X								☐	☐	
		BH108		110		1	S	X	X	X	X	X								☐	☐	
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		MS2201A		50		1	S	X	X	X	X	X								☐	☐	
		MS2201A		70		1	S	X	X	X	X	X								☐	☐	
		MS2201A		90		1	S	X	X	X	X	X								☐	☐	
		MS2201A		110		1	S	X	X	X	X	X								☐	☐	
		MS2201A		130		1	S	X	X	X	X	X								☐	☐	
		MS2201A		150		1	S	X	X	X	X	X								☐	☐	
		MS2201A		170		1	S	X	X	X	X	X								☐	☐	
		MS2201A		190		1	S	X	X	X	X	X								☐	☐	
		MS2201B		10		1	S	X	X	X	X	X								☐	☐	
		MS2201B		30		1	S	X	X	X	X	X								☐	☐	

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	[illegible]	10	1	5	X	X	X	X	X	☐	☐
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	[illegible]	80	1	5	X	X	X	X	X	☐	☐
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2	[illegible]	160	1	5	X	X	X	X	X	☐	☐
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4	[illegible]	20	1	5	X	X	X	X	X	☐	☐
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6	[illegible]	70	1	5	X	X	X	X	X	☐	☐
7	[illegible]	10	1	5	X	X	X	X	X	☐	☐
8	[illegible]	20	1	5	X	X	X	X	X	☐	☐
9	[illegible]	50	1	5	X	X	X	X	X	☐	☐
10	[illegible]	70	1	5	X	X	X	X	X	☐	☐
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12	[illegible]	110	1	5	X	X	X	X	X	☐	☐
13	[illegible]	120	1	5	X	X	X	X	X	☐	☐
14	[illegible]	150	1	5	X	X	X	X	X	☐	☐
15	[illegible]	170	1	5	X	X	X	X	X	☐	☐
16	[illegible]	10	1	5	X	X	X	X	X	☐	☐
17	[illegible]	20	1	5	X	X	X	X	X	☐	☐
18	[illegible]	50	1	5	X	X	X	X	X	☐	☐
19	[illegible]	60	1	5	X	X	X	X	X	☐	☐
20	[illegible]	7	1	5	X	X	X	X	X	☐	☐
21	[illegible]	20	1	5	X	X	X	X	X	☐	☐
22	[illegible]	40	1	5	X	X	X	X	X	☐	☐
23	[illegible]	60	1	5	X	X	X	X	X	☐	☐
24	[illegible]	80	1	5	X	X	X	X	X	☐	☐
25	[illegible]	100	1	5	X	X	X	X	X	☐	☐
26	[illegible]	120	1	5	X	X	X	X	X	☐	☐
27	[illegible]	140	1	5	X	X	X	X	X	☐	☐
28	[illegible]	160	1	5	X	X	X	X	X	☐	☐
29	[illegible]	180	1	5	X	X	X	X	X	☐	☐
30	[illegible]	200	1	5	X	X	X	X	X	☐	☐
31	[illegible]	7	1	5	X	X	X	X	X	☐	☐
32	[illegible]	8	1	5	X	X	X	X	X	☐	☐
33	[illegible]	40	1	5	X	X	X	X	X	☐	☐
34	[illegible]	60	1	5	X	X	X	X	X	☐	☐
35	[illegible]	10	1	5	X	X	X	X	X	☐	☐
36	[illegible]	20	1	5	X	X	X	X	X	☐	☐
37	[illegible]	40	1	5	X	X	X	X	X	☐	☐
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41	[illegible]	120	1	5	X	X	X	X	X	☐	☐
42	[illegible]	160	1	5	X	X	X	X	X	☐	☐
43	[illegible]	170	1	5	X	X	X	X	X	☐	☐
44	[illegible]	190	1	5	X	X	X	X	X	☐	☐
45	[illegible]	10	1	5	X	X	X	X	X	☐	☐
46	[illegible]	20	1	5	X	X	X	X	X	☐	☐
47	[illegible]	50	1	5	X	X	X	X	X	☐	☐
48	[illegible]	10	1	5	X	X	X	X	X	☐	☐
49	[illegible]	20	1	5	X	X	X	X	X	☐	☐
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51	[illegible]	20	1	5	X	X	X	X	X	☐	☐
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53	[illegible]	20	1	5	X	X	X	X	X	☐	☐
54	[illegible]	40	1	5	X	X	X	X	X	☐	☐
55	[illegible]	70	1	5	X	X	X	X	X	☐	☐

56	BH202_30										
57	BH202_219										
58	BH203_60										
59	BH203_250										
60	Unlabelled _70										
					1	5	X	X	X	X	X

Receipt Detail Lab use Only	Cooling Method: Ice Frozen / Melted; Ice Bricks Frozen / Thawed; None	Sample Temp at Receipt: °C °C °C	Security Seal Intact (circle): Yes / No / NA(None)
Carrier Details: ☐ Courier/Post ☐ Client; Con Note #	Packaging (Circle): Hard Esky, Foam Esky, Box/Bag/Other; Count # # #		
Relinquished by: Edward Rees	Signature: Edward Rees	Date/Time: 20/3/25 10:30am	
Received by: L. Shawcross	Signature:	Date/Time: 20/03/25	
Relinquished by:	Signature:	Date/Time:	
Received by:	Signature:	Date/Time:	

rec: Fitton 21/3/25 11:3[illegible]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2508175**	Page	: 1 of 24
Client	: **EMM CONSULTING PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: JAMES TUFF	Contact	: Samiksha Sathish
Address	: The Forum Level 10 201 Pacific Highway St Leonards NSW NSW 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: E221111	Date Samples Received	: 21-Mar-2025 11:30
Order number	: ----	Date Analysis Commenced	: 24-Mar-2025
C-O-C number	: ----	Issue Date	: 23-Apr-2025 12:38
Sampler	: ED DAWES		
Site	: ----		
Quote number	: EN/111		
No. of samples received	: 60		
No. of samples analysed	: 55		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005: Poor precision was obtained for Aluminium and Iron on sample ES2508175-#031. Confirmed by redigestion and reanalysis.
- EG020T: Poor precision was obtained for Arsenic, Copper and Lead on sample ES2508175-001. Confirmed by re-digestion and reanalysis.
- EG020T: Poor precision was obtained for Copper on sample ES25008175-011. Confirmed by re-digestion and reanalysis.
- EG020T: Poor precision was obtained for Copper on sample ES25008175-041. Confirmed by re-digestion and reanalysis.
- EG020T: Poor precision was obtained for Cobalt and Nickel on sample ES25008175-051. Confirmed by re-digestion and reanalysis.
- Split workorder - ES2508095, ES2508174
- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2202A_130	MB2202A_150	MB2202B_10	MB2202B_30	MB2202B_50
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-001	ES2508175-002	ES2508175-003	ES2508175-004	ES2508175-005
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.1**	**9.2**	**5.3**	**6.2**	**8.7**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**57**	**52**	**20**	**20**	**34**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**4.0**	**5.5**	**1.2**	**8.8**	**10.4**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**7080**	**7280**	**1160**	**9010**	**8750**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**7540**	**10700**	**7700**	**9960**	**7250**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**12.8**	**9.2**	**34.8**	**1.3**	**4.5**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**14.8**	**11.1**	**2.7**	**58.0**	**10.9**
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	**0.2**	**0.1**
Beryllium	7440-41-7	0.1	mg/kg	**0.5**	**0.6**	**0.2**	**0.8**	**0.7**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	**0.2**
Cobalt	7440-48-4	0.1	mg/kg	**3.0**	**4.3**	**0.1**	**3.4**	**3.6**
Chromium	7440-47-3	0.1	mg/kg	**6.1**	**9.6**	**10.0**	**14.4**	**5.6**
Copper	7440-50-8	0.1	mg/kg	**24.4**	**5.1**	**4.3**	**7.5**	**6.8**
Thorium	7440-29-1	0.1	mg/kg	**1.1**	**2.2**	**2.7**	**2.2**	**2.2**
Manganese	7439-96-5	0.1	mg/kg	**139**	**265**	**1.3**	**44.5**	**164**
Strontium	7440-24-6	0.1	mg/kg	**16.3**	**21.5**	**0.3**	**7.3**	**15.5**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**5.3**	**8.8**	**0.3**	**8.9**	**9.5**
Lead	7439-92-1	0.1	mg/kg	**7.2**	**4.1**	**3.2**	**2.1**	**23.4**

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

			Sample ID	MB2202A_130	MB2202A_150	MB2202B_10	MB2202B_30	MB2202B_50
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-001	ES2508175-002	ES2508175-003	ES2508175-004	ES2508175-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	**0.2**	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.3**	**0.3**	**1.0**	**0.4**	**0.4**
Zinc	7440-66-6	0.5	mg/kg	**20.8**	**21.5**	**3.4**	**30.6**	**28.7**
Lithium	7439-93-2	0.1	mg/kg	**24.3**	**22.2**	<0.1	**17.4**	**19.9**
Vanadium	7440-62-2	1	mg/kg	**8**	**10**	**15**	**15**	**8**
Tin	7440-31-5	0.1	mg/kg	**0.2**	**0.3**	**0.2**	**0.3**	**0.2**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2202B_70	MB2203A_10	MB2203A_30	MB2203A_50	MB2203A_70
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508175-006	ES2508175-007	ES2508175-008	ES2508175-009	ES2508175-010
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**8.8**	**9.1**	**9.3**	**9.1**	**9.2**
EA009: Net Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	----	**-43.2**	**-129**	----	----
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**36**	**58**	**58**	**85**	**104**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	----	**45.4**	**130**	----	----
ANC as CaCO3	----	0.1	% CaCO3	----	**4.6**	**13.2**	----	----
Fizz Rating	----	0	Fizz Unit	----	**2**	**3**	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**9.7**	<1.0	<1.0	<1.0	<1.0
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	----	**0.07**	**0.04**	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**7160**	**8040**	**5350**	**6640**	**5540**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**7940**	**6620**	**3220**	**9260**	**4840**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**0.3**	**5.8**	**2.2**	**8.0**	**1.9**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**14.0**	**11.6**	**6.7**	**27.8**	**7.6**
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.2**	<0.1	**0.2**	**0.1**
Beryllium	7440-41-7	0.1	mg/kg	**0.9**	**0.3**	**0.2**	**0.5**	**0.2**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.2**	**0.2**	<0.1	**0.2**	**0.2**
Cobalt	7440-48-4	0.1	mg/kg	**4.2**	**2.3**	**1.7**	**5.4**	**2.5**

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

			Sample ID	MB2202B_70	MB2203A_10	MB2203A_30	MB2203A_50	MB2203A_70
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508175-006	ES2508175-007	ES2508175-008	ES2508175-009	ES2508175-010
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.1	mg/kg	**4.0**	**14.2**	**9.7**	**15.9**	**12.2**
Copper	7440-50-8	0.1	mg/kg	**51.6**	**8.0**	**2.6**	**9.8**	**4.4**
Thorium	7440-29-1	0.1	mg/kg	**2.0**	**2.8**	**3.3**	**1.6**	**4.1**
Manganese	7439-96-5	0.1	mg/kg	**66.2**	**66.0**	**85.1**	**51.6**	**33.4**
Strontium	7440-24-6	0.1	mg/kg	**15.0**	**34.4**	**39.4**	**6.2**	**24.6**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**8.7**	**7.2**	**5.1**	**14.4**	**7.4**
Lead	7439-92-1	0.1	mg/kg	**2.0**	**1.3**	**1.7**	**2.5**	**1.9**
Antimony	7440-36-0	0.1	mg/kg	<0.1	**0.2**	<0.1	**0.1**	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.4**	**0.3**	**0.4**	**0.3**	**0.4**
Zinc	7440-66-6	0.5	mg/kg	**26.6**	**20.8**	**15.0**	**23.4**	**16.8**
Lithium	7439-93-2	0.1	mg/kg	**19.5**	**8.4**	**5.6**	**10.7**	**7.7**
Vanadium	7440-62-2	1	mg/kg	**5**	**13**	**8**	**13**	**9**
Tin	7440-31-5	0.1	mg/kg	<0.1	**0.3**	**0.2**	**0.3**	**0.2**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2203A_90	MB2203A_110	MB2203A_130	MB2203A_150	MB2203A_170
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-011	ES2508175-012	ES2508175-013	ES2508175-014	ES2508175-015
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.3**	**9.4**	**9.4**	**9.4**	**9.4**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**59**	**62**	**57**	**66**	**65**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**1.7**	<1.0	**2.4**	**2.3**	<1.0
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**3560**	**1760**	**6480**	**4440**	**5170**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**3910**	**1230**	**3090**	**2950**	**4420**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**3.2**	**3.5**	**1.8**	**3.0**	**2.0**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**5.3**	**1.7**	**6.1**	**5.1**	**5.6**
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	<0.1	**0.3**	**0.2**	**0.3**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	**0.2**	<0.1	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**1.6**	**0.8**	**1.5**	**1.4**	**1.8**
Chromium	7440-47-3	0.1	mg/kg	**13.1**	**6.6**	**7.8**	**9.8**	**8.8**
Copper	7440-50-8	0.1	mg/kg	**4.0**	**1.1**	**3.7**	**8.0**	**8.7**
Thorium	7440-29-1	0.1	mg/kg	**3.8**	**4.3**	**3.2**	**5.6**	**4.3**
Manganese	7439-96-5	0.1	mg/kg	**34.5**	**75.8**	**186**	**211**	**195**
Strontium	7440-24-6	0.1	mg/kg	**17.1**	**37.0**	**41.3**	**23.1**	**22.0**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	**0.3**	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**5.3**	**1.8**	**4.0**	**3.4**	**4.1**
Lead	7439-92-1	0.1	mg/kg	**1.9**	**4.8**	**1.4**	**1.4**	**1.4**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2203A_90	MB2203A_110	MB2203A_130	MB2203A_150	MB2203A_170
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-011	ES2508175-012	ES2508175-013	ES2508175-014	ES2508175-015
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.4**	**0.4**	**0.4**	**0.7**	**0.5**
Zinc	7440-66-6	0.5	mg/kg	**11.3**	**8.7**	**9.4**	**12.1**	**14.0**
Lithium	7439-93-2	0.1	mg/kg	**5.8**	**1.6**	**3.5**	**3.1**	**5.1**
Vanadium	7440-62-2	1	mg/kg	**8**	**2**	**7**	**7**	**8**
Tin	7440-31-5	0.1	mg/kg	**0.2**	<0.1	**0.2**	**0.2**	**0.1**

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	MB2203B_10	MB2203B_30	MB2203B_50	MB2203B_65	MB2204A_7
Sampling date / time				19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508175-016	ES2508175-017	ES2508175-018	ES2508175-019	ES2508175-020
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.2**	**9.4**	**9.1**	**9.2**	**7.7**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**65**	**56**	**44**	**106**	**40**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**5.1**	**8.3**	**8.7**	**3.3**	<1.0
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**7120**	**8550**	**7550**	**6230**	**13500**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**5180**	**4510**	**7270**	**2890**	**15500**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**8.0**	**1.7**	**4.2**	**1.0**	**5.5**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**12.2**	**10.2**	**14.6**	**8.7**	**57.9**
Thallium	7440-28-0	0.1	mg/kg	**0.1**	**0.1**	**0.2**	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.3**	**0.4**	**0.3**	**0.2**	**0.4**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	**2.3**	<0.1	**0.2**
Cobalt	7440-48-4	0.1	mg/kg	**2.2**	**1.8**	**3.3**	**1.4**	**6.2**
Chromium	7440-47-3	0.1	mg/kg	**15.5**	**13.0**	**17.4**	**8.9**	**24.8**
Copper	7440-50-8	0.1	mg/kg	**3.4**	**3.5**	**10.4**	**5.1**	**13.0**
Thorium	7440-29-1	0.1	mg/kg	**2.7**	**4.0**	**2.1**	**4.2**	**4.4**
Manganese	7439-96-5	0.1	mg/kg	**30.2**	**53.7**	**44.9**	**56.4**	**198**
Strontium	7440-24-6	0.1	mg/kg	**20.1**	**41.3**	**20.5**	**26.5**	**39.9**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	**0.1**
Nickel	7440-02-0	0.1	mg/kg	**7.7**	**6.7**	**8.3**	**4.3**	**12.0**
Lead	7439-92-1	0.1	mg/kg	**1.2**	**1.8**	**1.4**	**1.8**	**5.3**

Analytical Results

Sub-Matrix: **ROCK**
(Matrix: **SOIL)**

			Sample ID	**MB2203B_10**	**MB2203B_30**	**MB2203B_50**	**MB2203B_65**	**MB2204A_7**
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2508175-016**	**ES2508175-017**	**ES2508175-018**	**ES2508175-019**	**ES2508175-020**
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.3**	**0.4**	**0.3**	**0.4**	**0.3**
Zinc	7440-66-6	0.5	mg/kg	**12.8**	**10.8**	**22.0**	**11.1**	**42.6**
Lithium	7439-93-2	0.1	mg/kg	**7.5**	**5.7**	**9.8**	**4.6**	**25.2**
Vanadium	7440-62-2	1	mg/kg	**13**	**9**	**15**	**6**	**32**
Tin	7440-31-5	0.1	mg/kg	**0.2**	**0.1**	**0.5**	**0.2**	**1.0**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2204A_20	MB2204A_40	MB2204A_60	MB2204A_80	MB2204A_100
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-021	ES2508175-022	ES2508175-023	ES2508175-024	ES2508175-025
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**4.8**	**3.7**	**3.0**	**8.8**	**9.2**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**148**	**166**	**678**	**33**	**86**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	<1.0	**5.9**	<1.0	**1.3**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**4350**	**570**	**360**	**8910**	**5660**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**6670**	**3260**	**3420**	**7560**	**8140**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**3.8**	**18.3**	**60.7**	**6.5**	**11.3**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**37.4**	**3.5**	**2.0**	**7.2**	**7.0**
Thallium	7440-28-0	0.1	mg/kg	**0.1**	<0.1	**0.2**	**0.1**	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.3**	<0.1	<0.1	**0.6**	**0.5**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.1**	<0.1	**0.1**	**0.2**	**0.1**
Cobalt	7440-48-4	0.1	mg/kg	**3.7**	**1.8**	**2.3**	**3.2**	**4.4**
Chromium	7440-47-3	0.1	mg/kg	**10.0**	**1.8**	**0.9**	**11.3**	**9.6**
Copper	7440-50-8	0.1	mg/kg	**7.4**	**4.6**	**9.8**	**7.3**	**11.2**
Thorium	7440-29-1	0.1	mg/kg	**2.0**	**1.7**	**1.7**	**1.7**	**2.8**
Manganese	7439-96-5	0.1	mg/kg	**48.1**	**39.2**	**1.3**	**68.7**	**141**
Strontium	7440-24-6	0.1	mg/kg	**7.4**	**1.4**	**0.9**	**18.4**	**21.3**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	**0.2**	**0.1**	<0.1	**0.2**
Nickel	7440-02-0	0.1	mg/kg	**11.2**	**4.1**	**9.0**	**9.2**	**11.1**
Lead	7439-92-1	0.1	mg/kg	**3.4**	**3.2**	**5.0**	**1.1**	**8.0**

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

			Sample ID	MB2204A_20	MB2204A_40	MB2204A_60	MB2204A_80	MB2204A_100
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-021	ES2508175-022	ES2508175-023	ES2508175-024	ES2508175-025
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	<0.1	**0.5**	**0.6**	<0.1	**0.1**
Uranium	7440-61-1	0.1	mg/kg	**0.2**	**0.2**	**0.3**	**0.3**	**1.1**
Zinc	7440-66-6	0.5	mg/kg	**18.0**	**7.0**	**3.1**	**21.0**	**25.1**
Lithium	7439-93-2	0.1	mg/kg	**13.9**	**0.4**	<0.1	**17.6**	**16.2**
Vanadium	7440-62-2	1	mg/kg	**8**	**2**	<1	**11**	**6**
Tin	7440-31-5	0.1	mg/kg	**0.2**	<0.1	<0.1	**0.2**	**0.5**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2204A_120	MB2204A_140	MB2204A_160	MB2204A_180	MB2204A_200
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508175-026	ES2508175-027	ES2508175-028	ES2508175-029	ES2508175-030
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.0**	**9.2**	**9.2**	**8.8**	**9.0**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**82**	**86**	**69**	**72**	**46**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**3.9**	**2.2**	**7.0**	<1.0	**2.7**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**11300**	**10200**	**1260**	**5900**	**6450**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**24000**	**17100**	**2660**	**10800**	**10600**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**9.1**	**10.7**	**13.8**	**2.9**	**0.2**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**11.8**	**24.8**	**1.7**	**9.3**	**0.9**
Thallium	7440-28-0	0.1	mg/kg	**0.2**	**0.2**	<0.1	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**1.2**	**1.0**	**0.1**	**0.3**	<0.1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	**0.1**	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	**0.3**	**0.2**	<0.1	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**8.3**	**7.6**	**2.1**	**2.8**	**0.2**
Chromium	7440-47-3	0.1	mg/kg	**20.8**	**22.5**	**2.1**	**6.1**	**0.5**
Copper	7440-50-8	0.1	mg/kg	**21.8**	**22.1**	**2.2**	**5.7**	**0.4**
Thorium	7440-29-1	0.1	mg/kg	**4.1**	**2.7**	**0.8**	**0.9**	<0.1
Manganese	7439-96-5	0.1	mg/kg	**107**	**89.6**	**37.1**	**43.9**	**2.5**
Strontium	7440-24-6	0.1	mg/kg	**8.4**	**13.7**	**2.3**	**5.1**	**0.5**
Molybdenum	7439-98-7	0.1	mg/kg	**0.2**	**0.3**	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**26.9**	**20.3**	**5.3**	**6.8**	**0.4**
Lead	7439-92-1	0.1	mg/kg	**4.0**	**8.6**	**6.4**	**2.7**	**0.4**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2204A_120	MB2204A_140	MB2204A_160	MB2204A_180	MB2204A_200
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-026	ES2508175-027	ES2508175-028	ES2508175-029	ES2508175-030
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	**0.3**	**0.3**	**0.2**	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.5**	**0.8**	**0.1**	**0.1**	<0.1
Zinc	7440-66-6	0.5	mg/kg	**59.1**	**49.6**	**10.0**	**24.5**	**2.1**
Lithium	7439-93-2	0.1	mg/kg	**39.5**	**31.6**	**3.9**	**8.2**	<0.1
Vanadium	7440-62-2	1	mg/kg	**16**	**17**	**2**	**6**	<1
Tin	7440-31-5	0.1	mg/kg	**0.4**	**0.5**	**0.4**	**0.1**	<0.1

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2204B_3	MB2204B_8	MB2204B_40	MB2204B_60	MB2205A_10
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-031	ES2508175-032	ES2508175-033	ES2508175-034	ES2508175-035
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**6.1**	**6.8**	**3.4**	**3.6**	**5.4**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**14**	**41**	**700**	**387**	**10**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	**5.4**	**1.5**	**2.4**	<1.0
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**840**	**13400**	**720**	**370**	**920**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**3830**	**15600**	**5950**	**960**	**5050**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**8.5**	**7.1**	**23.2**	**2.0**	**4.7**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**9.4**	**77.9**	**2.1**	**2.1**	**21.5**
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.3**	**0.2**	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	**0.9**	**0.1**	<0.1	**0.2**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	**0.2**	**0.2**	<0.1	**0.2**
Cobalt	7440-48-4	0.1	mg/kg	**0.7**	**4.0**	**5.8**	**2.3**	**0.2**
Chromium	7440-47-3	0.1	mg/kg	**5.3**	**26.7**	**2.4**	**0.7**	**4.1**
Copper	7440-50-8	0.1	mg/kg	**4.7**	**14.0**	**14.6**	**3.7**	**2.9**
Thorium	7440-29-1	0.1	mg/kg	**1.4**	**3.9**	**3.3**	**1.8**	**5.0**
Manganese	7439-96-5	0.1	mg/kg	**9.5**	**134**	**59.2**	**11.3**	**2.8**
Strontium	7440-24-6	0.1	mg/kg	**3.8**	**31.4**	**20.4**	**1.4**	**11.7**
Molybdenum	7439-98-7	0.1	mg/kg	**0.1**	**0.4**	**0.2**	<0.1	**0.1**
Nickel	7440-02-0	0.1	mg/kg	**2.8**	**15.3**	**14.2**	**5.2**	**0.4**
Lead	7439-92-1	0.1	mg/kg	**5.1**	**7.9**	**15.6**	**2.1**	**15.2**

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

			Sample ID	MB2204B_3	MB2204B_8	MB2204B_40	MB2204B_60	MB2205A_10
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-031	ES2508175-032	ES2508175-033	ES2508175-034	ES2508175-035
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	<0.1	**0.1**	**0.6**	**0.1**	**0.3**
Uranium	7440-61-1	0.1	mg/kg	**0.3**	**0.5**	**0.3**	**0.3**	**0.3**
Zinc	7440-66-6	0.5	mg/kg	**7.7**	**41.5**	**15.8**	**7.3**	**4.9**
Lithium	7439-93-2	0.1	mg/kg	**2.9**	**18.1**	**1.2**	**0.4**	**0.3**
Vanadium	7440-62-2	1	mg/kg	**5**	**27**	**3**	<1	**4**
Tin	7440-31-5	0.1	mg/kg	**0.2**	**0.9**	<0.1	<0.1	**0.1**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2205A_30	MB2205A_50	MB2205A_70	MB2205A_80	MB2205A_110
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-036	ES2508175-037	ES2508175-038	ES2508175-039	ES2508175-040
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**4.4**	**9.2**	**9.1**	**9.3**	**9.3**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**86**	**70**	**45**	**61**	**85**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**5.5**	**2.4**	**1.4**	<1.0	**3.2**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**670**	**7600**	**8890**	**3840**	**6780**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**19900**	**10500**	**15000**	**3640**	**11900**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**15.9**	**2.2**	**13.1**	**3.4**	**14.2**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**5.5**	**26.4**	**12.1**	**3.6**	**10.0**
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.1**	**0.1**	<0.1	**0.1**
Beryllium	7440-41-7	0.1	mg/kg	**0.3**	**0.6**	**1.0**	**0.1**	**0.7**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	**0.3**	<0.1	**0.1**
Cobalt	7440-48-4	0.1	mg/kg	**2.3**	**4.0**	**6.1**	**2.6**	**6.4**
Chromium	7440-47-3	0.1	mg/kg	**2.2**	**13.8**	**16.5**	**10.3**	**14.6**
Copper	7440-50-8	0.1	mg/kg	**2.8**	**21.3**	**14.7**	**1.9**	**12.6**
Thorium	7440-29-1	0.1	mg/kg	**2.6**	**3.6**	**3.5**	**1.7**	**2.6**
Manganese	7439-96-5	0.1	mg/kg	**1280**	**242**	**54.3**	**371**	**227**
Strontium	7440-24-6	0.1	mg/kg	**3.1**	**17.7**	**11.5**	**39.2**	**24.0**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	**0.4**	<0.1	**0.2**
Nickel	7440-02-0	0.1	mg/kg	**4.9**	**11.7**	**17.1**	**5.3**	**15.8**
Lead	7439-92-1	0.1	mg/kg	**6.2**	**5.1**	**8.1**	**2.5**	**7.0**

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	MB2205A_30	MB2205A_50	MB2205A_70	MB2205A_80	MB2205A_110
Sampling date / time				19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508175-036	ES2508175-037	ES2508175-038	ES2508175-039	ES2508175-040
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	**0.3**	**0.1**	**0.1**	<0.1	**0.2**
Uranium	7440-61-1	0.1	mg/kg	**0.6**	**0.8**	**0.3**	**0.2**	**0.3**
Zinc	7440-66-6	0.5	mg/kg	**9.7**	**24.4**	**35.8**	**15.1**	**40.4**
Lithium	7439-93-2	0.1	mg/kg	**0.6**	**19.2**	**25.6**	**7.2**	**19.0**
Vanadium	7440-62-2	1	mg/kg	**4**	**12**	**12**	**8**	**11**
Tin	7440-31-5	0.1	mg/kg	**0.1**	**0.2**	**0.3**	**0.3**	**0.6**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2205A_130	MB2205A_150	MB2205A_170	MB2205A_190	MB2205B_10
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-041	ES2508175-042	ES2508175-043	ES2508175-044	ES2508175-045
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**9.2**	**9.2**	**9.1**	**8.7**	**5.3**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**66**	**59**	**41**	**48**	**23**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**2.8**	**2.7**	**6.8**	**4.2**	**2.5**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**1890**	**1260**	**5940**	**4420**	**320**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**3120**	**2810**	**6660**	**4670**	**3000**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**4.5**	**8.9**	**3.8**	**0.5**	**3.9**
Selenium	7782-49-2	1	mg/kg	<1	**1**	<1	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**1.4**	**1.5**	**15.8**	**9.0**	**6.0**
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
Beryllium	7440-41-7	0.1	mg/kg	**0.2**	**0.1**	**0.6**	**0.6**	<0.1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**2.4**	**1.3**	**3.1**	**2.5**	<0.1
Chromium	7440-47-3	0.1	mg/kg	**4.6**	**2.9**	**9.4**	**5.3**	**1.0**
Copper	7440-50-8	0.1	mg/kg	**3.9**	**2.2**	**4.7**	**1.9**	**1.8**
Thorium	7440-29-1	0.1	mg/kg	**1.8**	**1.4**	**1.5**	**1.9**	**1.9**
Manganese	7439-96-5	0.1	mg/kg	**68.9**	**175**	**79.1**	**26.6**	**0.7**
Strontium	7440-24-6	0.1	mg/kg	**6.5**	**6.0**	**8.8**	**8.2**	**2.6**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**6.2**	**3.1**	**8.1**	**5.8**	**0.1**
Lead	7439-92-1	0.1	mg/kg	**4.5**	**6.0**	**4.0**	**1.2**	**2.0**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	MB2205A_130	MB2205A_150	MB2205A_170	MB2205A_190	MB2205B_10
Sampling date / time				19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
				ES2508175-041	ES2508175-042	ES2508175-043	ES2508175-044	ES2508175-045
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	**0.3**	**0.2**	**0.2**	**0.1**	**0.3**
Uranium	7440-61-1	0.1	mg/kg	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**
Zinc	7440-66-6	0.5	mg/kg	**7.9**	**6.6**	**27.3**	**17.4**	**0.8**
Lithium	7439-93-2	0.1	mg/kg	**5.2**	**3.2**	**19.6**	**14.4**	<0.1
Vanadium	7440-62-2	1	mg/kg	**6**	**3**	**11**	**6**	<1
Tin	7440-31-5	0.1	mg/kg	**0.2**	**0.1**	**0.5**	**0.3**	<0.1

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)			Sample ID	MB2205B_30	MB2205B_60	MB2206A_10	MB2206A_30	MB2206A_50
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-046	ES2508175-047	ES2508175-048	ES2508175-049	ES2508175-050
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	**2.9**	**9.2**	**7.6**	**7.8**	**7.9**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1050**	**57**	**273**	**292**	**294**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**5.4**	**3.7**	**4.1**	**5.9**	**5.5**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**1600**	**6810**	**6040**	**9930**	**8990**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**17400**	**10900**	**4740**	**12000**	**5180**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**34.5**	**0.9**	**0.5**	**0.4**	**0.2**
Selenium	7782-49-2	1	mg/kg	**2**	**1**	**1**	<1	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**26.0**	**26.9**	**33.2**	**12.5**	**13.8**
Thallium	7440-28-0	0.1	mg/kg	<0.1	**0.2**	<0.1	**0.1**	**0.1**
Beryllium	7440-41-7	0.1	mg/kg	**0.5**	**0.6**	**1.6**	**1.0**	**0.4**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	**0.1**	**0.3**	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	**0.6**	**4.4**	**4.2**	**5.8**	**2.2**
Chromium	7440-47-3	0.1	mg/kg	**3.3**	**14.2**	**3.9**	**8.4**	**10.7**
Copper	7440-50-8	0.1	mg/kg	**6.5**	**3.7**	**0.6**	**15.4**	**3.1**
Thorium	7440-29-1	0.1	mg/kg	**4.1**	**3.5**	**3.5**	**3.3**	**2.2**
Manganese	7439-96-5	0.1	mg/kg	**5.6**	**150**	**120**	**129**	**44.2**
Strontium	7440-24-6	0.1	mg/kg	**6.7**	**7.8**	**5.7**	**17.8**	**10.3**
Molybdenum	7439-98-7	0.1	mg/kg	**0.2**	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**1.8**	**9.7**	**9.0**	**12.9**	**5.8**
Lead	7439-92-1	0.1	mg/kg	**11.2**	**4.9**	**4.3**	**4.7**	**0.7**

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

			Sample ID	MB2205B_30	MB2205B_60	MB2206A_10	MB2206A_30	MB2206A_50
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508175-046	ES2508175-047	ES2508175-048	ES2508175-049	ES2508175-050
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	**0.4**	<0.1	<0.1	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**1.1**	**0.9**	**0.6**	**0.4**	**0.2**
Zinc	7440-66-6	0.5	mg/kg	**3.9**	**24.0**	**20.5**	**50.5**	**16.2**
Lithium	7439-93-2	0.1	mg/kg	**0.3**	**19.3**	**15.2**	**25.4**	**9.8**
Vanadium	7440-62-2	1	mg/kg	**10**	**15**	**5**	**11**	**13**
Tin	7440-31-5	0.1	mg/kg	<0.1	**0.7**	**0.3**	**0.2**	**0.3**

Analytical Results

Sub-Matrix: ROCK
(Matrix: SOIL)

			Sample ID	MB2206A_70	MB2206B_10	MB2206B_30	MB2206B_50	MB2206B_70
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508175-051	ES2508175-052	ES2508175-053	ES2508175-054	ES2508175-055
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	----	**6.9**	**8.1**	**8.4**	**8.9**
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	**8**	**21**	**29**	**48**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**3.5**	<1.0	**3.1**	**8.6**	**6.0**
EG005(ED093)T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**8280**	**6090**	**8020**	**15500**	**7410**
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Iron	7439-89-6	50	mg/kg	**4120**	**4570**	**7980**	**7880**	**6510**
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.1	mg/kg	**2.4**	**0.6**	**0.4**	**2.1**	**9.0**
Selenium	7782-49-2	1	mg/kg	<1	<1	<1	**1**	<1
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	7440-39-3	0.1	mg/kg	**15.5**	**42.4**	**4.8**	**28.2**	**7.7**
Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	<0.1	**0.2**	**0.1**
Beryllium	7440-41-7	0.1	mg/kg	**0.4**	**0.7**	**1.0**	**0.6**	**0.6**
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	7440-69-9	0.1	mg/kg	<0.1	**0.2**	**0.1**	<0.1	**0.1**
Cobalt	7440-48-4	0.1	mg/kg	**2.0**	**1.6**	**5.3**	**3.2**	**3.6**
Chromium	7440-47-3	0.1	mg/kg	**8.5**	**5.6**	**3.7**	**15.2**	**4.0**
Copper	7440-50-8	0.1	mg/kg	**28.0**	**2.0**	**0.5**	**182**	**6.9**
Thorium	7440-29-1	0.1	mg/kg	**1.7**	**4.0**	**2.8**	**3.0**	**2.1**
Manganese	7439-96-5	0.1	mg/kg	**176**	**102**	**69.0**	**96.1**	**97.8**
Strontium	7440-24-6	0.1	mg/kg	**14.0**	**3.0**	**12.6**	**26.2**	**9.6**
Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/kg	**3.5**	**6.4**	**8.6**	**7.1**	**7.9**
Lead	7439-92-1	0.1	mg/kg	**5.7**	**1.7**	**3.3**	**2.2**	**2.3**

Analytical Results

Sub-Matrix: ROCK (Matrix: SOIL)

			Sample ID	MB2206A_70	MB2206B_10	MB2206B_30	MB2206B_50	MB2206B_70
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	*CAS Number*	*LOR*	*Unit*	ES2508175-051	ES2508175-052	ES2508175-053	ES2508175-054	ES2508175-055
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	7440-61-1	0.1	mg/kg	**0.3**	**0.6**	**0.3**	**0.3**	**0.4**
Zinc	7440-66-6	0.5	mg/kg	**21.0**	**18.5**	**31.4**	**27.5**	**20.8**
Lithium	7439-93-2	0.1	mg/kg	**9.8**	**6.6**	**22.8**	**10.6**	**18.1**
Vanadium	7440-62-2	1	mg/kg	**10**	**7**	**5**	**19**	**6**
Tin	7440-31-5	0.1	mg/kg	**0.2**	**0.4**	<0.1	**0.6**	**0.1**

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(SOIL) EA009: Net Acid Production Potential

(SOIL) ED042T: Total Sulfur by LECO

(SOIL) EA013: Acid Neutralising Capacity

QUALITY CONTROL REPORT

Work Order	: **ES2508174**	Page	: 1 of 16
Client	: **EMM CONSULTING PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: JAMES TUFF	Contact	: Samiksha Sathish
Address	: The Forum Level 10 201 Pacific Highway St Leonards NSW NSW 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: E221111	Date Samples Received	: 21-Mar-2025
Order number	: ----	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 17-Apr-2025
Sampler	: ED DAWES		
Site	: ----		
Quote number	: EN/111		
No. of samples received	: 60		
No. of samples analysed	: 60		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6465908)									
ES2508174-039	MB2201A_10	EG005T: Aluminium	7429-90-5	50	mg/kg	7950	8740	9.5	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	21100	18600	12.6	0% - 20%
ES2508174-049	MB2201B_10	EG005T: Aluminium	7429-90-5	50	mg/kg	4590	4740	3.0	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	12000	9900	19.5	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6465912)									
ES2508174-059	MB2202A_90	EG005T: Aluminium	7429-90-5	50	mg/kg	5390	5530	2.7	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	4140	4500	8.2	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6486612)									
ES2508174-001	BH104_375	EG005T: Aluminium	7429-90-5	50	mg/kg	1870	1610	14.8	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	16500	14000	16.7	0% - 20%
ES2508174-011	BH105_190	EG005T: Aluminium	7429-90-5	50	mg/kg	4440	4150	6.8	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	4620	4890	5.6	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6486616)									
ES2508174-021	BH106_30	EG005T: Aluminium	7429-90-5	50	mg/kg	5490	6650	19.1	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6486616) - continued									
ES2508174-021	BH106_30	EG005T: Iron	7439-89-6	50	mg/kg	26800	29600	9.8	0% - 20%
ES2508174-031	BH107_10	EG005T: Aluminium	7429-90-5	50	mg/kg	14800	16400	10.2	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	57800	65200	12.1	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6510955)									
ES2508174-012	BH105_210	EG005T: Aluminium	7429-90-5	50	mg/kg	7680	8210	6.7	0% - 20%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	6970	7620	8.9	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 6510946)									
ES2508174-001	BH104_375	EA002: pH Value	----	0.1	pH Unit	9.1	9.0	1.7	0% - 20%
ES2508174-011	BH105_190	EA002: pH Value	----	0.1	pH Unit	9.4	9.4	0.0	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 6510948)									
ES2508174-021	BH106_30	EA002: pH Value	----	0.1	pH Unit	7.9	7.9	0.0	0% - 20%
ES2508174-031	BH107_10	EA002: pH Value	----	0.1	pH Unit	8.3	8.2	0.0	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 6510950)									
ES2508174-041	MB2201A_50	EA002: pH Value	----	0.1	pH Unit	4.1	4.1	0.0	0% - 20%
ES2508174-051	MB2201B_50	EA002: pH Value	----	0.1	pH Unit	5.6	5.6	0.0	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 6510947)									
ES2508174-001	BH104_375	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	58	57	0.0	0% - 20%
ES2508174-011	BH105_190	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	47	51	8.2	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 6510949)									
ES2508174-021	BH106_30	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	23	22	0.0	0% - 20%
ES2508174-031	BH107_10	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	55	49	11.0	0% - 20%
EA010: Conductivity (1:5) (QC Lot: 6510951)									
ES2508174-041	MB2201A_50	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	116	109	6.1	0% - 20%
ES2508174-051	MB2201B_50	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	19	19	0.0	0% - 50%
EA013: Acid Neutralising Capacity (QC Lot: 6509319)									
ES2508174-001	BH104_375	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	34.2	34.2	0.0	0% - 20%
ES2508174-011	BH105_190	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	38.2	38.6	1.3	0% - 20%
EA013: Acid Neutralising Capacity (QC Lot: 6509320)									
ES2508174-021	BH106_30	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	8.5	8.0	6.3	0% - 50%
ES2508174-031	BH107_10	EA013: ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	16.8	17.6	5.0	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6465913)									

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6465913) - continued									
ES2508174-039	MB2201A_10	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
ES2508174-055	MB2202A_10	EA055: Moisture Content	----	0.1 (1.0)*	%	4.6	8.0	53.9	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6486621)									
ES2508174-001	BH104_375	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
ES2508174-009	BH105_150	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6486622)									
ES2508174-021	BH106_30	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
ES2508174-029	BH106_190	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6510907)									
EN2505238-001	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	25.0	22.5	10.7	0% - 20%
ES2508174-013	BH105_230	EA055: Moisture Content	----	0.1 (1.0)*	%	<1.0	<1.0	0.0	No Limit
ED042T: Total Sulfur by LECO (QC Lot: 6510359)									
ES2508174-001	BH104_375	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.09	0.07	21.5	No Limit
ES2508174-011	BH105_190	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.17	0.13	26.1	0% - 50%
ED042T: Total Sulfur by LECO (QC Lot: 6510360)									
ES2508174-021	BH106_30	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	0.0	No Limit
ES2508174-031	BH107_10	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.04	0.03	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6465905)									
ES2508174-039	MB2201A_10	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	4.1	# 6.8	48.9	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	37.2	35.0	6.1	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.4	0.4	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	6.4	7.2	11.8	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	27.0	22.6	17.9	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	10.3	# 14.2	31.4	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	54.6	55.4	1.5	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	12.1	13.0	7.3	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	1.6	1.9	19.6	0% - 50%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.5	0.5	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	16.9	20.2	18.1	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	44.4	45.0	1.4	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	12	15	21.6	0% - 50%
ES2508174-049	MB2201B_10	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	2.6	# 4.0	43.9	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	19.4	19.2	1.3	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.2	0.2	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 6465905) - continued									
ES2508174-049	MB2201B_10	EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	1.7	1.7	0.0	0% - 50%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	24.8	26.0	4.5	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	17.5	16.7	4.5	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	17.6	19.8	11.5	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	4.5	5.1	11.2	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	11.2	12.7	12.5	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.8	0.6	20.6	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	3.5	3.6	3.6	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.4	0.6	27.5	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	15.7	16.7	6.3	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	25	21	19.3	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 6465906)									
ES2508174-039	MB2201A_10	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	0.6	0.5	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.1	0.3	106	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	7.6	7.9	4.5	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	3	4	28.8	No Limit
ES2508174-049	MB2201B_10	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.1	0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	6.8	6.2	7.7	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	2	3	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6465907)									
ES2508174-039	MB2201A_10	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	0.1	<0.1	0.0	No Limit
ES2508174-049	MB2201B_10	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6465909)									
ES2508174-059	MB2202A_90	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	7.4	7.3	1.6	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.8	1.0	19.4	0% - 50%
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	3.8	4.3	11.5	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	3.8	3.9	2.8	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	100	88.6	12.1	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	6.4	7.1	11.2	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG020T: Total Metals by ICP-MS (QC Lot: 6465909) - continued									
ES2508174-059	MB2202A_90	EG020X-T: Lead	7439-92-1	0.1	mg/kg	1.7	1.9	8.5	0% - 50%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	21.9	26.2	17.7	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	24.4	26.0	6.4	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	3	4	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6465910)									
ES2508174-059	MB2202A_90	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.1	0.2	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	1.9	2.2	18.5	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6465911)									
ES2508174-059	MB2202A_90	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6486609)									
ES2508174-001	BH104_375	EG020X-T: Copper	7440-50-8	0.1 (0.4)*	mg/kg	1.2	1.5	17.8	No Limit
ES2508174-001	BH104_375	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	164	177	7.7	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	13.6	14.9	9.7	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.3	0.5	60.4	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	5.6	5.3	4.5	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	56.9	48.7	15.6	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	433	486	11.5	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	0.2	78.4	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	15.2	14.6	4.3	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	5.7	5.6	3.4	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	2.4	2.2	8.1	0% - 20%
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.5	0.8	50.6	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	2.2	2.1	5.8	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.6	0.6	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	43.9	44.1	0.5	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	23	24	4.4	0% - 20%
ES2508174-011	BH105_190	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	19.6	19.7	0.9	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	7.9	# 11.2	35.1	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.2	0.1	59.6	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	2.0	# 2.6	29.2	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	17.5	20.0	13.0	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG020T: Total Metals by ICP-MS (QC Lot: 6486609) - continued									
ES2508174-011	BH105_190	EG020X-T: Copper	7440-50-8	0.1	mg/kg	5.6	4.8	15.6	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	86.7	78.1	10.4	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	0.2	<0.1	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	5.8	# 9.9	52.5	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	1.2	0.9	33.7	0% - 50%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.6	0.4	30.6	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	8.0	8.0	0.0	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	3.3	# 4.9	38.1	0% - 20%
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	12.8	15.3	17.9	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	14	18	24.7	0% - 50%
EG020T: Total Metals by ICP-MS (QC Lot: 6486610)									
ES2508174-001	BH104_375	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.1	0.3	85.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	5.0	4.6	8.2	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
ES2508174-011	BH105_190	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.1	<0.1	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	5.5	5.0	8.9	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6486611)									
ES2508174-001	BH104_375	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	0.1	0.0	No Limit
ES2508174-011	BH105_190	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6486613)									
ES2508174-021	BH106_30	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	16.3	# 22.0	29.7	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	32.5	38.6	17.2	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	1.2	1.4	17.0	0% - 50%
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	14.7	12.2	18.3	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	12.0	14.2	17.4	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	8.0	9.3	15.1	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	365	# 458	22.6	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	0.3	101	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	19.8	23.2	15.8	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	40.6	# 53.6	27.5	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.2	0.5	94.7	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG020T: Total Metals by ICP-MS (QC Lot: 6486613) - continued									
ES2508174-021	BH106_30	EG020X-T: Uranium	7440-61-1	0.1	mg/kg	1.3	1.4	13.0	0% - 50%
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	16.4	18.9	14.3	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.3	0.5	62.7	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	64.4	73.9	13.6	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	4	10	86.6	No Limit
ES2508174-031	BH107_10	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	9.3	8.8	5.6	0% - 20%
		EG020X-T: Barium	7440-39-3	0.1	mg/kg	57.3	66.8	15.4	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	1.8	2.0	8.8	0% - 50%
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	14.4	15.8	9.4	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	46.7	# 59.0	23.3	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	9.4	# 11.8	22.1	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	679	824	19.3	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	0.1	0.2	0.0	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	27.1	29.6	8.7	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	16.2	15.6	3.7	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.5	0.6	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	24.8	26.0	4.6	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	1.5	# 2.6	55.2	0% - 20%
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	74.5	81.3	8.7	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	30	34	12.9	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 6486614)									
ES2508174-021	BH106_30	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	0.2	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	0.2	0.3	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	6.8	7.4	9.5	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
ES2508174-031	BH107_10	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	5.2	6.1	15.6	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6486615)									
ES2508174-021	BH106_30	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	0.1	0.2	0.0	No Limit
ES2508174-031	BH107_10	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6510952)									
ES2508174-012	BH105_210	EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	3.3	4.0	19.6	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EG020T: Total Metals by ICP-MS (QC Lot: 6510952) - continued									
ES2508174-012	BH105_210	EG020X-T: Barium	7440-39-3	0.1	mg/kg	4.7	5.8	19.6	0% - 20%
		EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	2.5	2.7	8.4	0% - 20%
		EG020X-T: Chromium	7440-47-3	0.1	mg/kg	18.1	19.0	4.8	0% - 20%
		EG020X-T: Copper	7440-50-8	0.1	mg/kg	9.9	11.4	14.0	0% - 20%
		EG020X-T: Manganese	7439-96-5	0.1	mg/kg	467	# 344	30.3	0% - 20%
		EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	0.2	69.7	No Limit
		EG020X-T: Nickel	7440-02-0	0.1	mg/kg	5.7	5.5	2.3	0% - 20%
		EG020X-T: Lead	7439-92-1	0.1	mg/kg	5.2	# 6.6	24.2	0% - 20%
		EG020X-T: Antimony	7440-36-0	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020X-T: Uranium	7440-61-1	0.1	mg/kg	0.6	0.7	0.0	No Limit
		EG020X-T: Lithium	7439-93-2	0.1	mg/kg	6.2	6.4	2.5	0% - 20%
		EG020X-T: Tin	7440-31-5	0.1	mg/kg	0.3	0.3	0.0	No Limit
		EG020X-T: Zinc	7440-66-6	0.5	mg/kg	20.1	# 31.6	44.2	0% - 20%
		EG020X-T: Vanadium	7440-62-2	1	mg/kg	3	3	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6510953)									
ES2508174-012	BH105_210	EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
		EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	0.1	0.2	0.0	No Limit
		EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	0.4	0.5	27.2	No Limit
		EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	5.1	5.4	6.3	0% - 20%
		EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	<1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6510954)									
ES2508174-012	BH105_210	EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	0.0	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6465908)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	101	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	108	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6465912)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	116	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	108	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6486612)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	108	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	108	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6486616)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	98.4	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	99.1	89.0	112
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6510955)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	15070 mg/kg	117	82.0	119
EG005T: Boron	7440-42-8	50	mg/kg	<50	----	----	----	----
EG005T: Iron	7439-89-6	50	mg/kg	<50	31660 mg/kg	111	89.0	112
EA002: pH 1:5 (Soils) (QCLot: 6510946)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	101	98.8	101
EA002: pH 1:5 (Soils) (QCLot: 6510948)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	101	98.8	101
EA002: pH 1:5 (Soils) (QCLot: 6510950)								
EA002: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	100	98.8	101
EA010: Conductivity (1:5) (QCLot: 6510947)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	103	92.0	108

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA010: Conductivity (1:5) (QCLot: 6510949)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	103	92.0	108
EA010: Conductivity (1:5) (QCLot: 6510951)								
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	103	92.0	108
EA013: Acid Neutralising Capacity (QCLot: 6509319)								
EA013: ANC as H2SO4	----	----	kg H2SO4 equiv./t	----	49 kg H2SO4 equiv./t	99.7	82.0	120
EA013: Acid Neutralising Capacity (QCLot: 6509320)								
EA013: ANC as H2SO4	----	----	kg H2SO4 equiv./t	----	9.9 kg H2SO4 equiv./t	94.6	82.0	120
ED042T: Total Sulfur by LECO (QCLot: 6510359)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.51 %	110	70.0	130
ED042T: Total Sulfur by LECO (QCLot: 6510360)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.13 %	100	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6465905)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	106	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	112	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	117	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	108	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	113	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	97.4	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	107	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	97.9	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	108	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	114	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	98.2	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6465906)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	112	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6465906) - continued								
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	104	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6465907)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6465909)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	116	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	122	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	128	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	119	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	126	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	112	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	118	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	109	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	120	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	125	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	112	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6465910)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	122	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	116	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6465911)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6486609)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	108	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	110	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	114	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	103	80.0	120

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6486609) - continued								
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	113	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	106	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	116	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	106	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	128	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	113	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	114	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6486610)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	120	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	109	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6486611)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6486613)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	110	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	107	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	103	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	104	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	111	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	104	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	114	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	104	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	138	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6486613) - continued								
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	108	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	111	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6486614)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	106	46.0	155
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	106	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6486615)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6510952)								
EG020X-T: Arsenic	7440-38-2	0.1	mg/kg	<0.1	110 mg/kg	106	75.0	125
EG020X-T: Barium	7440-39-3	0.1	mg/kg	<0.1	88.8 mg/kg	102	65.0	135
EG020X-T: Beryllium	7440-41-7	0.1	mg/kg	<0.1	0.65 mg/kg	96.4	72.0	130
EG020X-T: Cobalt	7440-48-4	0.1	mg/kg	<0.1	10.7 mg/kg	99.0	80.0	120
EG020X-T: Chromium	7440-47-3	0.1	mg/kg	<0.1	20.3 mg/kg	106	67.0	133
EG020X-T: Copper	7440-50-8	0.1	mg/kg	<0.1	49 mg/kg	107	87.0	123
EG020X-T: Manganese	7439-96-5	0.1	mg/kg	<0.1	536 mg/kg	110	58.0	142
EG020X-T: Molybdenum	7439-98-7	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Nickel	7440-02-0	0.1	mg/kg	<0.1	14.7 mg/kg	98.0	80.0	121
EG020X-T: Lead	7439-92-1	0.1	mg/kg	<0.1	57.4 mg/kg	117	87.0	139
EG020X-T: Antimony	7440-36-0	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Uranium	7440-61-1	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Zinc	7440-66-6	0.5	mg/kg	<0.5	125.8 mg/kg	110	86.0	148
EG020X-T: Lithium	7439-93-2	0.1	mg/kg	<0.1	----	----	----	----
EG020X-T: Vanadium	7440-62-2	1	mg/kg	<1	60.1 mg/kg	102	84.0	116
EG020X-T: Tin	7440-31-5	0.1	mg/kg	<0.1	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 6510953)								
EG020Y-T: Selenium	7782-49-2	1	mg/kg	<1	----	----	----	----
EG020Y-T: Thallium	7440-28-0	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.8 mg/kg	106	46.0	155

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6510953) - continued								
EG020Y-T: Bismuth	7440-69-9	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Thorium	7440-29-1	0.1	mg/kg	<0.1	----	----	----	----
EG020Y-T: Strontium	7440-24-6	----	mg/kg	----	65.8 mg/kg	101	78.0	122
EG020T: Total Metals by ICP-MS (QCLot: 6510954)								
EG020Z-T: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6465905)							
ES2508174-039	MB2201A_10	EG020X-T: Arsenic	7440-38-2	50 mg/kg	88.1	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	106	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	88.9	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	89.6	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	110	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	101	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6465906)							
ES2508174-039	MB2201A_10	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	102	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6465909)							
ES2508174-059	MB2202A_90	EG020X-T: Arsenic	7440-38-2	50 mg/kg	89.0	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	100	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	86.3	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	86.4	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	110	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	96.2	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6465910)							
ES2508174-059	MB2202A_90	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	99.4	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6486609)							
ES2508174-001	BH104_375	EG020X-T: Copper	7440-50-8	250 mg/kg	74.7	70.0	130
ES2508174-001	BH104_375	EG020X-T: Arsenic	7440-38-2	50 mg/kg	# 45.6	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	104	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	87.5	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	107	70.0	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 6486609) - continued							
ES2508174-001	BH104_375	EG020X-T: Zinc	7440-66-6	250 mg/kg	87.6	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6486610)							
ES2508174-001	BH104_375	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	96.1	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6486613)							
ES2508174-021	BH106_30	EG020X-T: Arsenic	7440-38-2	50 mg/kg	80.0	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	90.7	70.0	130
		EG020X-T: Copper	7440-50-8	250 mg/kg	98.0	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	86.3	70.0	130
		EG020X-T: Lead	7439-92-1	250 mg/kg	107	70.0	130
		EG020X-T: Zinc	7440-66-6	250 mg/kg	88.2	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6486614)							
ES2508174-021	BH106_30	EG020Y-T: Cadmium	7440-43-9	50 mg/kg	98.4	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6510952)							
ES2508174-012	BH105_210	EG020X-T: Arsenic	7440-38-2	50 mg/kg	93.0	70.0	130
		EG020X-T: Chromium	7440-47-3	50 mg/kg	82.3	70.0	130
		EG020X-T: Copper	7440-50-8	50 mg/kg	100	70.0	130
		EG020X-T: Nickel	7440-02-0	50 mg/kg	91.5	70.0	130
		EG020X-T: Lead	7439-92-1	50 mg/kg	104	70.0	130
		EG020X-T: Zinc	7440-66-6	50 mg/kg	96.2	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6510953)							
ES2508174-012	BH105_210	EG020Y-T: Cadmium	7440-43-9	12.5 mg/kg	92.1	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2508175**	Page	: 1 of 12
Client	: **EMM CONSULTING PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: JAMES TUFF	Telephone	: +61-2-8784 8555
Project	: E221111	Date Samples Received	: 21-Mar-2025
Site	: ----	Issue Date	: 23-Apr-2025
Sampler	: ED DAWES	No. of samples received	: 60
Order number	: ----	No. of samples analysed	: 55

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2508175--033	MB2204B_40	**Aluminium**	7429-90-5	35.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	ES2508175--033	MB2204B_40	**Iron**	7439-89-6	47.8 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508175--001	MB2202A_130	**Arsenic**	7440-38-2	28.0 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508175--051	MB2206A_70	**Cobalt**	7440-48-4	31.5 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508175--001	MB2202A_130	**Copper**	7440-50-8	33.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508175--041	MB2205A_130	**Copper**	7440-50-8	32.0 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508175--011	MB2203A_90	**Copper**	7440-50-8	32.4 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508175--051	MB2206A_70	**Nickel**	7440-02-0	30.7 %	0% - 20%	**RPD exceeds LOR based limits**
EG020T: Total Metals by ICP-MS	ES2508175--001	MB2202A_130	**Lead**	7439-92-1	34.8 %	0% - 20%	**RPD exceeds LOR based limits**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA002: pH 1:5 (Soils)						

Matrix: **SOIL**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA002: pH 1:5 (Soils) - Analysis Holding Time Compliance							
Snap Lock Bag							
MB2202A_130,	MB2202A_150,	10-Apr-2025	28-Mar-2025	13	11-Apr-2025	10-Apr-2025	1
MB2202B_10,	MB2202B_30,						
MB2202B_50,	MB2202B_70,						
MB2203A_10,	MB2203A_30,						
MB2203A_50,	MB2203A_70,						
MB2203A_90,	MB2203A_110,						
MB2203A_130,	MB2203A_150,						
MB2203A_170,	MB2203B_10,						
MB2203B_30,	MB2203B_50,						
MB2203B_65,	MB2204A_7,						
MB2204A_20,	MB2204A_40,						
MB2204A_60,	MB2204A_80,						
MB2204A_100,	MB2204A_120,						
MB2204A_140,	MB2204A_160,						
MB2204A_180,	MB2204A_200,						
MB2204B_3,	MB2204B_8,						
MB2204B_40,	MB2204B_60,						
MB2205A_10,	MB2205A_30,						
MB2205A_50,	MB2205A_70,						
MB2205A_80,	MB2205A_110,						
MB2205A_130,	MB2205A_150,						
MB2205A_170,	MB2205A_190,						
MB2205B_10,	MB2205B_30,						
MB2205B_60,	MB2206A_10,						
MB2206A_30,	MB2206A_50,						
MB2206B_10,	MB2206B_30,						
MB2206B_50,	MB2206B_70						
EA010: Conductivity (1:5)							

Matrix: **SOIL**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA010: Conductivity (1:5) - Analysis Holding Time Compliance							
Snap Lock Bag							
MB2202A_130,	MB2202A_150,	10-Apr-2025	28-Mar-2025	**13**	----	----	----
MB2202B_10,	MB2202B_30,						
MB2202B_50,	MB2202B_70,						
MB2203A_10,	MB2203A_30,						
MB2203A_50,	MB2203A_70,						
MB2203A_90,	MB2203A_110,						
MB2203A_130,	MB2203A_150,						
MB2203A_170,	MB2203B_10,						
MB2203B_30,	MB2203B_50,						
MB2203B_65,	MB2204A_7,						
MB2204A_20,	MB2204A_40,						
MB2204A_60,	MB2204A_80,						
MB2204A_100,	MB2204A_120,						
MB2204A_140,	MB2204A_160,						
MB2204A_180,	MB2204A_200,						
MB2204B_3,	MB2204B_8,						
MB2204B_40,	MB2204B_60,						
MB2205A_10,	MB2205A_30,						
MB2205A_50,	MB2205A_70,						
MB2205A_80,	MB2205A_110,						
MB2205A_130,	MB2205A_150,						
MB2205A_170,	MB2205A_190,						
MB2205B_10,	MB2205B_30,						
MB2205B_60,	MB2206A_10,						
MB2206A_30,	MB2206A_50,						
MB2206B_10,	MB2206B_30,						
MB2206B_50,	MB2206B_70						

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Electrical Conductivity (1:5)	EA010	5	54	9.26	10.00	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	5	54	9.26	10.00	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)						
Total Metals by ICP-MS - Suite Z	EG020Z-T	2	55	3.64	5.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Total Metals by ICP-AES	EG005T	0	55	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002: pH 1:5 (Soils)								
Snap Lock Bag (EA002)								
MB2202A_130,	MB2202A_150,	**21-Mar-2025**	**10-Apr-2025**	28-Mar-2025	×	**11-Apr-2025**	10-Apr-2025	×
MB2202B_10,	MB2202B_30,							
MB2202B_50,	MB2202B_70,							
MB2203A_10,	MB2203A_30,							
MB2203A_50,	MB2203A_70,							
MB2203A_90,	MB2203A_110,							
MB2203A_130,	MB2203A_150,							
MB2203A_170,	MB2203B_10,							
MB2203B_30,	MB2203B_50,							
MB2203B_65,	MB2204A_7,							
MB2204A_20,	MB2204A_40,							
MB2204A_60,	MB2204A_80,							
MB2204A_100,	MB2204A_120,							
MB2204A_140,	MB2204A_160,							
MB2204A_180,	MB2204A_200,							
MB2204B_3,	MB2204B_8,							
MB2204B_40,	MB2204B_60,							
MB2205A_10,	MB2205A_30,							
MB2205A_50,	MB2205A_70,							
MB2205A_80,	MB2205A_110,							
MB2205A_130,	MB2205A_150,							
MB2205A_170,	MB2205A_190,							
MB2205B_10,	MB2205B_30,							
MB2205B_60,	MB2206A_10,							
MB2206A_30,	MB2206A_50,							
MB2206B_10,	MB2206B_30,							
MB2206B_50,	MB2206B_70							

Work Order : ES2508175
Client : EMM CONSULTING PTY LTD
Project : E221111

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010: Conductivity (1:5)								
Snap Lock Bag (EA010)								
MB2202A_130,	MB2202A_150,	**21-Mar-2025**	**10-Apr-2025**	28-Mar-2025	×	**11-Apr-2025**	08-May-2025	✓
MB2202B_10,	MB2202B_30,							
MB2202B_50,	MB2202B_70,							
MB2203A_10,	MB2203A_30,							
MB2203A_50,	MB2203A_70,							
MB2203A_90,	MB2203A_110,							
MB2203A_130,	MB2203A_150,							
MB2203A_170,	MB2203B_10,							
MB2203B_30,	MB2203B_50,							
MB2203B_65,	MB2204A_7,							
MB2204A_20,	MB2204A_40,							
MB2204A_60,	MB2204A_80,							
MB2204A_100,	MB2204A_120,							
MB2204A_140,	MB2204A_160,							
MB2204A_180,	MB2204A_200,							
MB2204B_3,	MB2204B_8,							
MB2204B_40,	MB2204B_60,							
MB2205A_10,	MB2205A_30,							
MB2205A_50,	MB2205A_70,							
MB2205A_80,	MB2205A_110,							
MB2205A_130,	MB2205A_150,							
MB2205A_170,	MB2205A_190,							
MB2205B_10,	MB2205B_30,							
MB2205B_60,	MB2206A_10,							
MB2206A_30,	MB2206A_50,							
MB2206B_10,	MB2206B_30,							
MB2206B_50,	MB2206B_70							
EA013: Acid Neutralising Capacity								
Pulp Bag (EA013)								
MB2203A_10,	MB2203A_30	**21-Mar-2025**	**28-Mar-2025**	21-Mar-2026	✓	**28-Mar-2025**	24-Sep-2025	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Snap Lock Bag (EA055) MB2202A_130, MB2202A_150, MB2202B_10, MB2202B_30, MB2202B_50, MB2202B_70, MB2203A_10, MB2203A_30, MB2203A_50, MB2203A_70, MB2203A_90, MB2203A_110, MB2203A_130, MB2203A_150, MB2203A_170, MB2203B_10, MB2203B_30, MB2203B_50, MB2203B_65, MB2204A_7, MB2204A_20, MB2204A_40, MB2204A_60, MB2204A_80, MB2204A_100, MB2204A_120, MB2204A_140, MB2204A_160, MB2204A_180, MB2204A_200, MB2204B_3, MB2204B_8, MB2204B_40, MB2204B_60, MB2205A_10, MB2205A_30, MB2205A_50, MB2205A_70, MB2205A_80, MB2205A_110	**21-Mar-2025**	----	----	----	**24-Mar-2025**	04-Apr-2025	✓
Snap Lock Bag (EA055) MB2205A_130, MB2205A_150, MB2205A_170, MB2205A_190, MB2205B_10, MB2205B_30, MB2205B_60, MB2206A_10, MB2206A_30, MB2206A_50, MB2206A_70, MB2206B_10, MB2206B_30, MB2206B_50, MB2206B_70	**21-Mar-2025**	----	----	----	**25-Mar-2025**	04-Apr-2025	✓
ED042T: Total Sulfur by LECO							
Pulp Bag (ED042T) MB2203A_10, MB2203A_30	**21-Mar-2025**	**27-Mar-2025**	17-Sep-2025	✓	**27-Mar-2025**	17-Sep-2025	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES								
Snap Lock Bag (EG005T)								
MB2202A_130,	MB2202A_150,	**21-Mar-2025**	**24-Mar-2025**	17-Sep-2025	✓	**24-Mar-2025**	17-Sep-2025	✓
MB2202B_10,	MB2202B_30,							
MB2202B_50,	MB2202B_70,							
MB2203A_10,	MB2203A_30,							
MB2203A_50,	MB2203A_70,							
MB2203A_90,	MB2203A_110,							
MB2203A_130,	MB2203A_150,							
MB2203A_170,	MB2203B_10,							
MB2203B_30,	MB2203B_50,							
MB2203B_65,	MB2204A_7,							
MB2204A_20,	MB2204A_40,							
MB2204A_60,	MB2204A_80,							
MB2204A_100,	MB2204A_120,							
MB2204A_140,	MB2204A_160,							
MB2204A_180,	MB2204A_200,							
MB2204B_3,	MB2204B_8,							
MB2204B_40,	MB2204B_60,							
MB2205A_10,	MB2205A_30,							
MB2205A_50,	MB2205A_70,							
MB2205A_80,	MB2205A_110							
Snap Lock Bag (EG005T)								
MB2205A_130,	MB2205A_150,	**21-Mar-2025**	**25-Mar-2025**	17-Sep-2025	✓	**26-Mar-2025**	17-Sep-2025	✓
MB2205A_170,	MB2205A_190,							
MB2205B_10,	MB2205B_30,							
MB2205B_60,	MB2206A_10,							
MB2206A_30,	MB2206A_50,							
MB2206A_70,	MB2206B_10,							
MB2206B_30,	MB2206B_50,							
MB2206B_70								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS								
Snap Lock Bag (EG020Z-T)								
MB2202A_130,	MB2202A_150,	**21-Mar-2025**	**24-Mar-2025**	17-Sep-2025	✓	**24-Mar-2025**	17-Sep-2025	✓
MB2202B_10,	MB2202B_30,							
MB2202B_50,	MB2202B_70,							
MB2203A_10,	MB2203A_30,							
MB2203A_50,	MB2203A_70,							
MB2203A_90,	MB2203A_110,							
MB2203A_130,	MB2203A_150,							
MB2203A_170,	MB2203B_10,							
MB2203B_30,	MB2203B_50,							
MB2203B_65,	MB2204A_7,							
MB2204A_20,	MB2204A_40,							
MB2204A_60,	MB2204A_80,							
MB2204A_100,	MB2204A_120,							
MB2204A_140,	MB2204A_160,							
MB2204A_180,	MB2204A_200,							
MB2204B_3,	MB2204B_8,							
MB2204B_40,	MB2204B_60,							
MB2205A_10,	MB2205A_30,							
MB2205A_50,	MB2205A_70,							
MB2205A_80,	MB2205A_110							
Snap Lock Bag (EG020Z-T)								
MB2205A_130,	MB2205A_150,	**21-Mar-2025**	**25-Mar-2025**	17-Sep-2025	✓	**26-Mar-2025**	17-Sep-2025	✓
MB2205A_170,	MB2205A_190,							
MB2205B_10,	MB2205B_30,							
MB2205B_60,	MB2206A_10,							
MB2206A_30,	MB2206A_50,							
MB2206A_70,	MB2206B_10,							
MB2206B_30,	MB2206B_50,							
MB2206B_70								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Acid Neutralising Capacity (ANC)	EA013	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	5	54	**9.26**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	6	58	**10.34**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	5	54	**9.26**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	55	**10.91**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	6	55	**10.91**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	6	55	**10.91**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Z	EG020Z-T	6	55	**10.91**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acid Neutralising Capacity (ANC)	EA013	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	3	54	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	6	54	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	55	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	3	55	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	3	55	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Z	EG020Z-T	2	55	**3.64**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Electrical Conductivity (1:5)	EA010	3	54	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	55	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	3	55	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	3	55	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Z	EG020Z-T	3	55	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Metals by ICP-AES	EG005T	0	55	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite X	EG020X-T	3	55	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite Y	EG020Y-T	3	55	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
pH (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Net Acid Production Potential	EA009	SOIL	In house: Referenced to Coastech Research (Canada)(Mod.). NAPP = Acid Production Potential (APP or MAP-Maximum Acid Potential) minus Neutralising Capacity (ANC). NAPP may be +ve, zero or -ve.
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to Rayment and Lyons 3A1 and APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM Schedule B(3).
Acid Neutralising Capacity (ANC)	EA013	SOIL	In house: Referenced to USEPA 600/2-78-054, I. Miller (2000). A fizz test is done to semiquanititatively estimate the likely reactivity. The soil is then reacted with an known excess quanitity of an appropriate acid. Titration determines the acid remaining, and the ANC can be calculated from comparison with a blank titration.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Sulfur - Total as S (LECO)	ED042T	SOIL	In house: Dried and pulverised sample is combusted in a high temperature furnace in the presence of strong oxidants / catalysts. The evolved S (as SO2) is measured by infra-red detector
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Metals by ICP-MS - Suite X	EG020X-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Y	EG020Y-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite Z	EG020Z-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Dry and Pulverise (up to 100g)	GEO30	SOIL	#

Appendix E

ABCC plots

EMM

creating opportunities

E.1 ABCC plots

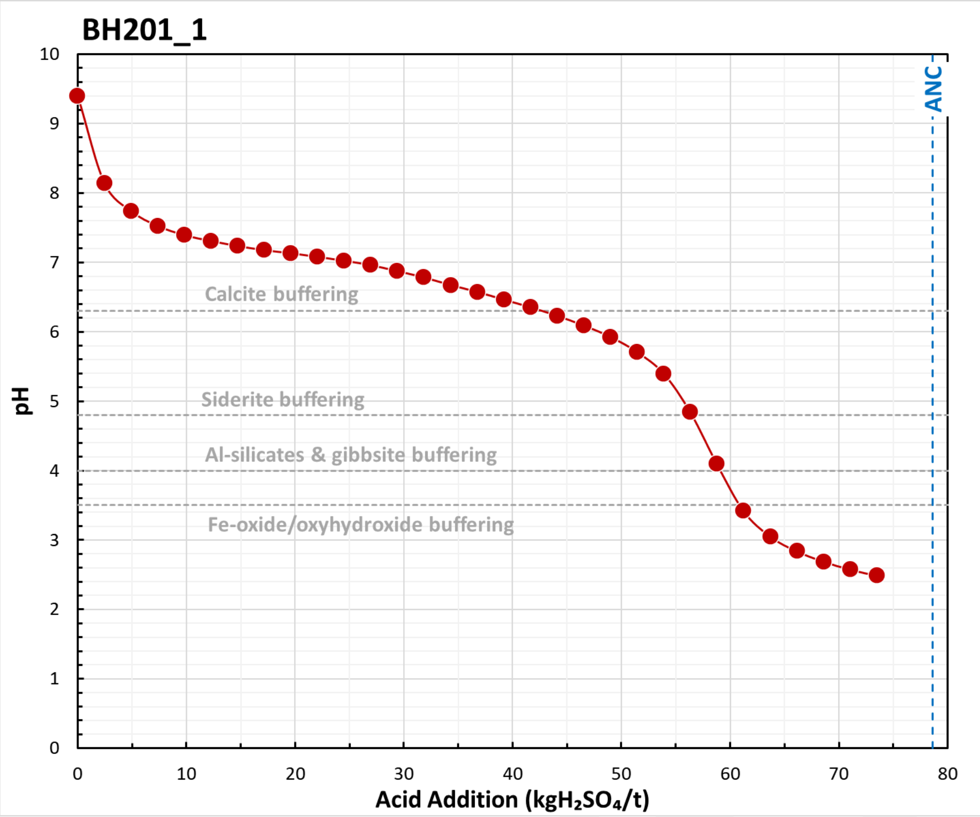

Figure E.1 ABCC plot for sample BH201 1 m

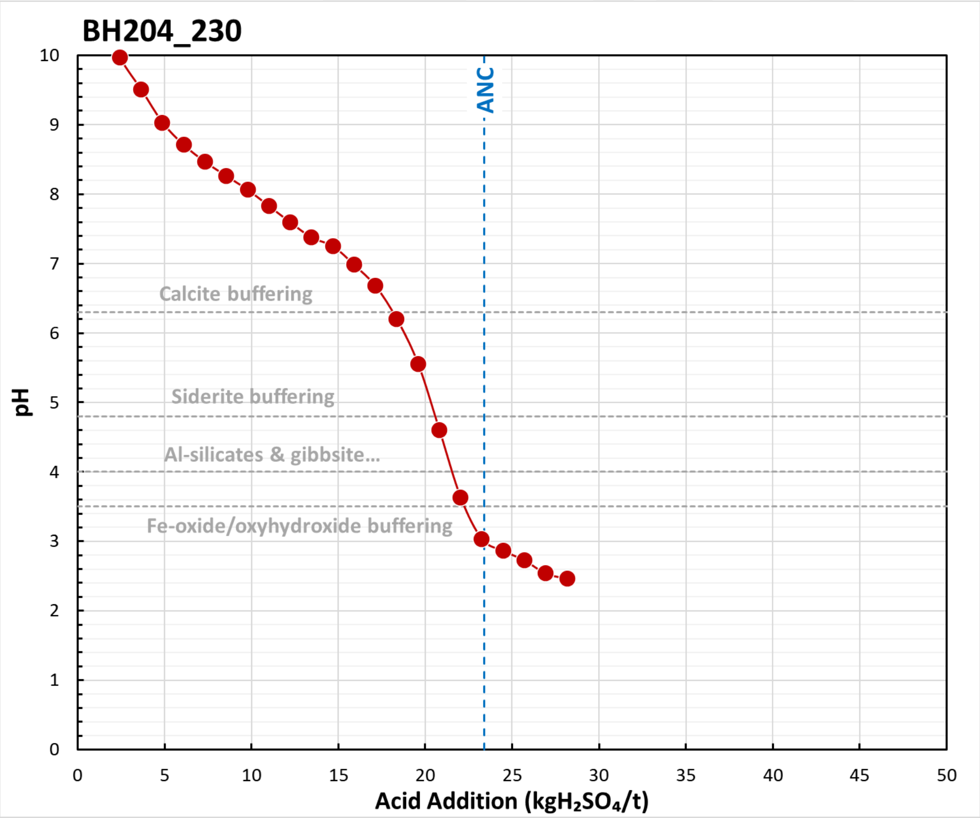

Figure E.2 ABCC plot for sample BH204 230 m

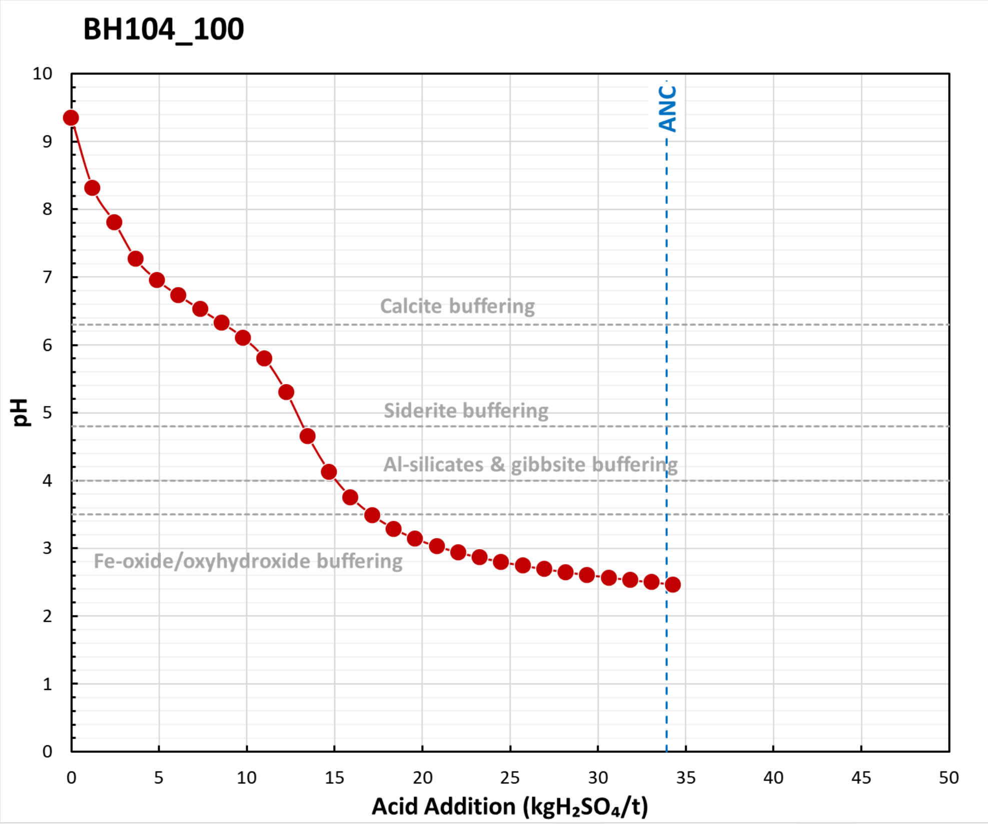

Figure E.3 ABCC plot for sample BH104 100 m

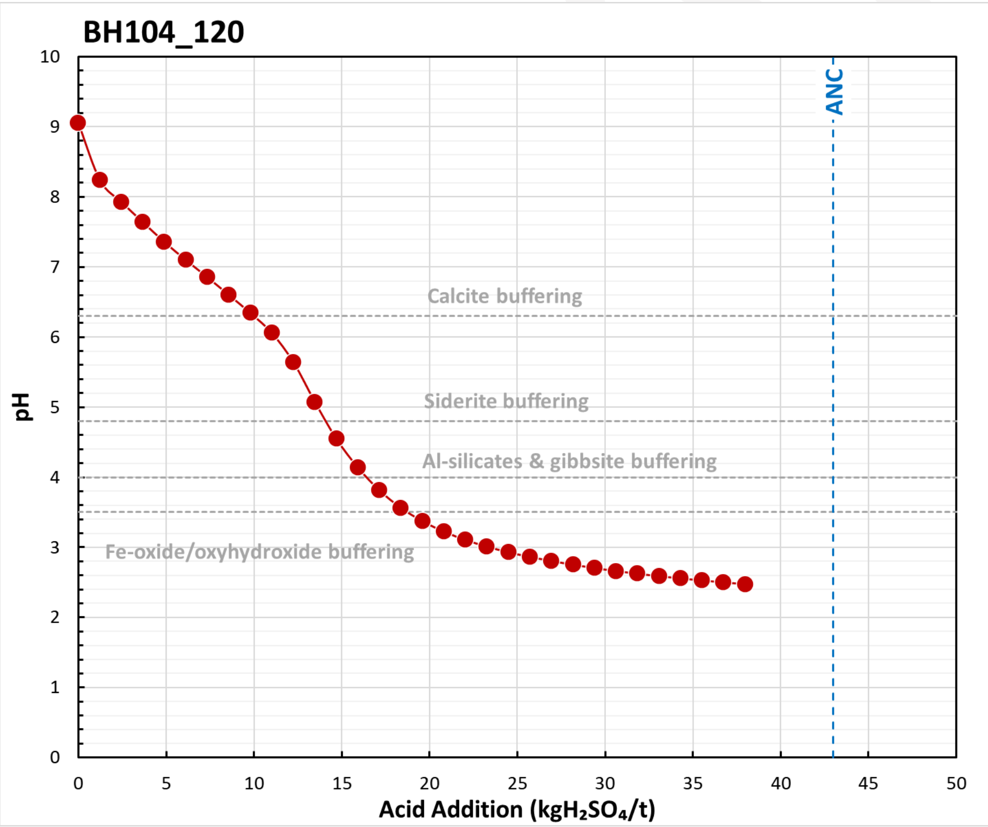

Figure E.4 ABCC plot for sample BH104 120 m

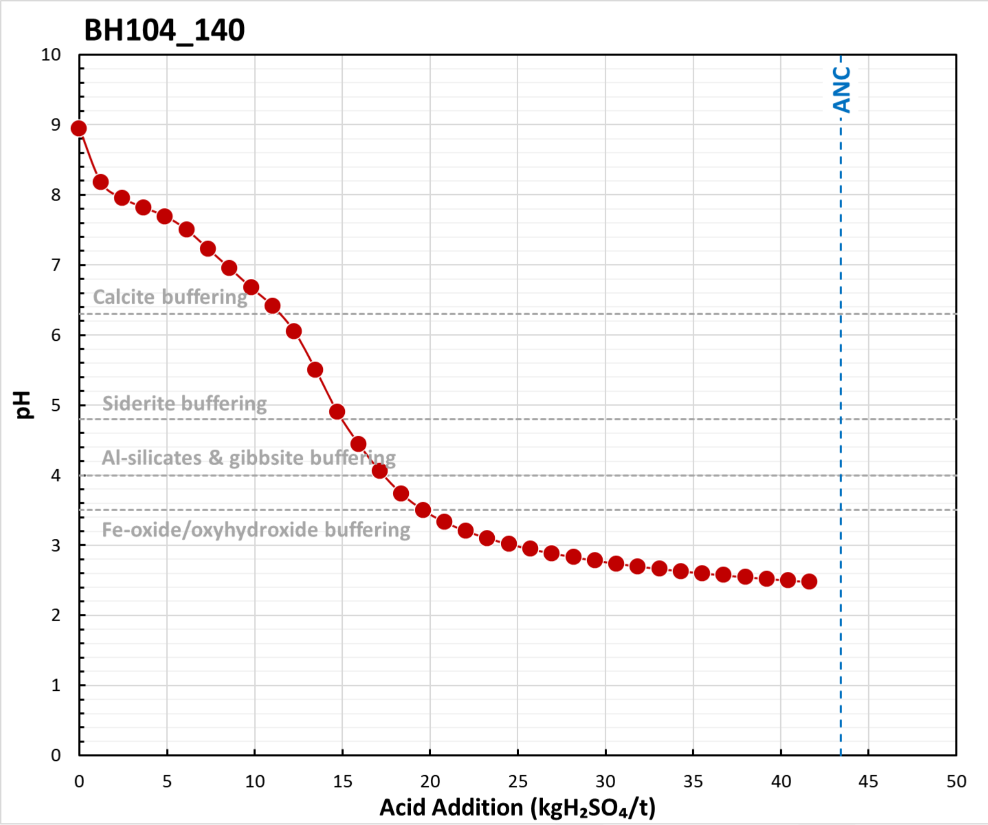

Figure E.5 ABCC plot for sample BH104 140 m

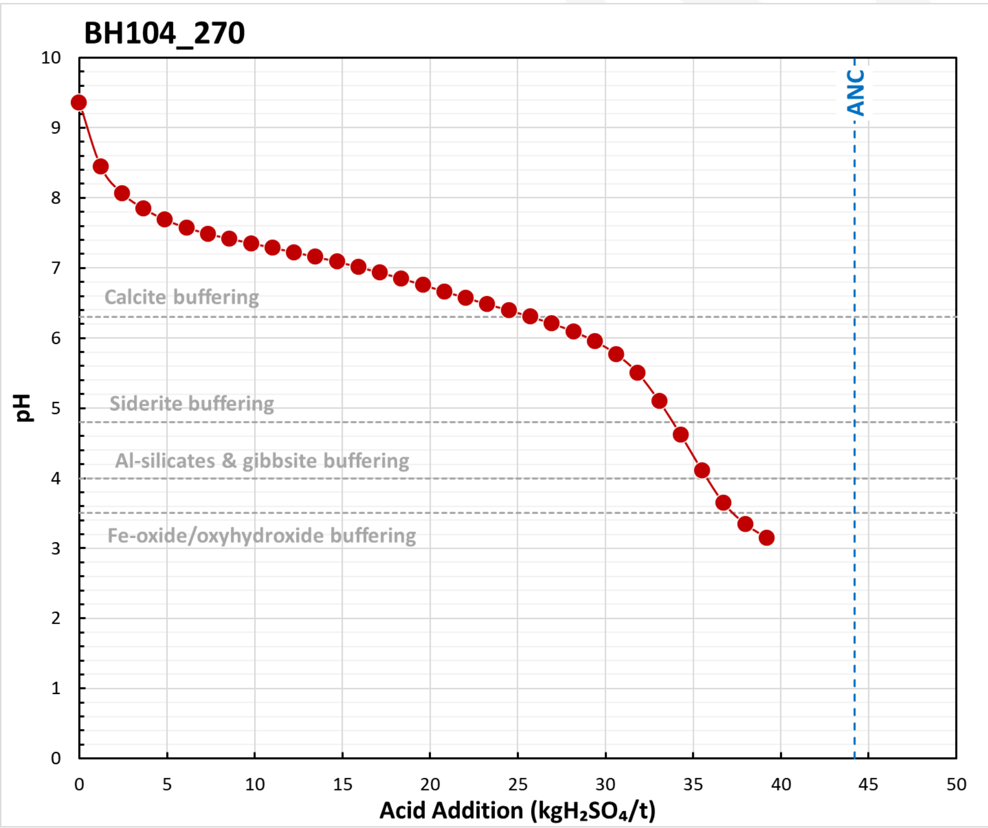

Figure E.6 ABCC plot for sample BH104 270 m

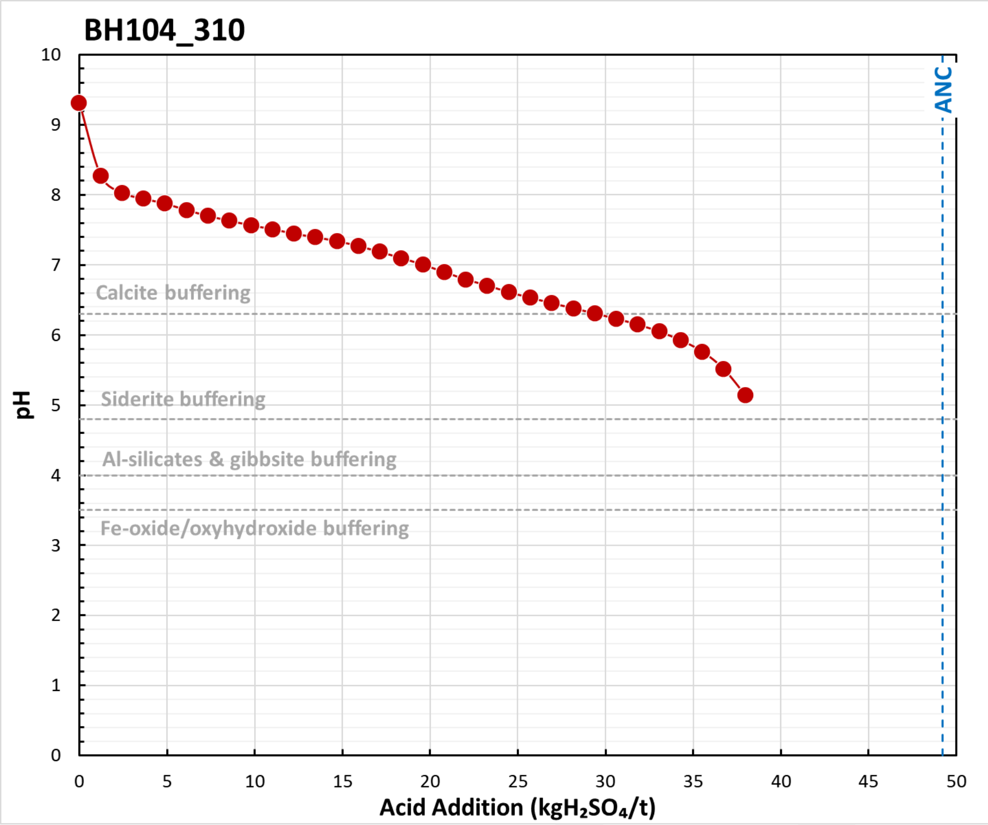

Figure E.7 ABCC plot for sample BH104 310 m

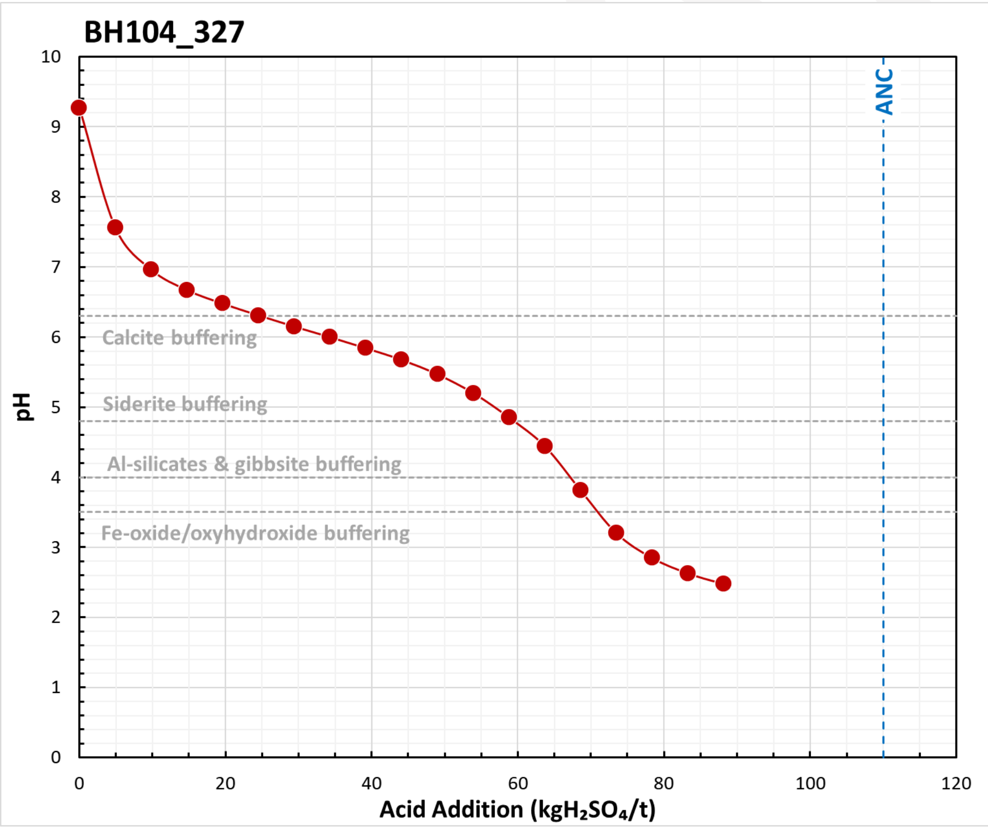

Figure E.8 ABCC plot for sample BH104 327 m

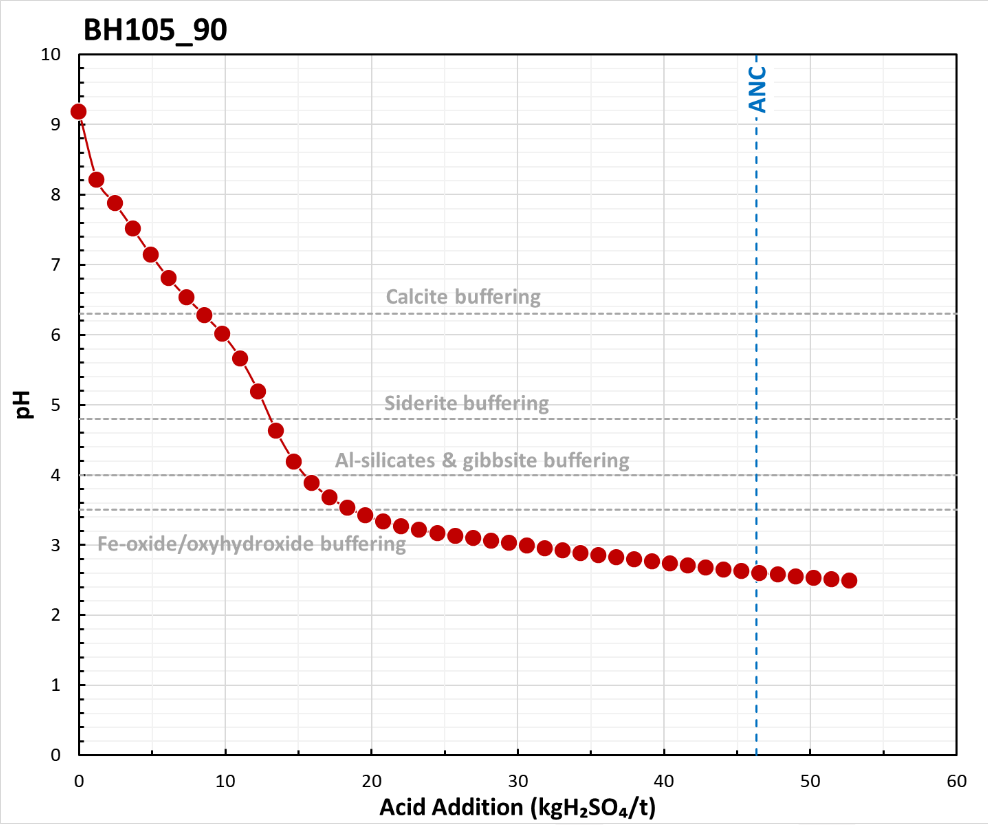

Figure E.9 ABCC plot for sample BH105 90 m

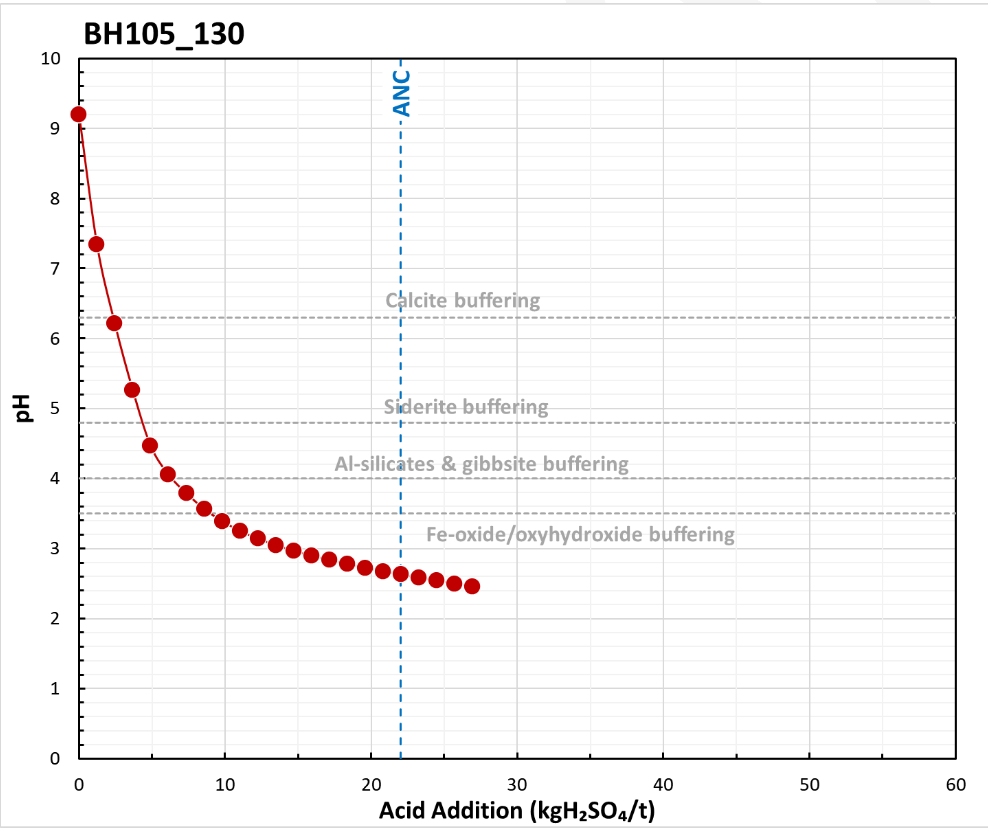

Figure E.10 ABCC plot for sample BH105 130 m

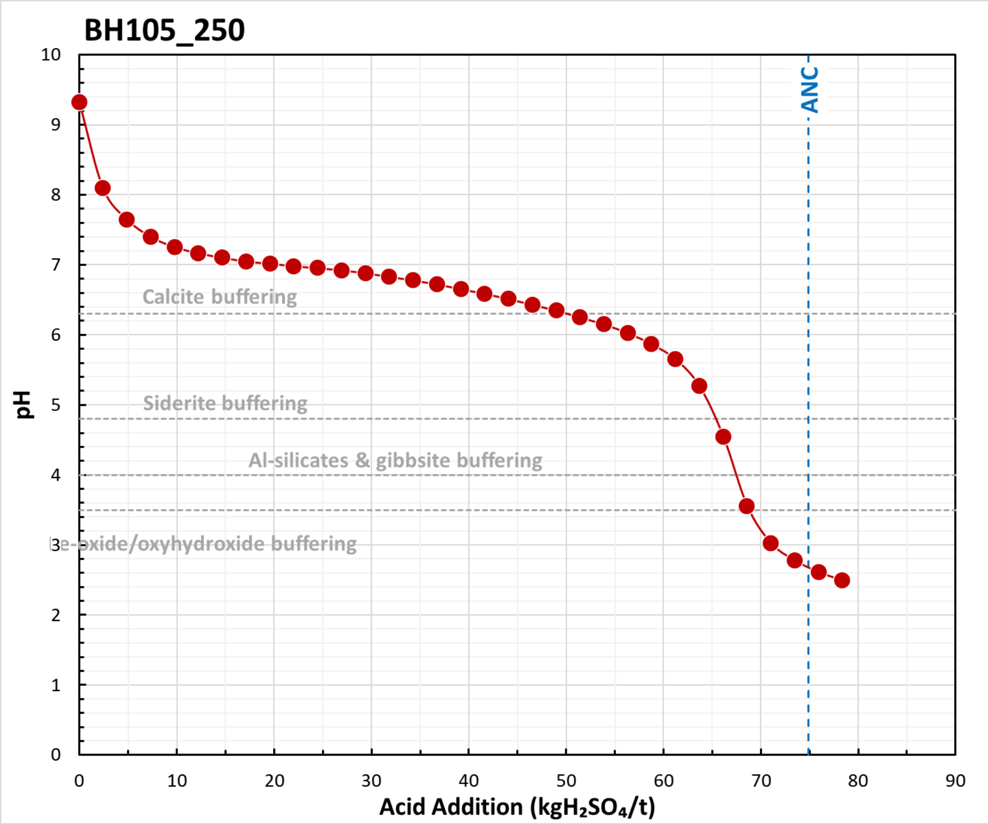

Figure E.11 ABCC plot for sample BH105 250 m

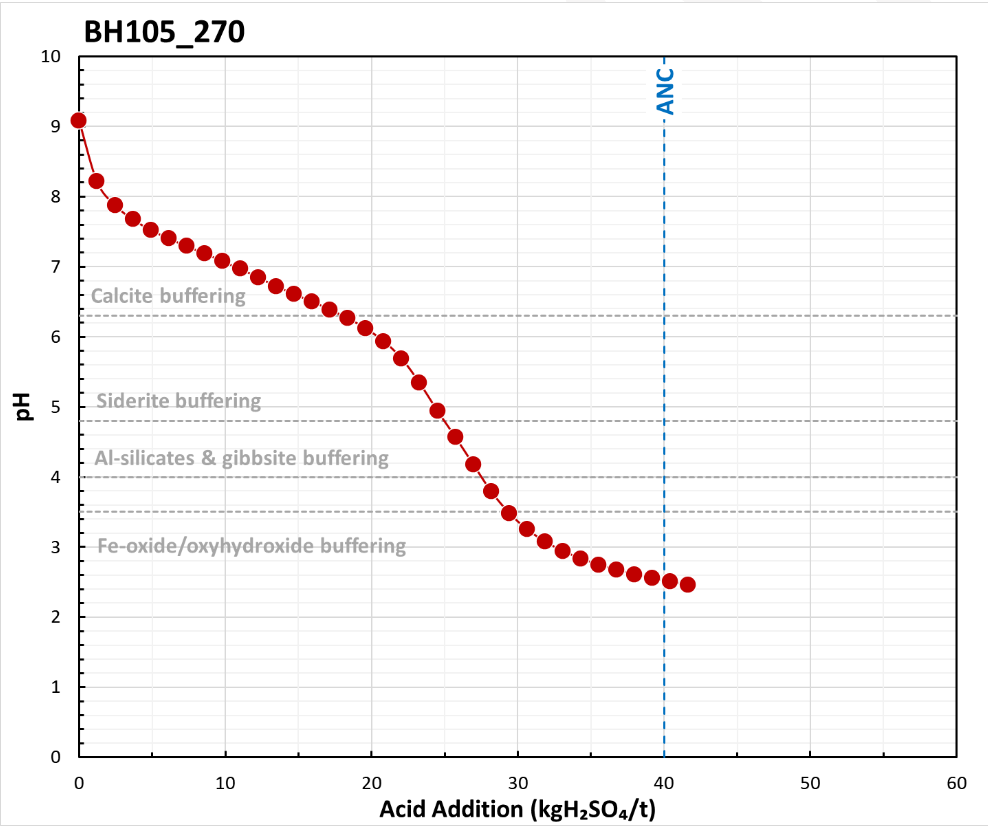

Figure E.12 ABCC plot for sample BH105 270 m

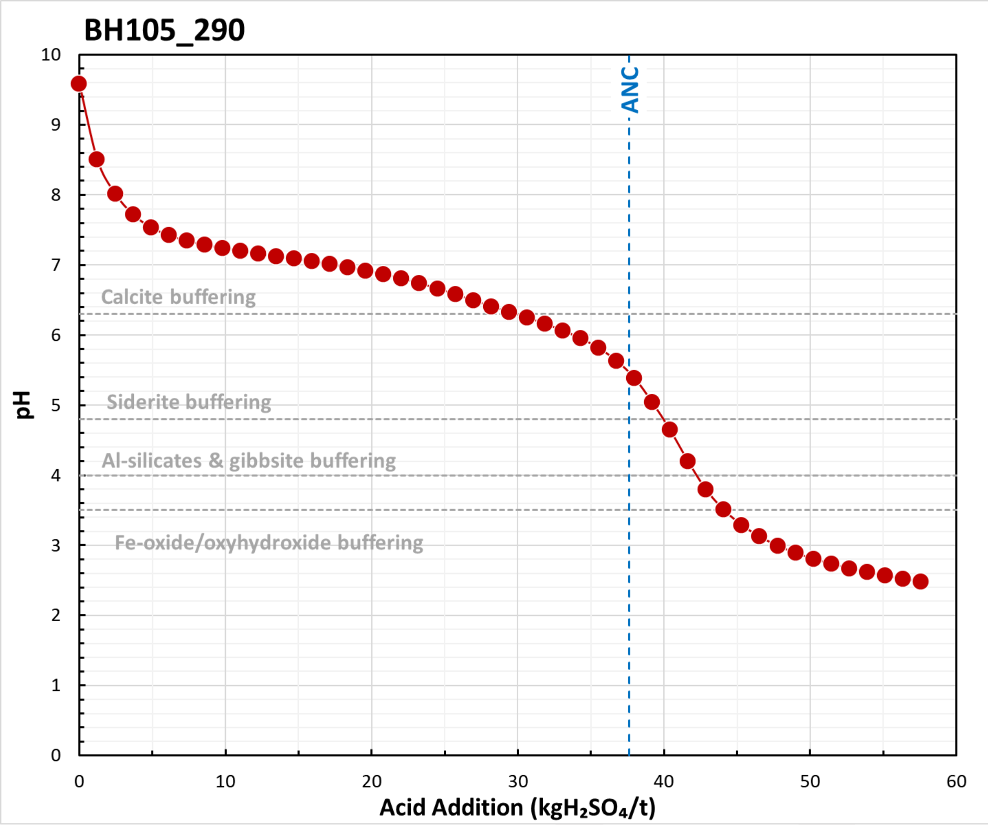

Figure E.13 ABCC plot for sample BH105 290 m

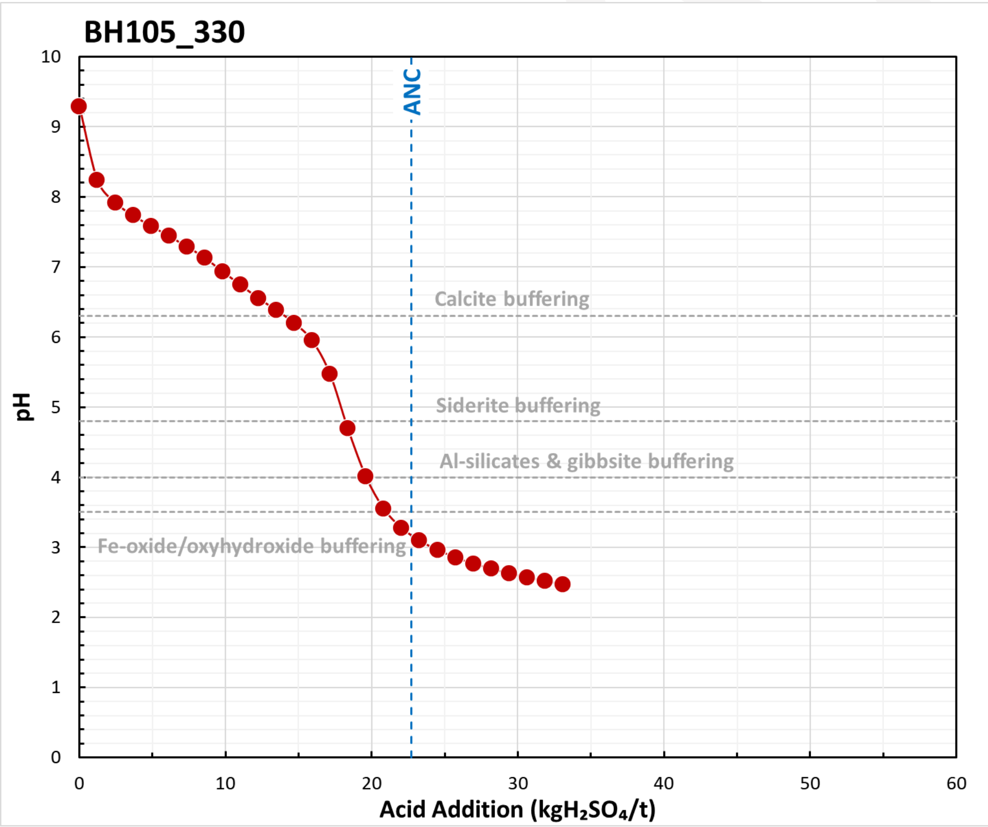

Figure E.14 ABCC plot for sample BH105 330 m

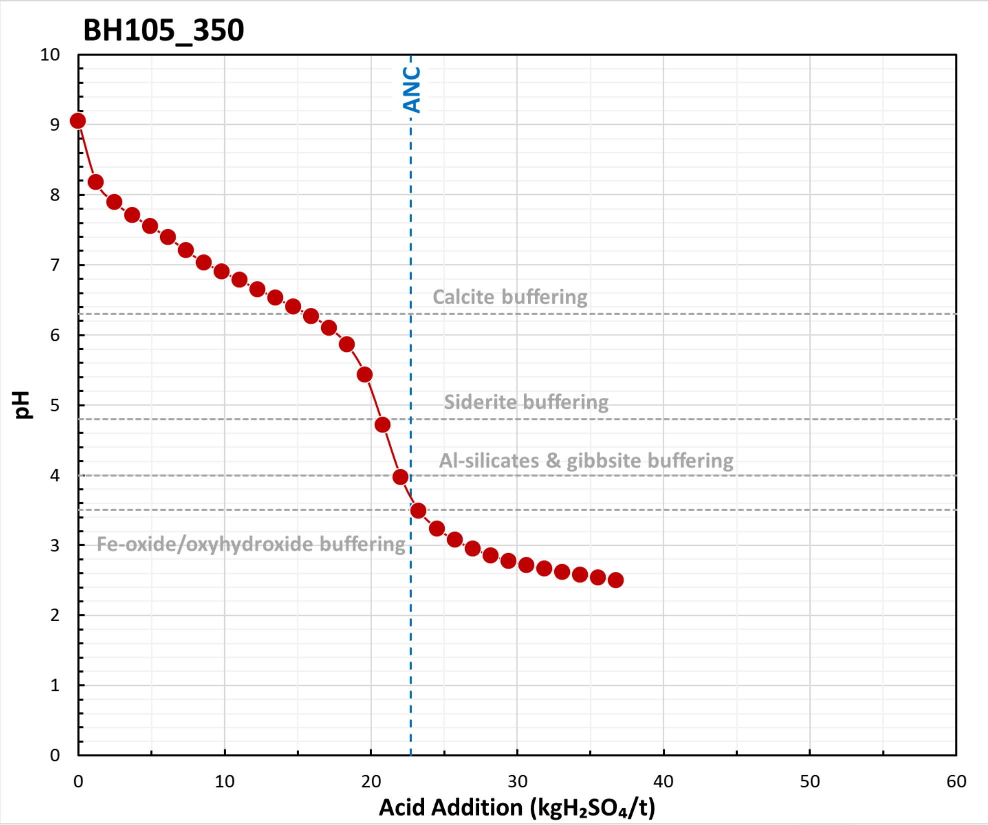

Figure E.15 ABCC plot for sample BH105 350 m

Australia

SYDNEY
Ground floor 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE
Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE
Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA
Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE
Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE
Suite 9.01 Level 9
454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH
Suite 3.03
111 St Georges Terrace
Perth WA 6000
T 08 6430 4800

Canada

TORONTO
2345 Yonge Street Suite 300
Toronto ON M4P 2E5
T 647 467 1605

VANCOUVER
422 Richards Street Unit 170
Vancouver BC V6B 2Z4
T 604 999 8297

CALGARY
606 4th Street SW 11 Floor
Calgary Alberta T2P 1T1

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