Construction Sciences

Stage 2 Detailed Site Investigation

120C OLD CANTERBURY ROAD, SUMMER HILL

Prepared for The Yard 120c

18/02/21

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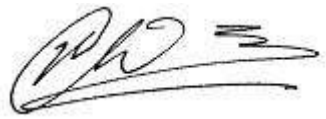

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DOCUMENT HISTORY

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INFORMATION ABOUT THIS REPORT

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Groundwater: Groundwater levels indicated on borehole and test pit logs are recorded at specific times. Depending on ground permeability, measured levels may or may not reflect actual levels if measured over a longer time period. Also, groundwater levels and seepage inflows may fluctuate with seasonal and environmental variations and construction activities.

Interpretation of Data: Data obtained from nominated discrete locations, subsequent laboratory testing and empirical or external sources are interpreted by trained professionals in order to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions in accordance with any relevant industry standards, guidelines or procedures.

Soil and Rock Descriptions: Soil and rock descriptions are based on AS 1726 – 1993, using visual and tactile assessment except at discrete locations where field and / or laboratory tests have been carried out. Refer to the accompanying soil and rock terms sheet for further information.

Further Advice: CS would be pleased to further discuss how any of the above issues could affect a specific project. We would also be pleased to provide further advice or assistance including:

- Assessment of suitability of designs and construction techniques;
- Contract documentation and specification;
- Construction control testing (earthworks, pavement materials, concrete);
- Construction advice (foundation assessments, excavation support).

Executive Summary

Construction Sciences Pty Ltd (CS) was engaged by The Yard 120c, to undertake a stage 2 detailed site investigation (DSI) for land located at 120C Old Canterbury Road, Summer Hill (the site).

At the commencement of this work, CS understood:

> The site is currently owned by The Yard 120C;

> The site is currently utilised as a storage space;

> The site is proposed for a land use scenario[1] comprising:

  – Residential with minimal opportunities for soil access including dwellings with fully and permanently paved yard space such as high rise buildings and flats.

  – Commercial / industrial such as shops, offices, factories and industrial sites.

> The proposed land use scenario assumes a reticulated potable water supply will be available at the site; and

> This DSI is required to address:

> the findings of the stage 1 preliminary site investigation prepared by Network Geotechnics (NG) in 2018; and

> development consent planning decision making processes referred to in State Environmental Planning Policy (SEPP) No. 55

The objectives of this project were to:

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> Assess the potential for contamination to be present at the site, arising from past and present land use activities;

> Provide advice on whether the site is suitable, in the context of land contamination, for the proposed land use scenario; and

> Provide recommendations for supplementary investigations, contamination management, or remedial works.

The scope of work undertaken to address the project objectives included:

> A desktop review of site history;

> A walkover of the site;

> Soil and water sampling;

> Laboratory analysis; and

> Data assessment and reporting.

The scope of works was undertaken with reference to the relevant sections of NEPC (2013), NSW EPA (2020b) and WA DOH (2009.

[1] Adopted from Section 2.2 of NEPC (2013a) and Section 3 of NEPC (2013e)

A number of areas of environmental concern (AEC) on the site, where potential land contaminating activities may have occurred, have been identified for the site, based on the site history review and site walkover observations.

The identified AEC and the COPC associated with those AEC are presented in the table below as the conceptual site model.

ID	AEC	Source	COPC
AEC01	Site	Uncontrolled filling (~2000m^2) Demolition waste storage Metal scrap storage Chemical storage	Hydrocarbons, PAH, OCP, PCB, metals, asbestos, aesthetics.

Following assessment and analysis of the aforementioned COPCs, the finalised CSM at the completion of the stage 2 detailed site investigation works, is presented below.

ID	AEC	Source	COPC	
AEC01	Site	Uncontrolled filling (~2000m^2) Demolition waste storage Metal scrap storage Chemical storage	Hydrocarbons	Material down to a minimum of 3m to be excavated and disposed of offsite to facilitate basement construction. **No further assessment required.**

Based on CS's assessment of desktop review information, fieldwork observations and laboratory analytical data, CS makes the following conclusions:

> the site is considered to be **suitable** for the following land use scenario, following the excavation and removal of fill material:

  - Residential with minimal opportunities for soil access including dwellings with fully and permanently paved yard space such as high rise buildings and flats.

This report must be read in conjunction with the Information About This Report page at the front of this report.

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Appendices

1 Introduction

1.1 Background

Construction Sciences Pty Ltd (CS) was engaged by The Yard 120c, to undertake a stage 2 detailed site investigation (DSI) for land located at 120C Old Canterbury Road, Summer Hill (the site).

At the commencement of this work, CS understood:

> The site is currently owned by The Yard 120C;

> The site is currently utilised as a storage space;

> The site is proposed for a land use scenario[2] comprising:

  - Residential with minimal opportunities for soil access including dwellings with fully and permanently paved yard space such as high rise buildings and flats.
  - Commercial / industrial such as shops, offices, factories and industrial sites.

> The proposed land use scenario assumes a reticulated potable water supply will be available at the site; and

> This DSI is required to address:

  - the findings of the stage 1 preliminary site investigation prepared by Network Geotechnics (NG) in 2018; and
  - development consent planning decision making processes referred to in State Environmental Planning Policy (SEPP) No. 55.

1.2 Objectives

The objectives of this project were to:

> Assess the potential for contamination to be present at the site, arising from past and present land use activities;

> Provide advice on whether the site is suitable, in the context of land contamination, for the proposed land use scenario; and

> Provide recommendations for supplementary investigations, contamination management, or remedial works.

1.3 Scope of Work

The scope of work undertaken to address the project objectives included:

- A desktop review of site history;
- A walkover of the site;

[2] Adopted from Section 2.2 of NEPC (2013a) and Section 3 of NEPC (2013e)

- Soil and groundwater sampling;
- Laboratory analysis; and
- Data assessment and reporting.

The scope of works was undertaken with reference to the relevant sections of NEPC (2013) and NSW EPA (2020b).

2 Site Identification

2.1 Site Locality

The locality of the site is presented in Figure 1.

2.2 Site Layout

The site covers an area of approximately 1956m^2.

The general layout of the site is present in Figure 2. The layout plan also includes locations on site of:

- Established site access points; and
- Surface water bodies on site and immediately adjacent to the site;

2.3 Lot Number and Deposited Plan

The site is identified as Lot 1 in DP817359, Lot 100 in DP875660, and part Lot 1 SP88286.

2.4 Local Government Authority

The local government authority for the site is Inner West Council.

2.5 Zoning

The local government authority's local environment plan (LEP), indicates that the site is currently zoned B4 Mixed Use.

2.6 Geographic Coordinates

The geographic coordinates of the general centre of the site obtained from Google Earth were 33°53'42" S and 151°08'35" E.

2.7 Detail and Level Survey

A copy of a detail and level survey of the site is presented in Appendix A.

3 Site Characterisation

3.1 Geology

The Department of Mineral Resources Geological Survey of NSW Sydney 1:100,000 Geological Series Sheet 9130 (Edition 1) 1983, indicated that the site is underlain by Ashfield Shale bordering an alluvial canal.

3.2 Topography and Elevation

A detail and level survey plan of the site indicated that:

- the topography of the site is generally flat with some minor north facing slopes; and
- the surface of the site was located at an elevation of approximately 9m Australian Height Datum (AHD) in the north and 18m AHD in the south.

3.3 Hydrogeology and Hydrology

NSW Water Realtime Data reported that there are no registered groundwater features located within a 500m radius of the site.

A review of readily available maps held on file by CS, indicated that surface water bodies near the site included:

- Hawthorn Canal, bordering the site in the north and east.
- Iron Cove, located approximately 2,500m to the north.
- Cooks River, located approximately 2,200m to the south.

Based on the location of the identified surface water courses and site topography, the inferred groundwater flow direction at the site is considered likely to be towards the north east.

Based on site surface topography and elevation, the inferred general surface water flow direction on the site is considered likely to be towards the north east.

3.4 Acid Sulfate Soils

A review of the NSW Department of Land and Water Conservation's Acid Sulfate Soil Risk Map for Botany Bay (Edition 2, 1997), indicated that:

- the site is located in a map class description of 'no known occurrence' where acid sulfate soils are not known or expected to occur in these environments; and
- land management activities are not likely to be affected by acid sulfate soil materials.

Further assessment of acid sulfate soils, in the context of this project is considered not warranted.

4 Previous Contamination Assessments

A copy of:

> NG 2018, 'Stage 1 Preliminary Site Investigation, 120c Old Canterbury Road, Summer Hill, NSW' dated February 2018, ref: G09-2641.

> JKG 2020, 'Geotechincal Assessment, 120c Old Canterbury Road, Summer Hill, NSW' dated 20 March 2020, ref: P512895.

> CS 2021, 'Addendum to Preliminary Contamination Assessment, 120c Old Canterbury Road, Summer Hill, NSW' dated 20 January 2021, ref: 10791EV.P.117 – R1.

was provided to CS for review during this project.

4.1 Network Geotechnics (2018)

The objective of NG (2018) was to identify potential contamination risks at the site, in order to provide recommendations on site suitability in relation the proposed development.

The scope of work undertaken to address the project objective included a site walkover and a desktop review of the site.

Based on the observations made during the site walkover and information obtained during the desktop review, NG (2018) made the following conclusions:

> The site contains fill, and had been used as storage for shipping containers.

> There was no concern for potential contamination in relation to the proposed development plan at the time, which did not include the three level basement that is now proposed.

4.2 JK Geotechnics (2020)

The objective of JK Geotechnics (2020) was to review geotechnical and subsurface conditions in relation to further excavation for the proposed development including a three-level basement carpark.

The scope of work undertaken to address the project objective included a document review of a previous geotechnical assessment (JKG, dated 2013) and report preparation. This report noted:

> the site was underlain with shallow fill containing bricks, concrete, ash and clay;

> Residual clay and sandstone bed rock was found below fill; and

> Groundwater was encountered in some boreholes at about 2m depth

Based on the observations made during the document review, JKG (2020) proposed the following management strategy in relation to contamination:

> The development of three groundwater monitoring wells due to the expectation of seepage during basement construction;

4.3 Construction Sciences (2020)

The objective of CS (2020) was to provide an addendum to the preliminary site investigation conducted by NG (2018), required due to a change in development plans including a new excavation depth of up to 9m BGL. This involved assessing additional risk due to potential site contamination from the impact of proposed development, including the 3-level basement car park.

The scope of work undertaken to address the project objective included a document review of a previous preliminary site investigation (NG, dated 2018) and addendum preparation.

Based on the observations made during the addendum, CS drew the following conclusions:

> The conclusions made about site suitability in NG (2018) are no longer applicable due to the change in proposed development for the site (excavation to 9m BGL for a three level basement carpark), and further investigation of contamination is required.

5 Conceptual Site Model

The site history review and observations made during the site walkover, were assessed in the context of the project objectives, in order to develop a conceptual site model (CSM) for the site.

5.1 Sources of Contamination

A number of potential land contaminating activities have been identified for the site, based on the site history review and site walkover observations. These include:

- Uncontrolled filling;
- Vehicle servicing;
- Demolition waste storage; and
- Chemical storage.

Table J1 in Appendix J of AS 4482.1-2005 and Appendix A in DUAP (1998) provides guidance on chemicals associated with the land uses activities. That guidance provides a basis for deciding on contaminants of potential concern (COPC) for each relevant land use activity. Information on COPC adopted for this investigation is presented in Section 5.5 of this report.

5.2 Land Use Scenario

5.2.1 Adopted Land Use Scenario

For the purpose of this investigation, CS understands that the proposed land use scenario for the site includes:

- Residential with minimal opportunities for soil access including dwellings with fully and permanently paved yard space such as high rise buildings and flats.

5.2.2 Assumptions for Adopted Land Use Scenario

Section 3 of NEPC (2013e) advises that the residential with minimal access to soil land use scenario includes high-density residential, not including a private garden. This land use scenario assumes typical residential unit blocks, consisting of multistorey buildings where living areas are on the ground floor (constructed on a ground level slab or above subsurface structures including basement car parks or storage areas).

Occupants of the buildings would have access to yard spaces that are largely covered by permanent paving, with some small areas of landscaping or lawns. Opportunities for direct access to soil by residents of these buildings are therefore minimal but there may be some potential for residents to inhale, ingest or come into direct dermal contact with dust (particulates) derived from the soil on the site.

The scenario does not include landscaped/playground (including sandpit) areas used for recreation within a high-density development. These are considered a 'public open space' land use scenario.

5.3 Receptors

5.3.1 Identified Receptors

Based on the adopted land use scenario, CS considers receptors at the site may include residents, workers, intrusive maintenance workers, ecological (aquatic) ecosystems.

5.3.2 Assumptions for Identified Receptors

The human receptors at a residential with minimal access to soils site, would typically include adults, children and infants who spend the majority of their time indoors within the residential properties, with some limited use of communal outdoor areas on site. The residents that are considered to be most susceptible to health risks associated with soil contaminants are the residents of ground floor units, due to the greatest potential for outdoor soil to be tracked indoors and vapour intrusion occurring with residences immediately overlying contaminated soil.

5.4 Exposure Pathways

5.4.1 Human Health

5.4.1.1 Dermal Contact / Ingestion / Dust Inhalation

Site history information and walkover observations indicated a potential for contaminants to be present in soils at the site, which may present a dermal contact or ingestion risk to human health.

The proposed land use scenario is likely to include exposure to fill material during below-ground carpark construction, where a pathway between identified receptors and direct contact / ingestion contaminant sources, may be complete.

Further assessment of dermal contact, dust inhalation and ingestion risk is considered warranted.

5.4.1.2 Vapour Intrusion / Inhalation

Vapour intrusion / inhalation exposure risks to human health can occur when a primary or secondary vapour source[3] is present.

Site history information and walkover observations did not indicate a potential for vapour sources to be present at the site.

Site history information and walkover observations did not indicate a potential for significantly contaminated groundwater to be present on the site.

Site history information and walkover observations also indicated a potential for historical uncontrolled filling. However, CS considers that:

- the transport, placement and spreading of uncontrolled filling typically includes significant disturbance of soils, which would typically result in the volatilisation of contaminants that might normally present an intrusion / inhalation risk; and
- the potential for contaminants to be present in uncontrolled filling at concentrations which could present an intrusion / inhalation risk, is low.

[3] Primary sources can include underground storage tanks, while secondary sources can include significantly contaminated soil or groundwater.

Further assessment of vapour intrusion / inhalation risks associated with the uncontrolled filling, is considered not warranted.

5.4.1.3 Asbestos

Bonded asbestos containing materials (ACM) comprises asbestos which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin.

Fibrous asbestos (FA) comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material, which can be broken or crumbled by hand pressure.

Asbestos fines (AF) include free fibres, small fibre bundles and small fragments of bonded ACM that can pass through a 7mm x 7mm sieve.

Asbestos poses a risk to human health when asbestos fibres are made airborne and inhaled. The assessment of sites contaminated with asbestos in soil should aim to describe the nature and quantity of asbestos in soil in sufficient detail to enable a risk management plan to be developed for the proposed land use scenario.

Site history information and walkover observations indicate a potential for bonded ACM, FA and/or AF to be present in soils at the site.

The proposed land use scenario is not likely to include unsealed and open space areas, however intrusive works for the below-ground carpark construction creates a potential pathway between identified receptors and asbestos in soils.

Further assessment of asbestos exposure risk is considered warranted.

5.4.2 Hazardous Ground Gases

NSW EPA (2020a) provides advice on ground gases that if present in the pore space of soils and rocks, and can adversely impact human health and safety or the integrity of structures. The ground gases that are generally of concern in this context are:

> Bulk ground gases, including methane, carbon dioxide, carbon monoxide, hydrogen, hydrogen sulphide, and petroleum vapours; and

> Trace ground gases including radon, volatile organic compounds and mercury vapour.

CS has reviewed desktop site history information and site walkover data in the context of sources and origins of hazardous ground gases in Table 1 and Table 2 of NSW EPA (2020a). Based on that review, CS is of the opinion that further assessment of hazardous ground gases in the context of the stage 1 PSI conducted by NG (2018), is considered not warranted.

5.4.3 Aesthetics

CS has used the guidance in Section 3.6.2 and Section 3.6.3 of NEPC (2013a) to facilitate an assessment of site history review information and site walkover observations, in the context of aesthetics risk and the sensitivity of the proposed land use. For example, higher expectations apply to residential properties with gardens compared with industrial settings.

Table 5.4 Preliminary Aesthetics Risk Screening

Preliminary Aesthetics Risk Screening Questions	Potential
Is there a potential for highly malodorous soils or extracted groundwater (e.g. strong residual petroleum hydrocarbon odours, hydrogen sulphide in soil or extracted groundwater, organosulfur compounds) to be present on site?	No
Is there a hydrocarbon sheen on surface waters on site?	No
Is there potential for discoloured chemical deposits or soil staining with chemical waste other than of a very minor nature, on be present in site soils;	Yes
Is there potential for large monolithic deposits of otherwise low risk material, e.g. gypsum as powder or plasterboard or cement kiln dust, to be present in site soils;	No
Is there potential for the presence of putrescible refuse including material that may generate hazardous levels of methane such as a deep fill profile of green waste or large quantities of timber waste, in site soils?	No
Is there potential for soils containing residue from animal burial (e.g. former abattoir sites) to be onsite.	No
Is there a potential for large quantities of non-hazardous inert material to be present in site soils?	No
Is there a potential for high odour residue material to be present in site soils?	No
Is there a potential for large quantities of various fill types and demolition rubble to be present in site soils proposed for residential land use?	Yes

The historical records review, observations made during the site walkover and results of the preliminary risk screening, identified the following potential aesthetics risks for the site:

- Remnant road base and asphalt coverage on site surface; and
- Fill material containing demolition rubble along the batter in the southern portion of the site;

Further assessment of aesthetic risks on site, is considered warranted.

5.4.4 Management Limits for Petroleum Hydrocarbons

Section 2.9 of NEPC (2013a) indicates that there are a number of policy considerations which reflect the nature and properties of petroleum hydrocarbons:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosive hazards; and
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons.

Section 2.9 of NEPC (2013a) notes that CME (2008) includes management limits to avoid or minimise these potential effects. Application of management limits requires consideration of site specific factors such as depth of building basements and services, and depth to groundwater, to determine the maximum depth to which the limits should apply. NEPC (2013a) also states that:

- management limits may have less relevance at operating industrial sites (including mine sites) which have no or limited sensitive receptors in the area of potential impact.
- the presence of site total petroleum hydrocarbon (TPH) contamination at the levels of the management limits does not imply that there is no need for administrative notification or controls in accordance with jurisdiction requirements.

Site history information and walkover observations indicated a potential these policy considerations to be associated with identified AEC at the site, in the context of the proposed future land use scenario. On that basis, further assessment of petroleum hydrocarbons in soils in the context of those policy considerations, is considered warranted.

5.4.5 Groundwater

Section 2.2 of NSW DEC (2007) provides guidance on the need for the potential for groundwater contamination to be assessed, for the purposes of evaluating whether it may pose an unacceptable risk to human health and/or the environment.

Section 3.2 of NEPC (2013d) provides guidance on the environmental values (that are conducive to public benefit, welfare, safety or health) and that require protection from the effects of pollution, waste discharge and deposits. These values include:

- Ecosystem protection;
- Aquaculture and human consumers of food;
- Agricultural water (irrigation and stock water);
- Recreation and aesthetics;
- Drinking water; and
- Industrial water.

Each of these values is considered in the following sub-sections.

5.4.5.1 Aquatic ecosystem protection

The nearest surface water body likely to host an aquatic ecosystem, is considered likely to be polluted and be of a quality that is not consistent with natural background water quality.

Given the combination of

- The nearest water body being sealed (Hawthorn Canal);
- regional geology (which is likely to include low permeability clays); and

it is considered unlikely that those contaminants would become sufficiently mobile, migrate into groundwater and subsequently be transported to the nearest surface water receptor.

However, given the likely nature of the contaminants of potential concern on the site, CS considers that further assessment of aquatic ecosystem protection as a groundwater value is warranted.

5.4.5.2 Aquaculture and human consumers of food

The nearest surface water body (Hawthorn Canal) is located on adjacent to the site, however it is up gradient and sealed. On that basis, it is unlikely that site occupants would frequent that surface water body for the collection and consumption of aquatic based foods.

Based on these scenarios, CS considers that further assessment of aquaculture and human consumers of food as a groundwater value, is not warranted.

5.4.5.3 Agricultural water (irrigation and stock water)

Section 3.3 of this report did not identify any registered groundwater bores within a 500m radius of the site, authorised for irrigation or stock watering purposes.

Urban development both on the site and on land down gradient of the site, is likely to prevent agricultural land use activities from being undertaken. Subsequently, extraction of groundwater for agricultural purposes in the future is considered unlikely.

Based on these scenarios, CS considers that further assessment of agricultural water as a groundwater value, is not warranted.

5.4.5.4 Recreation and aesthetics

The nearest surface water body is a sealed canal that is unlikely to be used recreationally. On that basis, it is unlikely that the surface water body would be used for:

- sports in which the user comes into frequent direct contact with water, either as part of the activity or accidentally, for example, swimming or surfing (primary contact);
- sports that generally have less-frequent body contact with the water, for example, boating or fishing (secondary contact); or
- visual passive recreational use, for example, pleasant places to be near or to look at (no body contact).

CS considers that further assessment of recreation and aesthetics as a groundwater value, is not warranted.

5.4.5.5 Drinking water

Section 3.3 of this report did not identify any registered groundwater bores within a 500m radius of the site, authorised for drinking water purposes.

The current / future land use scenario for the site includes a reticulated drinking water system. Urban development surrounding the site is also likely to include a reticulated drinking water system.

CS considers that further assessment of drinking water as a groundwater value, is not warranted.

5.4.5.6 Industrial water

Section 3.3 of this report did not identify any registered groundwater bores within a 500m radius of the site, authorised for industrial purposes.

Urban residential development / commercial development / agricultural land use both on the site and on land down gradient of the site, is likely to prevent industrial activities from being undertaken. Subsequently, extraction of groundwater for industrial purposes in the future is considered unlikely.

Based on these scenarios, CS considers that further assessment of industrial water as a groundwater value, is not warranted.

5.4.6 Terrestrial Ecosystems

Site history information and walkover observations indicated a potential for contaminants, which may present an ecological risk, may be present on site.

Section 3.4.2 of NEPC (2013a) indicates that:

- a pragmatic risk-based approach should be taken when assessing ecological risk in residential and commercial / industrial land use settings;
- in existing residential and urban development sites, there are often practical considerations that enable soil properties to be improved by addition of ameliorants with a persistent modifying effect or by the common practice of backfilling or top dressing with clean soil;
- in other cases, all of the site soils will be removed during site development works or relocated for the formation of new land forms;
- sites may also be backfilled with clean soil/fill and the fate of any excavated contaminated soil should be considered in process; and
- commercial and industrial sites may have large building structures and extensive areas covered with concrete, other pavement or hardstand materials and may have limited environmental values requiring consideration while in operational use.

The proposed land use scenario is not likely to include unsealed, open space and landscaped areas, where an ecological exposure pathway may be complete.

On that basis, further assessment of terrestrial ecosystem exposure risks is not considered warranted.

5.5 Conceptual Site Model

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources and receptors, and exposure pathways between those sources and receptors.

Based on:

- the areas of environmental concern (AEC) at the site where sources of contamination may be present;
- the contaminants of potential concern (COPC) identified for the site;
- receptors identified for the site; and
- the exposure pathways between those sources and receptors assessed as being potentially or actually complete,

a CSM is presented for the site in Table 5.5.

Table 5.5 Conceptual Site Model

ID	AEC	Source	COPC	Exposure Pathway	Receptor
AEC01	Site	Uncontrolled filling Demolition waste storage Metal scrap storage Chemical storage	Hydrocarbons, PAH, OCP, PCB, metals, asbestos, aesthetics.	Dermal contact Soil Ingestion Dust inhalation Aesthetics Management Limits	Residents Workers (Construction and Maintenance) Aquatic Ecosystems

6 Data Quality Objectives

Appendix B in NEPC (2013b) provides guidance on the data quality objective (DQO) process, which is a seven step iterative planning approach that can be used to define the type, quantity and quality of data needed to inform decisions relating to the environmental condition of a site.

6.1 Step 1: State the problem

The reason the project is being undertaken, is set out in Section 1.1 of this report.

The objective of this project is set out in Section 0 of this report.

The project team and technical support experts identified for the project include the CS project director, CS project manager, CS field staff and CS's subcontractors.

The design and undertaking of this project will be constrained by the client's financial and time budgets.

The regulatory authorities associated with this project include NSW EPA, the local planning authority, and SafeWork NSW.

6.2 Step 2: Identify the decision/goal of the study

The decisions that need to be made during this project, to address the project objectives, include:

> Is the data collected for the project, suitable for assessing land contamination exposure risks?

> Do the detected concentrations of contaminants of potential concern identified in the CSM, present an unacceptable exposure risk to the receptors identified in the CSM, based on the proposed land use scenario?

> Is the site suitable, in the context of land contamination, for the proposed land use scenario?

6.3 Step 3: Identify the information inputs

The information inputs required to make the decisions for the project set out in Section 6.2, include:

> Data obtained during the site history review and site walkover;

> Identification of sample media that needs to be collected, as set out in Section 6.7;

> Parameters that will be measured in each relevant sample, as set out in Section 6.7;

> The analytical methods required for each identified COPC, so that assessment can be made relative to adopted site criteria. These are set out in Section 6.7 of this report; and

> The basis for decisions to be made from field screening, including photo-ionisation detector (PID) data, and what action is to be taken if a defined concentration is attained, as set out in Section 6.7; and

> The site criteria for the media of concern. These criteria are set out in Table 6.3.1 and will be adopted based on the proposed land use scenario[4] and identified receptors.

[4] The land use scenarios in Section 2.2 of NEPC (2013a) will be considered when adopting human health assessment criteria. The land use scenarios in Section 2.5 of NEPC (2013a) will be considered when adopting ecological assessment criteria.

Table 6.3.1 Adopted Site Assessment Criteria

Exposure Pathway	Land Use Setting[5]	Reference
Human health direct contact	HIL B - Residential with minimal opportunities for soil access	Table 1A(1) in NEPC (2013a) Table B4 in Friebel, E & Nadebaum P (2011)
Human health (asbestos)	Residential B	Table 7 in NEPC (2013a)[6]
Human health (aesthetics)	All	Characteristics and processes in Section 3.6.2 and 3.6.3 in NEPC (2013a)
Groundwater	Aquatic (freshwater or marine)	Table 1C in NEPC (2013a) ANZG (2018) (ANZG (2018) (https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/search).
Management Limits (petroleum hydrocarbons)	Residential, parkland and public open space	Table 1B(7) in NEPC (2013a)

6.4 Step 4: Define the boundaries of the study

The geographical and spatial extent of the project will be limited to:

> the site as defined by the boundaries set out in Section 2; and

> any physical constraints or existing infrastructure on site that prevents safe and reasonable access by the project team and/or typical industry equipment used for projects of this nature.

The time and budget constraints of the project will be as per those set out in the contract (and subsequent variations) between CS and the client.

The temporal boundaries of the project will include:

> Weather conditions including rain, wind, heat and cold, which may adversely affect execution of fieldwork tasks and/or data quality;

> Availability of the site for access to execute fieldwork tasks; and

> Availability of project team members to execute the project.

The lateral and vertical intervals in which contamination distribution is believed to be uniformly distributed, based on the CSM, will be:

[5] Consideration will be given to soil type, soil texture, soil depth, groundwater depth and appropriate species protection levels.
[6] A depth of up to 10cm below ground level is adopted to define 'surface soil'.

- The inferred lateral boundaries of each AEC, including groundwater down gradient of primary / secondary sources (where applicable);
- The inferred vertical extent of each AEC, likely to be to the base of fill material, to the base of stockpiled material, to ~1m below the base of belowground infrastructure, and to ~2m below inferred standing water level (where applicable).

The scale of the decisions required will be based on the site, as defined by its boundaries.

6.5 Step 5: Develop the analytical approach

6.5.1 Duplicates and Triplicates

Field duplicates and triplicates will be collected at a rate of one set per 20 samples collected (an equivalent of 5%), and one set per 10 samples collected (an equivalent of 10%) where PFAS is a contaminant of concern. Sample collection will include splitting of one bulk sample across three separate sample containers. Soil samples will not be homogenised, particularly where the COPC are volatile or semi volatile in nature.

Analysis of the duplicate and triplicates will be based on at least one of the analytes that the parent sample is being analysed for (excluding asbestos).

The relative percent difference (RPD) of the detected concentrations in the parent and duplicate, and the parent and triplicate, will be calculated.

6.5.2 Trip Blanks and Trip Spikes

One trip blank and trip spike will be used for each day of sampling[7]. A minimum of one trip blank and one trip spike will be scheduled for BTEX analysis, during the project, provide sample handling, preservation and storage procedures the same for each day of sampling.

6.5.3 Rinsate Blanks

One rinsate blank will be used for each day of sampling[8]. A minimum of one trip blank and one trip spike will be scheduled for BTEX analysis, during the project, provided sample handling, preservation and storage procedures are the same for each day of sampling.

Analysis of the rinsate blank will be based on at least one of the analytes that the parent sample is being analysed for (excluding asbestos).

6.5.4 Field Blanks

One field blank will be used for each day of sampling[9]. A minimum of one field blank will be scheduled for PFAS analysis, during the project, provided sample handling, preservation and storage procedures the same for each day of sampling.

[7] Only where samples being collected on that day are expected to be analysed for BTEX and/or TRH C6-C10.
[8] Only where non-disposable sampling equipment is being used on that day.
[9] Only where PFAS is a contaminant of concern for samples collected on that day.

6.5.5 Laboratory Quality Assurance and Quality Control

The quality assurance and quality control (QA/QC) program of the primary analytical laboratory will typically include analysis of method blanks, matrix spikes, surrogate spikes, laboratory control samples and laboratory duplicates. The laboratory will report on whether the QA/QC analysis meets the laboratory's adopted data quality objectives.

6.5.6 Data Quality Indicators

Data quality indicators (DQI) will be adopted to facilitate an assessment of the completeness, comparability, representativeness, precision and accuracy (bias) of the field and laboratory data collected. These DQI are set out in Table 6.5.6.

Table 6.5.6 Data Quality Indicators

Completeness			
Field Considerations	**Target**	**Laboratory Considerations**	**Target**
Experienced sampling team used	Yes	Complete SRA and COA attached	Yes
Sampling devices and equipment set out in sampling plan were used (refer Section 6.7.1).	Yes	Critical samples identified in sampling plan, analysed	Yes
Critical locations in sampling plan, sampled (refer Section 6.7.1).	Yes	Analysis undertaken addresses COPC in sampling plan (refer Section 6.7.8)	Yes
Critical samples in sampling plan, collected (refer Section 6.7.1).	Yes	Analytical methods reported in laboratory documentation and appropriate LOR used	Yes
Completed field and calibration logs attached	Yes	Sample holding times met (refer Section 6.7.9)	Yes
Completed COC attached	Yes		

Comparability			
Field Considerations	**Target**	**Laboratory Considerations**	**Target**
Same sampling team used for all work.	Yes	Same laboratory used for all analysis (refer Section 6.7.7).	Yes
Weather conditions suitable for sampling.	Yes	Comparable methods if different laboratories used Refer Section 6.7.9).	Yes
Same sample types collected and preserved in same way (refer Section 6.7.6).	Yes	Comparable LORs if different laboratories used.	Yes

Comparability			
Field Considerations	**Target**	**Laboratory Considerations**	**Target**
Relevant samples stored in insulated containers and chilled (refer Section 6.7.6).	Yes	Comparable units of measure if different laboratories used (refer Section 6.7.9).	Yes

Representativeness			
Field Considerations	**Target**	**Laboratory Considerations**	**Target**
Media identified in sampling plan, sampled (refer Section 6.7.1).	Yes	Samples identified in sampling plan, analysed.	Yes
Samples required by sampling plan, collected (refer Section 6.7.1).	Yes		

Precision			
Field Considerations	**Target**	**Laboratory Considerations**	**Target**
Minimum 5% duplicates and triplicates collected and analysed (refer Section 6.5.1).	Yes	All laboratory duplicate RPDs within laboratory acceptance criteria (refer Section 6.5.5).	Yes
Minimum 10% duplicates and triplicates collected and analysed where PFAS is a contaminant of concern (refer Section 6.5.1).	Yes		
RPD unlimited where detected concentrations are <10 times the LOR.	Yes		
RPD within 50% where detected concentrations are 10-20 times the LOR.	Yes		
RPD within 30% where detected concentrations are >20 times the LOR.	See Comment		

Accuracy (bias)			
Field Considerations	**Target**	**Laboratory Considerations**	**Target**
Trip blank analyte results less than LOR (refer Section 6.5.2).	Yes	Laboratory method blank results within laboratory acceptance limits (refer Section 6.5.5).	Yes

Accuracy (bias)			
Field Considerations	**Target**	**Laboratory Considerations**	**Target**
Trip spike analyte results less between 60% and 140% (refer Section 6.5.2).	Yes	Laboratory control sample results within laboratory acceptance limits (refer Section 6.5.5).	Yes
Rinsate blank analyte results less than LOR (refer Section 6.5.3).	Yes	Laboratory spike sample results within laboratory acceptance limits.	Yes

6.5.7 If/Then Statements

If field and laboratory analytical dataset is within the DQI assessment parameters, then the data may be considered to be adequately complete, comparable, representative, precise and accurate, for decision making within the objectives of this project.

If field and laboratory analytical dataset is outside the DQI assessment parameters, then additional data may be collected to address identified data gaps.

If field and laboratory analytical results are within adopted contamination assessment criteria, then the site may be considered suitable for the proposed land use scenario.

If field and laboratory analytical results are outside adopted contamination assessment criteria, then the site may be considered unsuitable for the proposed land use scenario, or additional data collected to further inform the decision making process.

6.6 Step 6: Specify the performance or acceptance criteria

6.6.1 If / Then Decisions

There are two types of decision error:

> sampling errors occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the site. That is, the samples collected are not representative of site conditions (e.g. an appropriate number of representative samples have not been collected from each stratum to account for estimated variability); and

> measurement errors occur during sample collection, handling, preparation, analysis and data reduction.

In the assessment of land contamination, these errors can result in either:

> a Type I error, where contamination exposure risks are considered to be acceptable, when they are not; or

> a Type II error, where contamination exposure risks are considered to be not acceptable, when they are.

In order for decision rules to be sound, they should be designed to minimise decision errors. The risk of decision error will be mitigated by:

> Ensuring fieldwork tasks are undertaken by suitably experienced field staff and sub-contractors, with reference to the DQO presented in this report;

- Ensuring laboratory analyses are undertaken by NATA accredited laboratories; and
- Ensuring interpretation of data is undertaken by suitably experienced environmental consultants and/or outsourcing interpretation to technical experts (if warranted).

6.7 Step 7: Develop the plan for obtaining data

6.7.1 Sampling Point Density and Locations

Table A in NSW EPA (1995) includes guidance on minimum sampling point densities required characterising a site, based on detecting circular hot spots by using a systematic sampling pattern. Application of this guidance is recommended when:

- There is little knowledge about the probable locations of the contamination;
- The distribution of the contamination is expected to be random (e.g. landfill sites); or
- The distribution of the contamination is expected to be fairly homogenous (e.g. agricultural lands).

Section 3.1 of NSW EPA (1995) states that judgemental or stratified sampling methods can be used if there is sufficient information about the probable distribution of the contamination. Additionally, Section 6.2.1 in NEPC (2013b) states that judgemental sampling, the selection of samples (number, location, timing, etc) is based on knowledge of the site and professional judgement. Sampling would be expected to be localised to known or potentially contaminated areas identified from knowledge of the site either from the site history or an earlier phase of site assessment. Judgemental sampling can be used to investigate sub-surface contamination issues in site assessment.

Section 7.5 of NEPC (2013b) and VIC EPA (2009) provides guidance on sampling methods and sample numbers for stockpiles.

Section 4.1 and Table 1 of WA DOH (2009) provides guidance on asbestos in soil sampling densities, relative to the likelihood of asbestos being present on the site.

Section 5.3 of HEPA (2020) requires site specific sampling to take into account:

- the features of the surrounding land;
- that some environmental media act as temporary or permanent PFAS sinks (e.g. PFAS concentrations in sediments in surface water bodies (including drainage lines) are important to consider when assessing transport via wastewater and surface water pathways; and
- other known or potential sources of PFAS contamination.

Table 6.1 of Sullivan et al (2018) provides guidance on acid sulfate soil sampling densities, relative to the type of soil disturbance proposed, the volume of soil to be disturbed, and the extent of the site.

Section A4.2 of NSW EPA (2019) notes that ground gas monitoring network design is a compromise between coverage and cost, however an adequate number of rationally placed sampling points is fundamental to a credible investigation. The design should be based on desktop review data, site reconnaissance and an adequate conceptual site model, and should consider the three dimensionality of gas flow. Further guidance is provided in Table 19 of NSW EPA (2020a) and Sections 5.2 and 5.3 of NSW EPA (2016).

The scope of this project has included collection of data that provides an understanding of:

- site history;

- the locations of potentially contaminated areas;
- the identified COPC;
- laydown mechanisms for COPC in each AEC;
- the likely lateral and vertical extent of potential contamination in each AEC; and
- constraints on site which may restrict the use of certain sampling techniques.

On that basis, it is considered reasonable to adopt a mix of grid based and judgemental sampling patterns, using the sampling point densities set out in Table 6.7.1 and Figure 3.

Table 6.7.1 Sampling Point Densities and Locations

ID	AEC	Sampling Point ID	Method	Target Depth (mbgs)
AEC01	Site (~2000m^2)	BH01-BH08	Borehole	5m, refusal or 0.3m into natural
		MW01-MW03	Groundwater well	5m or 2m below inferred standing water level, or refusal, whichever occurs first

6.7.2 Sampling Method – Soils

Soil samples will be collected from relevant sampling points at the surface, and at regular intervals thereafter, or where there is a change in lithology, or where there is visual/olfactory evidence of potential contamination.

When identified COPC include volatiles (e.g. BTEX, TRH or VOC), collected soil samples will be screening for ionisable volatile organic compounds using a photo-ionisation detector (PID). A sub sample from each sample collected at each sampling point will be placed in a zip lock bag, sealed, and shaken. Each zip lock bag will then be pierced with the tip of a PID and the results recorded on the relevant sampling point log.

Samples requiring asbestos gravimetric screening will be 10L in volume, and will be collected and screened with reference to Table 5 in WA DOH (2009).

Samples requiring calculation of asbestos fines (AF) and fibrous asbestos (FA), will be collected as separate samples.

6.7.3 Sampling Method - Groundwater

Groundwater monitoring bores will be drilled to a target depth of 5m below ground surface or 2m below inferred standing water level, using a drilling rig fitted with push tubes / solid stem augers.

A monitoring well will be constructed in each bore using 50mm Class 18 PVC machine slotted screen and casing, gravel pack from the base to approximately 0.5m above the top of the screen, followed by approximately 0.5m of hydrated bentonite, grout to the surface and a lockable cast iron road box or lockable monument.

Monitoring wells will be developed following installation, and allowed to equilibrate before sampling (preferably 5 days later).

At the start of the groundwater monitoring event (GME), depth to standing water level in MW01, MW02 and MW03, will be gauged in each well, and then each well purged until field groundwater quality parameters stabilise. Field groundwater quality parameters including dissolved oxygen, conductivity, oxygen reduction

potential, pH and temperature, will be measured using a calibrated water quality meter and flow cell. Observations will also be made of colour, clarity, odour and sheen. Field water quality measurements and observations will be recorded on a groundwater monitoring event field sheet.

Groundwater samples will be collected using low flow sampling techniques (peristaltic pump), from up gradient wells before down gradient wells. Samples for volatile analysis will be collected before semi volatiles. Headspace in sample containers will be avoided. Relevant samples will be field filtered to 0.45µm.

Samples will be submitted to a NATA accredited laboratory for analysis.

6.7.4 Field Screening

When identified COPC include volatiles (e.g. BTEX, TRH or VOC), collected soil samples will be screening for ionisable volatile organic compounds using a photo-ionisation detector (PID). A sub sample from each sample collected at each sampling point will be placed in a zip lock bag, sealed, and shaken. Each zip lock bag will then be pierced with the tip of a PID and the results recorded on the relevant sampling point log.

6.7.5 Decontamination

Non-disposable sampling equipment will be decontaminated between sampling points to mitigate potential for cross contamination of samples. The decontamination method to be used will be:

> Wash off the non-disposable sampling equipment with a solution of potable water and phosphate free detergent (e.g. Decon 90), noting that Decon 90 will not be used on equipment used for collection of samples that will be analysed for PFAS compounds;

> Rinse the washed equipment with distilled or de-ionised water; and

> Air dry the rinsed equipment.

6.7.6 Sample Identification, Preservation, Handling and Transport

Soil samples will be identified using the CS project number, sampling point identification number and sampling depth interval (e.g. TP01/0.0-1.0 or BH04/0.2-0.4), and date the sample was collected.

Groundwater samples will be identified using the CS project number, sampling point identification number (e.g. MW03) and date the sample was collected.

Samples will be placed in laboratory prepared containers (containing preservatives as appropriate), bulk sample bags and zip lock bags.

Soil, water and vapour samples will be stored in insulated containers with ice.

Samples will be transported to the analytical laboratory by CS field staff, using the analytical laboratory's chain of custody (COC) documentation.

6.7.7 Laboratory Selection

Analytical laboratories used for this project will be NATA accredited for the analytical methods used.

6.7.8 Laboratory Analytical Schedule

Samples scheduled for laboratory analysis will be selected based on:

> The COPC identified for the AEC the sample was collected from;

> Observations made of the sample when collected (including staining, odour and discolouration); and

> The results of PID headspace screening (if applicable).

The proposed laboratory analytical schedule (including upper limiting sample quantities) for the project is set out in Table 6.7.8.

Table 6.7.8 Laboratory Analytical Schedule

ID	AEC	Sampling Point ID	TRH / BTEX	PAH	OCP/PCB	Metals (8)	Asbestos (ID)	Asbestos (0.001%)	CEC / pH
AEC01	Site	BH01 – TP08	12	16	2	16	2	16	2
AEC01	Site	MW01 – MW03	3	3	-	3	-	-	-

6.7.9 Laboratory Holding Times, Analytical Methods and Limits of Reporting

Sample holding times, laboratory analytical methods and limits of reporting applicable to this project, are set out in Table **6.7.9**.

Table 6.7.9 Laboratory Holding Times, Analytical Methods and Limits of Reporting

Analyte	Holding Time	Method	LOR (mg/kg)	LOR (µg/L)
BTEX and TRH C6-C10	14 days	USEPA 5030, 8260B and 8020	0.2-0.5	1-2 and 50
TRH C10-C40	14 days	USEPA 8015B & C	20-100	50-500
VOC	14 days	USEPA 8260	0.1-0.5	-
PAH	14 days	USEPA 8270	0.1-0.2	0.5-10
OCP	14 days	USEPA 8081	0.2	-
PCB	14 days	USEPA 8270	0.2	-
Metals	6 months	USEPA 8015B & C	0.05-2	0.1-5
pH	On receipt	APHA 4500 pH	-	0.1 pH unit
Asbestos ID	No limit	AS4926	Absence / presence	-
Asbestos (WA DOH)	No limit	Inhouse	0.001% w/w	-

7 Fieldwork

7.1 Soils

7.1.1 Sampling

Soil sampling works were undertaken by CS on 4 February 2021. These works included:

> Surveying of each sampling point by a service locating contractor for buried services;

> Drilling of eight soil bores (BH01 to BH08) using a track mounted drilling rig fitted with push tube augers and solid stem augur.

> Development of three groundwater monitoring wells (MW01 to MW03)

Soil samples were collected at each sampling point, at the surface and at regular intervals thereafter, or where visual or olfactory evidence of contamination was observed.

Samples were collected directly from the push tube liner, using a fresh pair of nitrile gloves.

Samples were placed in suitable laboratory prepared containers and labelled.

Boreholes were backfilled with excess drill cuttings and clean sand.

Duplicate and triplicate samples were collected by splitting the primary sample across three sample containers (without homogenising, to avoid loss of volatiles).

Sampling point locations were confirmed on a site plan. The sampling point location plan is presented in Figure 3.

Image 7.1.1.1 View of borehole locality at sampling point BH02

Image 7.1.1.2 View of borehole at sampling point BH04

7.1.1.3 View of bore hole at sampling point BH06

7.1.2 Site Specific Geology

Observations made of soils encountered during intrusive investigation works were recorded on logs. These logs are presented in Appendix B.

A summary of subsurface conditions is presented in Table 7.1.2**.**

Table 7.1.2 Summary of Subsurface Conditions

Layer	Description	Depth (m)
Fill	Gravelly SAND/CLAY, coarse grained/low plasticity, loose/stiff, brown (red/grey in BH05 and BH06), with some bitumen, moist to dry	0.0 to 0.4 (1.5 in BH08, 3.0 in BH05, 3.5 in BH06)
Natural	CLAY red/grey, low to medium plasticity, stiff, dry to wet, with trace ironstone	0.2 to 5
Rock	SANDSTONE, white/yellow	3.2 to 3.4

7.1.2.1 View of fill soils encountered at BH02

7.1.2.2 View of fill soils encountered at BH07

7.1.2.3 View of natural soils encountered at BH05

7.1.2.3 View of rock (sandstone) encountered at BH05

7.1.3 Potential Asbestos Containing Materials

Visual evidence of potential asbestos containing materials (ACM) was encountered on the surface at sampling point BH02, in the form of a fibrous cement fragment. A sample of this potential ACM was collected.

7.1.3.1 View of potential ACM fragment at BH02

7.1.4 Odours

Olfactory evidence of odours in the soil samples collected included a mild hydrocarbon odour in sample BH01-0.5-0.8.

7.1.5 Staining

There was visual evidence of minor black staining in the sample BH01-0.5-0.8.

7.1.6 Headspace Screening

Headspace screening was undertaken, by placing a sub sample from each relevant sample at each relevant sampling point, in a zip lock bag, sealing it, shaking it, then piercing the bag with the tip of the PID and results recorded.

The results of the headspace screening are presented on the logs in Appendix B. The results recorded indicated the potential for ionisable volatile organic compounds to be present in the samples screened was generally low, with the highest occurring in BH02-0.0-0.1 at 6.0ppm.

A copy of the PID calibration certificate is presented in Appendix C.

7.2 Groundwater

7.2.1 Monitoring Well Installation

Monitoring well installation works were undertaken by Stratacore under the supervision of CS. Each well was constructed using 50mm Class 18 PVC machine slotted screen and casing, gravel pack, bentonite seal, grout and a lockable cast iron road box. Well construction details are present in the logs in Appendix B.

Each well was developed using a Waterra D-25 foot valve.

7.2.1.1 View of well head at sampling point MW01

7.2.1.2 View of well head at sampling point MW03

7.2.2 Groundwater Sampling

Standing water levels in each of the monitoring wells were gauged by CS on 8 February 2021 and the results recorded on the field groundwater quality parameter forms presented in Appendix E. Based on the well survey data and measured standing water levels, the inferred groundwater flow direction is towards the south. Inferred groundwater contours cannot be assessed given the fact that the wells are in a linear formation.

Each well was then purged using a peristaltic pump and dedicated LDPE and silicon tubing, until water quality parameters stabilised. The results were recorded on the field groundwater quality parameter forms presented in Appendix E.

The same pump and dedicated tubing was used to collect a sample from each monitoring well. Samples were placed in suitable laboratory prepared containers and labelled. The samples collected for metal analysis were filtered in the field during collection, using disposable 45µm filters.

A copy of the groundwater sampling equipment calibration documentation is presented in Appendix C.

7.2.2.1 View of groundwater sampling at MW03

8 Laboratory

The samples were transported to the analytical laboratory using chain of custody protocols. A selection of those samples were scheduled for laboratory analysis, taking into consideration the laboratory analytical schedule presented in Table 6.7.8 and observations made in the field.

A copy of the sample receipts and certificates of analysis, is presented in Appendix G.

The relevant laboratory analytical results were tabulated and presented in the attached Table LR01, Table LR02, Table LR03 and Table LR04.

9 Assessment of Data Quality Indicators

An assessment of performance against the data quality indicators (DQI) is presented in Appendix G.

10 Discussion

10.1 Human Health - Dermal Contact / Ingestion / Dust Inhalation

The detected concentrations of the relevant COPC in the soil samples analysed, were less than the adopted human health direct contact assessment criteria, with the exception of:

> the concentration benzo(a)pyrene TEQ in samples BH05-1.5-1.7 (9.6mg/kg) and BH03-MW01-0.0-0.1 (6.1mg/kg), where the criterion is 4mg/kg;

Asphalt gravels were logged as being observed in sample BH03-MW01-0.0-0.1, which is considered to be the source of the elevated concentration of benzo(a)pyrene TEQ. Footnote 6 in Table 1A(1) of NEPC (2013a) advises that where the B(a)P occurs in bitumen fragments, it is relatively immobile and does not represent a significant health risk. The elevated concentration of benzo(a)pyrene TEQ in sample BH05-1.5-1.7 is not directly related to bitumen in strata. However, the layers in which these exceedances occur are a part of the fill material flagged for excavation and subsequent offsite disposal. On that basis, further assessment of the benzo(a)pyrene (TEQ) in samples BH05-1.5-1.7 and BH03-MW01-0.0-0.1 in relation to dermal contact, dust inhalation and ingestion risk is considered not warranted.

10.2 Human Health - Asbestos

10.2.1 Bonded Asbestos Containing Materials

Fragments of potential ACM were observed during field works on the surface of BH02. However, asbestos was not identified in the samples collected of this material.

Further assessment of bonded asbestos human health exposure risks is considered not warranted.

10.2.2 Fibrous Asbestos / Asbestos Fines

The concentration of FA and AF detected in the samples analysed, were less than the adopted health screening level of 0.001% w/w.

Further assessment of fibrous asbestos / asbestos fines human health exposure risks is considered not warranted.

10.3 Aesthetics

Visual and olfactory observations made of the soils and groundwater encountered during fieldwork, indicated the presence of some bitumen in the fill material at some sampling points.

This fill material has been flagged for excavation and disposal offsite.

On this basis, the observations made on site are considered to not present circumstances which would trigger further assessment of aesthetics.

Further assessment of aesthetic risks is considered not warranted.

10.4 Management Limits for Petroleum Hydrocarbons

The detected concentrations of the relevant COPC in the soil samples analysed, were less than the adopted management limits for petroleum hydrocarbon assessment criteria.

10.5 Groundwater

10.5.1 Aquatic ecosystem protection

The detected concentrations of the relevant COPC in the groundwater samples analysed, were less than the adopted aquatic ecosystems assessment criteria, with the exception of:

> Zinc in MW01 (38µg/L), MW02 (61µg/L) and MW03 (54µg/L),

> Nickel in samples MW02 (0.032mg/L) - MW03 (0.017mg/L), and

> Copper in samples MW01 (0.006 mg/L), MW02 (0.004 mg/L) and MW03 (0.007mg/L), slightly elevated across all sample locations.

CS notes that the elevated concentrations of zinc, nickel and copper in the groundwater are likely to be attributable to the mineralogy in the Ashfield shale. CS further notes that:

> The detected concentrations of zinc in the soil samples analysed were within background ranges presented in Berkman D A (1989), indicating that the zinc concentrations in site soils are unlikely to be a significant contributor to zinc concentrations in site groundwater; and

> The zinc concentration detected in the groundwater samples were within close proximity to the arithmetic mean concentration of zinc in stormwater (40µg/L) in a 'high urban' environment presented in Table 2.17 in Fletcher T, Duncan H, Poelsman P & Lloyd S (2004). This indicates that diffuse stormwater recharge of groundwater is considered likely to be a significant contributor to concentrations of zinc in groundwater, both on site and regionally, rather than a specific source in site soils.

Further assessment of aquatic ecosystem exposure risks is considered not warranted.

11 Revised Conceptual Site Model

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources and receptors, and exposure pathways between those sources and receptors. The CSM at the completion of the stage 2 detailed site investigation works, is presented for the site in Table 11.1.

Table 11.1 Revised Conceptual Site Model

ID	AEC	Source	COPC	Exposure Pathway	Receptor	Outcome
AEC01	Site	Uncontrolled filling Demolition waste storage Metal scrap storage Chemical storage	Hydrocarbons	Dermal contact Soil Ingestion Management Limits	Residents Workers (Construction and Maintenance) Aquatic Ecosystems	Material down to a minimum of 3m to be excavated and disposed of offsite to facilitate basement construction. No further assessment required.

12 Duty to Report Contamination

CS understands the client is the owner and/or occupier of the land that the site is located on. The scope of work CS was engaged to undertake for this investigation, did not include an assessment of site data against relevant duty to report notification triggers in NSW EPA (2015). CS advises that if:

> the client has undertaken activities on the site that may have contaminated the land; or

> the client is the owner of the land that may have been contaminated;

then NSW EPA (2015) provides guidance on when the client should seek further advice about site contamination and its duty to report. Further information on the client's duty to report, can be found at www.epa.nsw.gov.au.

12.1 On-site Soil Contamination

This test applies to contamination in, or on, soil on the site.

Given the results of the test above, an assessment of whether a person has been or foreseeably will be exposed to the identified contaminants of concern or a by-product the contaminant, is not warranted.

12.2 Off-site Soil Contamination

This test applies to contamination in, or on, soil on neighbouring land.

Assessment of the 95% upper confidence limit (UCL) on the arithmetic average concentration of contaminants in or on soil on neighbouring land, was not within the scope of this stage 2 DSI.

Assessment of whether the detected concentration of identified contaminants in individual soil samples on neighbouring land were not equal to or more than 250% of the relevant HIL or HSL for the current or approved use of the respective offsite land, as specified in Section 6 of NEPC (2013a), was not within the scope of this stage 2 DSI.

12.3 Foreseeable Contamination of Neighbouring Land

This test applies to the foreseeable contamination of neighbouring land.

The available data is not sufficient for determining, with a reasonable degree of certainty, whether contaminants identified onsite, will foreseeably enter neighbouring land.

The results of the test reported in Section 12.1 of this investigation did not identify contaminant concentrations that would foreseeably be above the relevant HIL or HSL for that contaminant for the current or approved use of the respective off-site land, as specified in Section 6 of NEPC (2013a).

Further to the preceding paragraph, it is therefore considered that the concentration of the contaminants, even if found to foreseeably enter neighbouring land, would not foreseeably continue to remain above the relevant HIL or HSL for that contaminant for the current or approved use of the respective off-site land, as specified in Section 6 of NEPC (2013a).

13 Conclusions and Recommendations

Based on CS's assessment of desktop review information, fieldwork observations and laboratory analytical data, CS makes the following conclusions:

> the site is considered to be suitable for the proposed residential land use (with minimal opportunities for soil access such as high rise buildings and flats), subject to the excavation and removal of fill material to facilitate the basement construction.

This report must be read in conjunction with the ***Information About This Report*** page at the front of this report.

14 References

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National Environment Protection Council (NEPC) 2013c, 'Schedule B(4) Guideline on Site-Specific Health Risk Assessment Methodology', National Environment Protection (Assessment of Site Contamination) Measure (NEPM) as amended in May 2013.

National Environment Protection Council (NEPC) 2013d, 'Schedule B(6) Guideline on The Framework for Risk-Based Assessment of Groundwater Contamination', National Environment Protection (Assessment of Site Contamination) Measure (NEPM) as amended in May 2013.

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NSW EPA 2020b, 'Contaminated Land Guidelines: Consultants reporting on contaminated land' dated May 2020, ref: EPA2020P2233.

WA DOH 2009, 'Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia', dated May 2009.

10791EV.P.117
FIGURES

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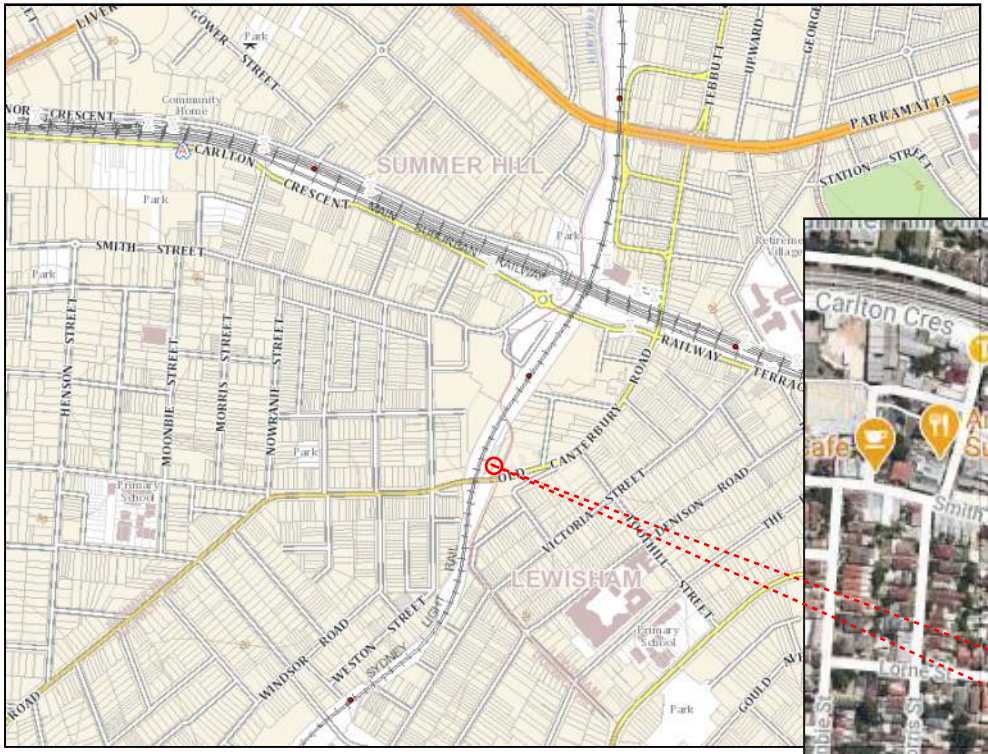

LEGEND:

- Approximate site location
- Approximate site boundary

N

Construction Sciences

2/4 Kellogg Rd
ROOTY HILL NSW 2766

Tel: (02) 8646 2000
Fax: (02) 8646 2025
Web: www.constructionsciences.net

Scale: Not to scale	Client: The Yard 120C
Date: 03 February 2021	Project: Stage 2 Contamination Assessment
Drawn By: JGB	Location: 120C Old Canterbury Road, Summer Hill, NSW
Drawing No: 10791EV.P.117 - R02 - F1	Sheet: **Site Locality**

LEGEND:

- Approximate site boundary
- Site access
- Hawthorn Canal
- Train Line

N

Construction Sciences

2/4 Kellogg Rd
ROOTY HILL NSW 2766

Tel: (02) 8646 2000
Fax: (02) 8646 2025
Web: www.constructionsciences.net

Scale: ← 20.00 m →	Client: The Yard 120C
Date: 15 February 2021	Project: Stage 2 Contamination Assessment
Drawn By: JGB	Location: 120C Old Canterbury Road, Summer Hill, NSW
Drawing No: 10791EV.P.117 - R02 - F2	Sheet: **Site Layout**

N

LEGEND:

- Approximate site boundary
- Borehole locations
- Monitoring well locations

Construction Sciences

2/4 Kellogg Rd
ROOTY HILL NSW 2766

Tel: (02) 8646 2000
Fax: (02) 8646 2025
Web: www.constructionsciences.net

Scale: ← 20.00 m →	Client: The Yard 120C
Date: 03 February 2021	Project: Stage 2 Contamination Assessment
Drawn By: JGB	Location: 120C Old Canterbury Road, Summer Hill, NSW
Drawing No: 10791EV.P.117 - R02 - F3	Sheet: **Sampling Location Plan**

APPENDIX A

SITE SURVEY

Fox Johnston
Level 1, 268A Devonshire Street
Surry Hills
NSW 2010 AUSTRALIA
foxjohnston.com.au
T + 61 2 9211 2700
F + 61 2 9211 2785
ABN - 63111324353
contact@foxjohnston.com.au

Client
The Yard 120c

REV	DESCRIPTION	DRAWN	DATE
-	Development Application	BW	18.09.2020

ALL LEVELS TO AUSTRALIAN HEIGHT DATUM.

IT IS THE CONTRACTORS RESPONSIBILITY TO CONFIRM ALL MEASUREMENTS ON SITE PRIOR TO COMMENCEMENT OF WORK. DRAWINGS SHOULD NOT BE SCALED. WRITTEN DIMENSIONS ONLY SHOULD BE TAKEN FROM DRAWINGS. ALL DIMENSIONING IS TO SUBSTRATE BRICKWORK / BLOCKWORK UNLESS OTHERWISE NOTED.

Project
120C Old Canterbury Road_Summer Hill

Title
Site Analysis Plan

Job No.	#Pln
Scale	1:250 @ A1 1:500 @ A3
Date	18.09.2020
Drawn/Checked	BW/ CJ
Dwg No.	A-100-001
Rev.	-

APPENDIX B
LOGS

Construction Sciences

BOREHOLE LOG SHEET

Client: The Yard 120c
Project: Stage 2 Detailed Site Investigation
Location: 120c Old Canterbury Road, Summer Hill

Hole No: BH01

Job No: 10791EV.P.117 **Sheet:** 1 of 1

Position: **Angle from Horizontal:** 90° **Surface Elevation:**
Rig Type: Geoprobe **Mounting:** Track **Driller:** Stratacore
Casing/Hole Diameter: / **Contractor:** Stratacore
Date Started: 4/2/21 **Date Completed:** 4/2/21 **Logged By:** **Checked By:** NDS

Drilling: Method	Drilling: Resistance	Drilling: Casing	Water	Sampling & Testing: Sample or Field Test	Depth (m)	Material Description: Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
PT			Not Encountered	BH01 0.00 - 0.10 m ASB BH01 0.00 - 0.20 m PID: 0.7ppm ES	0		SP	FILL: Gravelly SAND: coarse grained	M	L	FILL 0.00 m: No odour, no staining, no PACM.
								0.30m			
				BH01 0.50 - 0.80 m PID: 1.5ppm ES ASB	0.5		SP	SAND/BITUMEN	M	L	0.30 m: Mild hydrocarbon odour, minor black staining, no PACM.
								0.80m			
				BH01 1.00 - 1.20 m PID: 0.4ppm ES ASB	1.0			CRUSHED SANDSTONE: coarse, with brown sand inclusions and residual clay			0.80 m: No odour, no staining, no PACM.
				BH01 1.50 - 1.70 m PID: 3.0ppm ES ASB	1.5				M	L	
				BH01 2.00 - 2.20 m PID: 4.7ppm ES ASB	2.0						
								2.40m			
					2.5			TERMINATED AT 2.40 m Refusal			
					3.0						
					3.5						
					4.0						
					4.5						
					5.0						

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

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Construction Sciences

BOREHOLE LOG SHEET

Client: The Yard 120c
Project: Stage 2 Detailed Site Investigation
Location: 120c Old Canterbury Road, Summer Hill

Hole No: BH02

Job No: 10791EV.P.117 **Sheet:** 1 of 1

Position: **Angle from Horizontal:** 90° **Surface Elevation:**
Rig Type: Geoprobe **Mounting:** Track **Driller:** Stratacore
Casing/Hole Diameter: / **Contractor:** Stratacore
Date Started: 4/2/21 **Date Completed:** 4/2/21 **Logged By:** **Checked By:** NDS

Drilling			Water	Sampling & Testing	Depth (m)	Material Description					
Method	Resistance	Casing		Sample or Field Test		Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
PT			Not Encountered	BH02 0.00 - 0.10 m PID: 6.0ppm ES ASB			SP	FILL: Gravelly SAND: coarse grained, brown/white, with some bitumen and trace glass fragments	M	L	FILL 0.00 m: No odour, no staining, PACM on surface.
								0.40m TERMINATED AT 0.40 m Refusal			
					0.5						
					1.0						
					1.5						
					2.0						
					2.5						
					3.0						
					3.5						
					4.0						
					4.5						
					5.0						

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

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Construction Sciences

BOREHOLE LOG SHEET

Client: The Yard 120c
Project: Stage 2 Detailed Site Investigation
Location: 120c Old Canterbury Road, Summer Hill

Hole No: BH03-MW01

Job No: 10791EV.P.117 **Sheet:** 1 of 1

Position: **Angle from Horizontal:** 90° **Surface Elevation:**
Rig Type: Geoprobe **Mounting:** Track **Driller:** Stratacore
Casing/Hole Diameter: / **Contractor:** Stratacore
Date Started: 4/2/21 **Date Completed:** 4/2/21 **Logged By:** **Checked By:** NDS

Drilling: Method	Drilling: Resistance	Drilling: Casing	Water	Sampling & Testing: Sample or Field Test	Depth (m)	Graphic Log	Classification	Material Description: SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
PT			Water encountered	BH03-MW01 0.00 - 0.10 m PID: 0.9ppm ES ASB	0.0		SP	FILL: Gravelly SAND: coarse grained, brown, with some bitumen	M	L	FILL 0.00 m: No odour, no staining, no PACM.
								0.30m			
				BH03-MW01 0.30 - 0.50 m PID: 0.7ppm ES	0.5		CL	CLAY: low plasticity, red with grey mottle	M	St	NATURAL 0.30 m: No odour, no staining, no PACM.
				BH03-MW01 1.00 - 1.20 m PID: 1.0 ppm ES	1.0						
					1.5			1.50m			
AD/V							CL	CLAY: low plasticity, grey with red mottle	M	F	1.50 m: No odour, no staining, no PACM.
				BH03-MW01 2.50 - 2.70 m PID: 1.2ppm ES	2.5						
					3.0						
					3.5				W		3.50 m: Water infiltration
								3.70m			
				BH03-MW01 3.70 - 3.90 m PID: 1.0ppm ES	4.0		CI	Sandy CLAY: medium plasticity, yellow	W	L	3.70 m: No odour, no staining, no PACM.
					4.5						
					5.0			5.00m			
								TERMINATED AT 5.00 m Target depth			

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
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St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

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Construction Sciences

BOREHOLE LOG SHEET

Client: The Yard 120c
Project: Stage 2 Detailed Site Investigation
Location: 120c Old Canterbury Road, Summer Hill

Hole No: BH04

Job No: 10791EV.P.117 **Sheet:** 1 of 1

Position: **Angle from Horizontal:** 90° **Surface Elevation:**
Rig Type: Geoprobe **Mounting:** Track **Driller:** Stratacore
Casing/Hole Diameter: / **Contractor:** Stratacore
Date Started: 4/2/21 **Date Completed:** 4/2/21 **Logged By:** **Checked By:** NDS

Drilling: Method	Drilling: Resistance	Drilling: Casing	Water	Sampling & Testing: Sample or Field Test	Depth (m)	Material Description: Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
PT			Not Encountered	BH04 0.00 - 0.10 m PID: 0.6ppm ES ASB	0.0		CL	FILL: Gravelly CLAY: low plasticity, brown, with trace asphalt	D	St	FILL 0.00 m: No odour, no staining, no PACM
				BH04 0.30 - 0.60 m PID: 0.8ppm, QC201, QC202 ES	0.30m		CL	CLAY: low plasticity, red/grey with brown mottle, with trace ironstone	D	St	NATURAL 0.30 m: No odour, no staining, no PACM
				BH04 2.80 - 3.90 m PID: 0.4ppm ES	2.80m		CL	Sandy CLAY: low plasticity, grey	M	F	2.80 m: No odour, no staining, no PACM
					3.00m			TERMINATED AT 3.00 m Target depth			

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

CONSTRUCTION SCIENCES PTY LTD

Construction Sciences

BOREHOLE LOG SHEET

Client: The Yard 120c
Project: Stage 2 Detailed Site Investigation
Location: 120c Old Canterbury Road, Summer Hill

Hole No: BH05-MW02

Job No: 10791EV.P.117 **Sheet:** 1 of 1

Position: **Angle from Horizontal:** 90° **Surface Elevation:**
Rig Type: Geoprobe **Mounting:** Track **Driller:** Stratacore
Casing/Hole Diameter: / **Contractor:** Stratacore
Date Started: 4/2/21 **Date Completed:** 4/2/21 **Logged By:** **Checked By:** NDS

Drilling: Method	Drilling: Resistance	Drilling: Casing	Water	Sampling & Testing: Sample or Field Test	Depth (m)	Graphic Log	Classification	Material Description: SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
PT			Water encountered	BH05-MW02 0.00 - 0.10 m PID: 8.0ppm ES ASB	0.5		CL	FILL: CLAY: low plasticity, red/grey, with trace ironstone and bitumen	D	St	FILL 0.00 m: No odour, no staining, no PACM
				BH05-MW02 1.00 - 1.20 m PID: 4.4ppm ES ASB	1.0						
				BH05-MW02 2.50 - 2.70 m PID: 3.8ppm, QC101, QC102 ES ASB	1.5 2.0 2.5						2.70 m: Water intrusion
AD/T				BH05-MW02 3.00 - 3.20 m ES	3.0		CI	3.00m CLAY: medium plasticity, red with grey mottle, with trace ironstone 3.20m	M - W	S	NATURAL 3.00 m: No odour, no staining, no PACM
								SANDSTONE: white/yellow 3.40m	W	H	3.20 m: No odour, no staining, no PACM
					3.5			TERMINATED AT 3.40 m Target depth			
					4.0 4.5 5.0						

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
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VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
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MOISTURE
D - Dry
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SOIL CONSISTENCY
VS - Very Soft
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RELATIVE DENSITY
VL - Very Loose
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MD - Medium Dense
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Refer to explanatory notes for details of abbreviations and basis of descriptions

CONSTRUCTION SCIENCES PTY LTD

Construction Sciences

BOREHOLE LOG SHEET

Client: The Yard 120c
Project: Stage 2 Detailed Site Investigation
Location: 120c Old Canterbury Road, Summer Hill

Hole No: BH06

Job No: 10791EV.P.117 **Sheet:** 1 of 1

Position: **Angle from Horizontal:** 90° **Surface Elevation:**
Rig Type: Geoprobe **Mounting:** Track **Driller:** Stratacore
Casing/Hole Diameter: / **Contractor:** Stratacore
Date Started: 4/2/21 **Date Completed:** 4/2/21 **Logged By:** **Checked By:** NDS

Drilling			Water	Sampling & Testing	Depth (m)	Material Description					
Method	Resistance	Casing		Sample or Field Test		Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
PT			Not Encountered	BH06 0.00 - 0.10 m PID: 4.0ppm ES ASB	0.5		CL	FILL: CLAY: low plasticity, grey/red, with trace ironstone	D	St	FILL 0.00 m: No odour, no staining, no PACM
				BH06 1.00 - 1.20 m PID: 4.0ppm ES ASB	1.0						
					1.5						
					2.0						
				BH06 2.50 - 2.70 m PID: 3.8ppm ES ASB	2.5						
					3.0				M		
AD/T				BH06 3.50 - 3.70 m PID: 0.9ppm ES	3.5		CI	3.50m CLAY: medium plasticity, red with grey mottle 3.80m	W	F	NATURAL 3.50 m: No odour, no staining, no PACM
					4.0			TERMINATED AT 3.80 m Target depth			
					4.5						
					5.0						

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
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MD - Medium Dense
D - Dense
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Refer to explanatory notes for details of abbreviations and basis of descriptions

CONSTRUCTION SCIENCES PTY LTD

Construction Sciences

BOREHOLE LOG SHEET

Client: The Yard 120c
Project: Stage 2 Detailed Site Investigation
Location: 120c Old Canterbury Road, Summer Hill

Hole No: BH07

Job No: 10791EV.P.117 **Sheet:** 1 of 1

Position: **Angle from Horizontal:** 90° **Surface Elevation:**
Rig Type: Geoprobe **Mounting:** Track **Driller:** Stratacore
Casing/Hole Diameter: / **Contractor:** Stratacore
Date Started: 4/2/21 **Date Completed:** 4/2/21 **Logged By:** **Checked By:** NDS

Drilling: Method	Drilling: Resistance	Drilling: Casing	Water	Sampling & Testing: Sample or Field Test	Depth (m)	Material Description: Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
PT			Not Encountered	BH07 0.00 - 0.10 m PID: 3.0ppm ES ASB	0		SP	FILL: SAND: coarse grained, with trace bitumen	M	L	FILL 0.00 m: No odour, no staining, no PACM
								0.20m			
								CLAY: low plasticity, red with grey mottle, with trace ironstone			NATURAL 0.20 m: No odour, no staining, no PACM
				BH07 0.80 - 1.00 m PID: 3.7ppm ES	0.5		CL		D - M	St	
					1.0						
				BH07 1.50 - 1.70 m PID: 2.0ppm ES	1.5						
								1.70m			
				BH07 1.80 - 2.00 m PID: 0.8ppm ES			CL	CLAY: low plasticity, grey with red mottle	D - M	St	1.70 m: No odour, no staining, no PACM
					2.0			2.00m			
								CLAY: low plasticity, red with grey mottle	M	St	2.00 m: No odour, no staining, no PACM
				BH07 2.50 - 2.70 m PID: 0.7ppm ES	2.5		CL				
								3.00m	W		
					3.0			TERMINATED AT 3.00 m Target depth			
					3.5						
					4.0						
					4.5						
					5.0						

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
PP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

CONSTRUCTION SCIENCES PTY LTD

Construction Sciences

BOREHOLE LOG SHEET

Client: The Yard 120c
Project: Stage 2 Detailed Site Investigation
Location: 120c Old Canterbury Road, Summer Hill

Hole No: BH08-MW03

Job No: 10791EV.P.117 **Sheet:** 1 of 1

Position: **Angle from Horizontal:** 90° **Surface Elevation:**
Rig Type: Geoprobe **Mounting:** Track **Driller:** Stratacore
Casing/Hole Diameter: / **Contractor:** Stratacore
Date Started: 4/2/21 **Date Completed:** 4/2/21 **Logged By:** **Checked By:** NDS

Drilling: Method	Drilling: Resistance	Drilling: Casing	Water	Sampling & Testing: Sample or Field Test	Depth (m)	Material Description: Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
PT			Water encountered	BH08-MW03 0.00 - 0.10 m PID: 1.5ppm ES ASB	0.0			FILL: CLAY: low plasticity, grey with red mottle, with trace silt and trace ironstone			FILL 0.00 m: No odour, no staining, no PACM
				BH08-MW03 0.50 - 0.70 m PID: 2.2ppm ES ASB	0.5		CL		D	St	
					1.0						
					1.5			1.50m			
				BH08-MW03 1.80 - 2.00 m PID: 0.8ppm ES	2.0		CI	CLAY: medium plasticity, grey, with sand inclusions, yellow	M	F	NATURAL 1.50 m: No odour, no staining, no PACM
					2.5						
AD/T					3.0						
					3.5						3.70 m: Water intrustion
					4.0			4.00m			
					4.5			TERMINATED AT 4.40 m Target depth			
					5.0						

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
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VS - Vane Shear; P=Peak, R=Residual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

CONSTRUCTION SCIENCES PTY LTD

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PIEZOMETER INSTALLATION LOG

Hole ID
BH03-MW01

CLIENT	: The Yard 120c	POSITION	:	SHEET	: 1 OF 1
CONTRACTOR	: Stratacore	EASTING	:	STATUS	:
PROJECT	: Stage 2 Detailed Site Investigation	NORTHING	:	LOGGED BY	:
LOCATION	: 120c Old Canterbury Road, Summer Hill	COORD. SYS.	: MGA94 56	DRILL DATE	: 04/02/2021
PROJECT No.	: 10791EV.P.117	GROUND RL	:		

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Description Soil / Rock Description
PT		1			FILL
					NATURAL
AD/V		2			NATURAL
		3			NATURAL
		4			
		5			END OF BOREHOLE @ 5.00 m TARGET DEPTH

ID MW01 Type Standpipe piezometer | Tip Depth & RL 0.20 m | Installation Date 04/02/2021 | Static Water Level

2.00 m

4.20 m

4.40 m
4.40 m

ID: MW01 SAND PACK: 0.075-10 mm
STICKUP: 0.00 m

RIG	: Geoprobe	CHECKED BY	: NDS	REMARK
INCLINATION	:	CHECKED DATE	:	
AZIMUTH	:	APPROVED BY	:	
HOLE DIA.	:	APPROVED DATE	:	

Construction Sciences

PIEZOMETER INSTALLATION LOG

Hole ID
BH05-MW02

CLIENT	: The Yard 120c	POSITION	:	SHEET	: 1 OF 1
CONTRACTOR	: Stratacore	EASTING	:	STATUS	:
PROJECT	: Stage 2 Detailed Site Investigation	NORTHING	:	LOGGED BY	:
LOCATION	: 120c Old Canterbury Road, Summer Hill	COORD. SYS.	: MGA94 56	DRILL DATE	: 04/02/2021
PROJECT No.	: 10791EV.P.117	GROUND RL	:		

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Description Soil / Rock Description
PT		1			FILL
		2			
		3			
AD/T					NATURAL
					NATURAL
		4			END OF BOREHOLE @ 3.40 m TARGET DEPTH
		5			

ID MW02 — Type: Standpipe piezometer — Tip Depth & RL: 0.20 m — Installation Date: 04/02/2021 — Static Water Level

2.00 m

2.30 m

2.93 m

2.93 m

ID: MW02 SAND PACK: 0.075-10 mm
STICKUP: 0.00 m

RIG	: Geoprobe	CHECKED BY	: NDS
INCLINATION	:	CHECKED DATE	:
AZIMUTH	:	APPROVED BY	:
HOLE DIA.	:	APPROVED DATE	:

REMARK

Construction Sciences

PIEZOMETER INSTALLATION LOG

Hole ID
BH08-MW03

CLIENT	: The Yard 120c	POSITION	:	SHEET	: 1 OF 1
CONTRACTOR	: Stratacore	EASTING	:	STATUS	:
PROJECT	: Stage 2 Detailed Site Investigation	NORTHING	:	LOGGED BY	:
LOCATION	: 120c Old Canterbury Road, Summer Hill	COORD. SYS.	: MGA94 56	DRILL DATE	: 04/02/2021
PROJECT No.	: 10791EV.P.117	GROUND RL	:		

Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Description Soil / Rock Description	ID MW03	Type Standpipe piezometer	Tip Depth & RL 0.20 m	Installation Date 04/02/2021	Static Water Level
PT		1			FILL					
					NATURAL		1.50 m			
		2					1.88 m			
		3							ID: MW03 SAND PACK: 0.075-10 mm STICKUP: 0.00 m	
AD/T		4					3.90 m 3.90 m			
		5			END OF BOREHOLE @ 4.40 m TARGET DEPTH					

				REMARK
RIG	: Geoprobe	CHECKED BY	: NDS	
INCLINATION	:	CHECKED DATE	:	
AZIMUTH	:	APPROVED BY	:	
HOLE DIA.	:	APPROVED DATE	:	

APPENDIX C
CALIBRATION

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 18G103298

Air-Met Scientific Pty Ltd
1300 137 067

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

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 10.00		pH 10.00		355386	pH 9.96
2. pH 7.00		pH 7.00		355072	pH 7.03
3. pH 4.00		pH 4.00		351412	pH 3.98
4. mV		229.6mV		358632/358634	229.6mV
5. EC		2.76mS		350510	2.77mS
6. D.O		0.00ppm		10959	0.00ppm
7. Temp		22.0°C		MultiTherm	22.0°C

Calibrated by: **Kylie Rawlings**

Calibration date: **5/02/2021**

Next calibration due: **7/03/2021**

Oil / Water Interface Meter

Instrument Geotech Interface Meter (30M)
Serial No. 3908

Air-Met Scientific Pty Ltd
1300 137 067

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

Certificate of Calibration

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

Calibrated by: **Ashok Hettigama**

Calibration date: **5/02/2021**

Next calibration due: **6/04/2021**

PID Calibration Certificate

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument **PhoCheck Tiger**
Serial No. **T-105859**

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
Pump	Operation	✓	
	Filter	✓	
	Flow	✓	
	Valves, Diaphragm	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	PID	✓	10 6eV Lamp
Alarms	Beeper	✓	
	Settings	✓	
Software	Version	✓	
Data logger	Operation	✓	
Download	Operation	✓	
Other tests:			

Low	High	TWA	STEL
50ppm	100ppm	N/A	N/A

Certificate of Calibration

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

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		*Instrument Reading*
PID Lamp		100ppm Isobutylene	NIST	SY358		*100.1ppm*

Calibrated by: **Lauren Tompkins**

Calibration date: **3/02/2021**

Next calibration due: **5/08/2021**

APPENDIX D/E

WELL SURVEY DATA/GME FIELD FORM

Construction Sciences

GROUNDWATER FIELD DATA SHEET

Project No: 20791EV.p.## 117	**Well ID:** MW01
Project Name: DSI	**Sampler(s):** MB
Address: 1206 Old Canterbury Rd Summer Hill	**Date:** 8/2/24

Well Status

Monument damaged:	YES / NO / N/A	Well ID visible:	YES / NO / N/A
Locked well casing:	(YES) NO / N/A	Cap on PVC casing:	YES / NO / N/A
Casing Diameter:	~~50~~ 50mm	Well Headspace PID (ppm):	
WQM ID:		IP ID:	
PID ID:		Sampling Equipment:	
Total well depth:	4.92 mBTOC		
Depth to water before pump ~~install~~:	~~4.2~~ mBTOC 4.2		
Depth to water after pump install:	4.8 mBTOC		
Pump intake depth:	mBTOC		
Casing above ground:	m BTOC		

Weather Conditions:

Temperature: 15-20 ☐ 20-25 ☒ 25-30 ☐ >30 ☐

Clear ☐ Partly cloudy ☒ Overcast ☐

Calm ☐ Slight breeze ☐ Moderate breeze ☐ Windy ☐

Fine ☐ Showers ☐ Rain ☐

702mL x 5 = 3.510L

Note: 50mm internal diameter pipe = 1.96 L/m. All measurements below well collar

Water Quality Details:

Time am / pm	Vol (L)	Depth to water (mBTOC)	DO (ppm)	EC (µS cm^{-1})	pH	Redox (mV)	Temp (°C)	Comments (colour, turbidity, sediment, odour, sheen, thickness)
	Well purge & stabilisation acceptance criteria		±10%	±3%	±0.1	±10%	±10%	
12.00		4.2	0.01	903	6.70	-78.1	22.7	
12.01		4.4	0.02	901	6.71	-72.1	22.8	
12.02		4.5	0.81	890	6.72	-70.2	22.6	
12.03		4.6	0.83	885	6.70	-68.3	22.7	
12.04		4.8	0.83	881	6.70	-68.1	22.7	
12.05		4.85	0.84	883	6.69	-67.8	22.5	

Sample ID: MW01 **Dup. Sample ID:** QC101 **Trip Sample ID:** QC102

Metals Sample Field Filtered: (yes) / no

Construction Sciences

GROUNDWATER FIELD DATA SHEET

Project No: 107911.EV.P.117	**Well ID:** MW02
Project Name: DSI	**Sampler(s):** JGB
Address: 120 Old Canterbury Rd, Summer Hill	**Date:** 8/9/21

Well Status

Monument damaged:	YES / NO / N/A	Well ID visible:	YES / NO / N/A
Locked well casing:	YES / NO / N/A	Cap on PVC casing:	YES / NO / N/A
Casing Diameter: 50mm		Well Headspace PID (ppm):	
WQM ID:		IP ID:	
PID ID:		Sampling Equipment:	
Total well depth: 2.93	mBTOC		
Depth to water before pump install: 2.30	mBTOC		
Depth to water after pump install:	mBTOC		
Pump intake depth:	mBTOC		
Casing above ground:	m BTOC		

(603 x 5) x 3
= 4045

Weather Conditions:

Temperature 15-20 ☐ 20-25 ☐ 25-30 ☐ >30 ☐

Clear ☐ Partly cloudy ☐ Overcast ☐

Calm ☐ Slight breeze ☐ Moderate breeze ☐ Windy ☐

Fine ☐ Showers ☐ Rain ☐

Note: 50mm internal diameter pipe = 1.96 L/m. All measurements below well collar

Water Quality Details:

Time am / pm	Vol (L)	Depth to water (mBTOC)	DO (ppm)	EC (µS cm^{-1})	pH	Redox (mV)	Temp (°C)	Comments (colour, turbidity, sediment, odour, sheen, thickness)
	Well purge & stabilisation acceptance criteria		±10%	±3%	±0.1	±10%	±10%	
1.24		2.4	1.54	1232	6.6	91.0	23.4	Red/orange, turbid
1.25		2.5	2.0	9.1	6.7	41.1	25.1	
1.26		2.7	1.98	8.9	6.6	93.1	23.7	"
1.27		2.8	1.95	8.1	6.6	97.3	23.1	
1.28		2.8	1.97	8.0	6.6	99.5	23.8	Red, clear

Sample ID: MW02 **Dup. Sample ID:** **Trip Sample ID:**

Metals Sample Field Filtered: ~~yes~~/no

Construction Sciences

GROUNDWATER FIELD DATA SHEET

Project No: PTQREV. p. 117	**Well ID:** MW03
Project Name: DSI	**Sampler(s):** NGB
Address: 120C old canterbury road, Summer Hill	**Date:** 8/2/21

Well Status

Monument damaged:	YES / NO / N/A	Well ID visible:	YES / NO / N/A
Locked well casing:	YES / NO / N/A	Cap on PVC casing:	YES / NO / N/A
Casing Diameter:	50mm	Well Headspace PID (ppm):	
WQM ID:		IP ID:	
PID ID:		Sampling Equipment:	
Total well depth:	3.90 mBTOC		
Depth to water before pump install:	1.88 mBTOC		
Depth to water after pump install:	2.4 mBTOC		
Pump intake depth:	mBTOC		
Casing above ground:	m BTOC		

(2.1 × 5) × 3

Weather Conditions:

Temperature: 15-20 ☐ 20-25 ☒ 25-30 ☐ >30 ☐

Clear ☐ Partly cloudy ☐ Overcast ☒

Calm ☐ Slight breeze ☐ Moderate breeze ☐ Windy ☐

Fine ☐ Showers ☐ Rain ☐

Note: 50mm internal diameter pipe = 1.96 L/m. All measurements below well collar

Water Quality Details:

Time am / pm	Vol (L)	Depth to water (mBTOC)	DO (ppm)	EC (µS cm⁻¹)	pH	Redox (mV)	Temp (°C)	Comments (colour, turbidity, sediment, odour, sheen, thickness)
	Well purge & stabilisation acceptance criteria		±10%	±3%	±0.1	±10%	±10%	
2.12		1.90	5.23	5.8	6.5	175.1	24.6	Clear, low turbidity
2.13		1.95	5.15	6.1	5.68	177.7	24.0	" "
2.14		2.10	~~6.0~~	6.0	5.8	187.1	~~23.1~~	" "
2.15		2.26	4.1	5.8	5.8	200.0	23.0	" "

Sample ID: MW03 Dup. Sample ID: Trip Sampl

APPENDIX F
LABORATORY

					Field ID	BH01-0.0-0.1	BH01-0.5-0.8	BH01-1.0-1.2	BH01-1.5-1.7	BH02-0.0-0.1	BH02-0.0-PACM	BH03-MW01-0.0-0.1
					Date	4/02/2021	4/02/2021	4/02/2021	4/02/2021	4/02/2021	4/02/2021	4/02/2021
	Unit	EQL	CRC Care HSL-C Recreational / Open	NEPM 2013 Table 1B(7) Management Limits in	NEPM 2013 Table 1A(1) HILs Res B Soil							
NA												
FA- Comment	**Comment**					1	1	1		1	1	1
Respirable Fibres - Comment	**Comment**					1	1	1		1	0	1
Approximate Sample Mass	**g**					775	617	659		590	9	627
Organic Fibres - Comment	**Comment**					1	1	1		1	1	1
Synthetic Fibres - Comment	**Comment**					1	1	1		1	1	1
TRH												
C16-C34	**mg/kg**	100	5,300	2,500					330			210
Asbestos												
Asbestos Reported Result	**Comment**					1	1	1		1	1	1
Metals												
Arsenic	**mg/kg**	1			500	2.9			4.4	4.4		
Chromium (III+VI)	**mg/kg**	0.5				49			10	20		
Copper	**mg/kg**	0.5			30,000	34				71		
Lead	**mg/kg**	1			1,200	38			14	100		
Nickel	**mg/kg**	0.5			1,200	58				43		
Zinc	**mg/kg**	2			60,000	100			11	140		
Organochlorine Pesticides												
Toxaphene	**mg/kg**	0.1			30							
PAH												
Benzo(a) pyrene	**mg/kg**	0.5							6.2	1.4		4.0
Benzo(a)pyrene TEQ calc (Half)	**mg/kg**	0.5			4	0.6	0.6		9.6	2.1		6.1
PAHs (Sum of total)	**mg/kg**	0.5			400				77.8	13.7		36.4

Environmental Standards
CRC Care, 2011, CRC Care HSL-C Recreational / Open Space
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

Statistics
* A Non Detect Multiplier of 0.5 has been applied.

					Field ID	BH03-MW01-0.3-0.5	BH04-0.0-0.1	BH04-0.3-0.6	BH05-MW02-0.0-0.1	BH05-MW02-1.0-1.2	BH05-MW02-2.5-2.7
					Date	4/02/2021	4/02/2021	4/02/2021	4/02/2021	4/02/2021	4/02/2021
	Unit	EQL	CRC Care HSL-C Recreational / Open	NEPM 2013 Table 1B(7) Management Limits in	NEPM 2013 Table 1A(1) HILs Res B Soil						
NA											
FA- Comment	**Comment**						1		1	1	
Respirable Fibres - Comment	**Comment**						1		1	1	
Approximate Sample Mass	**g**						1,031		687	601	
Organic Fibres - Comment	**Comment**						1		1	1	
Synthetic Fibres - Comment	**Comment**						1		1	1	
TRH											
C16-C34	**mg/kg**	100	5,300	2,500							
Asbestos											
Asbestos Reported Result	**Comment**						1		1	1	
Metals											
Arsenic	**mg/kg**	1			500	4.1					
Chromium (III+VI)	**mg/kg**	0.5				28		20			29
Copper	**mg/kg**	0.5			30,000	10		8.3			18
Lead	**mg/kg**	1			1,200	22		17			28
Nickel	**mg/kg**	0.5			1,200	6.6		5.6			7.8
Zinc	**mg/kg**	2			60,000	15		12			14
Organochlorine Pesticides											
Toxaphene	**mg/kg**	0.1			30						
PAH											
Benzo(a) pyrene	**mg/kg**	0.5									
Benzo(a)pyrene TEQ calc (Half)	**mg/kg**	0.5			4	0.6		0.6	0.6		0.6
PAHs (Sum of total)	**mg/kg**	0.5			400						

Environmental Standards

CRC Care, 2011, CRC Care HSL-C Recreational / Open Space

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil

2013, NEPM 2013 Table 1A(1) HILs Res B Soil

Statistics

* A Non Detect Multiplier of 0.5 has been applied.

					Field ID	BH06-0.0-0.1	BH06-3.7-3.8	BH07-0.0-0.1	BH07-0.8-1.0	BH07-2.5-2.7	BH08-MW03-0.0-0.1	BH08-MW03-0.5-0.7
					Date	4/02/2021	4/02/2021	4/02/2021	4/02/2021	4/02/2021	4/02/2021	4/02/2021
	Unit	EQL	CRC Care HSL-C Recreational / Open	NEPM 2013 Table 1B(7) Management Limits in	NEPM 2013 Table 1A(1) HILs Res B Soil							
NA												
FA- Comment	**Comment**					1		1	1		1	
Respirable Fibres - Comment	**Comment**					1		1	1		1	
Approximate Sample Mass	**g**					540		1,146	663		595	
Organic Fibres - Comment	**Comment**					1		1	1		1	
Synthetic Fibres - Comment	**Comment**					1		1	1		1	
TRH												
C16-C34	**mg/kg**	100	5,300	2,500								
Asbestos												
Asbestos Reported Result	**Comment**					1		1	1		1	
Metals												
Arsenic	**mg/kg**	1			500	7.4	26		15	57	4.7	
Chromium (III+VI)	**mg/kg**	0.5				25	58		73	57	28	
Copper	**mg/kg**	0.5			30,000	28	61		20	44	12	
Lead	**mg/kg**	1			1,200	32	56		58	64	29	
Nickel	**mg/kg**	0.5			1,200	5.5	16		5.6		5.4	
Zinc	**mg/kg**	2			60,000	23	42		13	19	35	
Organochlorine Pesticides												
Toxaphene	**mg/kg**	0.1			30			0.5				
PAH												
Benzo(a) pyrene	**mg/kg**	0.5										
Benzo(a)pyrene TEQ calc (Half)	**mg/kg**	0.5			4	0.6	0.6		0.6	0.6	0.6	0.6
PAHs (Sum of total)	**mg/kg**	0.5			400							

Environmental Standards
CRC Care, 2011, CRC Care HSL-C Recreational / Open Space
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

Statistics
* A Non Detect Multiplier of 0.5 has been applied.

					Field ID	BH08-MW03-1.8-2.0	QC101	QC102	QC201	QC202
					Date	4/02/2021	4/02/2021	4/02/2021	4/02/2021	4/02/2021
	Unit	EQL	CRC Care HSL-C Recreational / Open	NEPM 2013 Table 1B(7) Management Limits in	NEPM 2013 Table 1A(1) HILs Res B Soil					
NA										
FA- Comment	**Comment**									
Respirable Fibres - Comment	**Comment**									
Approximate Sample Mass	**g**									
Organic Fibres - Comment	**Comment**									
Synthetic Fibres - Comment	**Comment**									
TRH										
C16-C34	**mg/kg**	100	5,300	2,500						
Asbestos										
Asbestos Reported Result	**Comment**									
Metals										
Arsenic	**mg/kg**	1			500		6.6	3	5.0	5
Chromium (III+VI)	**mg/kg**	0.5				8.8	45	13	25	11
Copper	**mg/kg**	0.5			30,000		22	11	13	6.2
Lead	**mg/kg**	1			1,200	11	31	14	17	9
Nickel	**mg/kg**	0.5			1,200		8.9	1.9	6.7	1.4
Zinc	**mg/kg**	2			60,000		16	5	16	5
Organochlorine Pesticides										
Toxaphene	**mg/kg**	0.1			30					
PAH										
Benzo(a) pyrene	**mg/kg**	0.5								
Benzo(a)pyrene TEQ calc (Half)	**mg/kg**	0.5			4	0.6				
PAHs (Sum of total)	**mg/kg**	0.5			400					

Environmental Standards
CRC Care, 2011, CRC Care HSL-C Recreational / Open Space
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

Statistics
* A Non Detect Multiplier of 0.5 has been applied.

						Field ID								
						Date								
	Unit	EQL	CRC Care HSL-C Recreational / Open	NEPM 2013 Table 1B(7) Management Limits in	NEPM 2013 Table 1A(1) HILs Res B Soil		Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration *	Median Concentration *
NA														
FA- Comment	**Comment**						**13**	**13**	**1**	**1**	**1**	**1**	**1**	**1**
Respirable Fibres - Comment	**Comment**						**13**	**13**	**0**	**0**	**1**	**1**	**0.92**	**1**
Approximate Sample Mass	**g**						**13**	**13**	**9**	**9**	**1,146**	**1,146**	**657**	**627**
Organic Fibres - Comment	**Comment**						**13**	**13**	**1**	**1**	**1**	**1**	**1**	**1**
Synthetic Fibres - Comment	**Comment**						**13**	**13**	**1**	**1**	**1**	**1**	**1**	**1**
TRH														
C16-C34	**mg/kg**	100	5,300	2,500			**12**	**2**	**<100**	**210**	**<500**	**330**	**103**	**50**
Asbestos														
Asbestos Reported Result	**Comment**						**13**	**13**	**1**	**1**	**1**	**1**	**1**	**1**
Metals														
Arsenic	**mg/kg**	1			500		**16**	**13**	**<2**	**2.9**	**57**	**57**	**9.3**	**4.55**
Chromium (III+VI)	**mg/kg**	0.5					**16**	**16**	**8.8**	**8.8**	**73**	**73**	**31**	**26.5**
Copper	**mg/kg**	0.5			30,000		**16**	**14**	**<5**	**6.2**	**71**	**71**	**23**	**15.5**
Lead	**mg/kg**	1			1,200		**16**	**16**	**9**	**9**	**100**	**100**	**34**	**28.5**
Nickel	**mg/kg**	0.5			1,200		**16**	**13**	**1.4**	**1.4**	**58**	**58**	**11**	**5.6**
Zinc	**mg/kg**	2			60,000		**16**	**15**	**5**	**5**	**140**	**140**	**29**	**15.5**
Organochlorine Pesticides														
Toxaphene	**mg/kg**	0.1			30		**3**	**1**	**<0.1**	**0.5**	**<1**	**0.5**	**0.35**	**0.5**
PAH														
Benzo(a) pyrene	**mg/kg**	0.5					**16**	**3**	**<0.5**	**1.4**	**6.2**	**6.2**	**0.93**	**0.25**
Benzo(a)pyrene TEQ calc (Half)	**mg/kg**	0.5			4		**16**	**16**	**0.6**	**0.6**	**9.6**	**9.6**	**1.6**	**0.6**
PAHs (Sum of total)	**mg/kg**	0.5			400		**16**	**3**	**<0.5**	**13.7**	**77.8**	**77.8**	**8.2**	**0.25**

Environmental Standards

CRC Care, 2011, CRC Care HSL-C Recreational / Open Space

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil

2013, NEPM 2013 Table 1A(1) HILs Res B Soil

Statistics

* A Non Detect Multiplier of 0.5 has been applied.

	Unit	EQL	CRC Care HSL-C Recreational / Open	NEPM 2013 Table 1B(7) Management Limits in	NEPM 2013 Table 1A(1) HILs Res B Soil	Field ID Date Standard Deviation *	95% UCL (Student's-t) *	% of Detects	% of Non-Detects
NA									
FA- Comment	**Comment**					**0**	**1**	**100**	**0**
Respirable Fibres - Comment	**Comment**					**0.28**	**1.06**	**100**	**0**
Approximate Sample Mass	**g**					**265**	**787.8**	**100**	**0**
Organic Fibres - Comment	**Comment**					**0**	**1**	**100**	**0**
Synthetic Fibres - Comment	**Comment**					**0**	**1**	**100**	**0**
TRH									
C16-C34	**mg/kg**	100	5,300	2,500		**100**	**155.1**	**17**	**83**
Asbestos									
Asbestos Reported Result	**Comment**					**0**	**1**	**100**	**0**
Metals									
Arsenic	**mg/kg**	1			500	**14**	**15.5**	**81**	**19**
Chromium (III+VI)	**mg/kg**	0.5				**19**	**39.77**	**100**	**0**
Copper	**mg/kg**	0.5			30,000	**20**	**31.66**	**88**	**12**
Lead	**mg/kg**	1			1,200	**25**	**44.53**	**100**	**0**
Nickel	**mg/kg**	0.5			1,200	**16**	**18.24**	**81**	**19**
Zinc	**mg/kg**	2			60,000	**38**	**45.75**	**94**	**6**
Organochlorine Pesticides									
Toxaphene	**mg/kg**	0.1			30	**0.26**	**0.788**	**33**	**67**
PAH									
Benzo(a) pyrene	**mg/kg**	0.5				**1.7**	**1.674**	**19**	**81**
Benzo(a)pyrene TEQ calc (Half)	**mg/kg**	0.5			4	**2.5**	**2.717**	**100**	**0**
PAHs (Sum of total)	**mg/kg**	0.5			400	**21**	**17.31**	**19**	**81**

Environmental Standards
CRC Care, 2011, CRC Care HSL-C Recreational / Open Space
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

Statistics
* A Non Detect Multiplier of 0.5 has been applied.

					Field ID	MW01	MW02	MW03	QC101	QC102	TRIP BLANK	TRIP SPIKE
					Date	8/02/2021	8/02/2021	8/02/2021	8/02/2021	8/02/2021	8/02/2021	8/02/2021
	Unit	EQL	ANZECC 2000 slightly-moderately disturbed	NEPM 2013 Table 1C GILs, Fresh Waters								
BTEX												
Benzene	µg/L	1	950	950		<1	<1	<1			<1	
	%											95
Toluene	µg/L	1				<1	<1	<1			<1	
	%											100
Ethylbenzene	µg/L	1				<1	<1	<1			<1	
	%											100
Xylene Total	µg/L	3		550		<3	<3	<3			<3	
Xylene Total	%											110
TRH												
C10-C16 (F2 minus Naphthalene)	µg/L	50				<50	<50	<50				
C6-C10 (F1 minus BTEX)	µg/L	20				<20	<20	<20				
C16-C34	µg/L	100				<100	<100	<100				
C34-C40	µg/L	100				<100	<100	<100				
Metals												
Arsenic	mg/L	0.001				0.001	0.001	<0.001	0.001			
Arsenic (filtered)	mg/L	0.001								0.001		
Cadmium	mg/L	0.0002	0.0002	0.0002		<0.0002	<0.0002	<0.0002	<0.0002			
Cadmium (filtered)	mg/L	0.0001	0.0002	0.0002						<0.0001		
Chromium (III+VI)	mg/L	0.001				<0.001	<0.001	<0.001	<0.001			
Chromium (III+VI) (filtered)	mg/L	0.001								<0.001		
Copper	mg/L	0.001	0.0014	0.0014		0.006	0.004	0.007	<0.001			
Copper (filtered)	mg/L	0.001	0.0014	0.0014						0.001		
Lead	mg/L	0.001	0.0034	0.0034		<0.001	<0.001	<0.001	<0.001			
Lead (filtered)	mg/L	0.001	0.0034	0.0034						<0.001		
Mercury	mg/L	0.0001	0.00006	0.00006		<0.0001	<0.0001	<0.0001	<0.0001			
Mercury (filtered)	mg/L	0.0001	0.00006	0.00006						<0.0001		
Nickel	mg/L	0.001	0.011	0.011		0.011	0.032	0.017	0.010			
Nickel (filtered)	mg/L	0.001	0.011	0.011						0.009		
Zinc	mg/L	0.005	0.008	0.008		0.038	0.061	0.054	0.024			
Zinc (filtered)	mg/L	0.005	0.008	0.008						0.024		
PAH												
1-Methylnaphthalene	µg/L	0.1								<0.1		
2-methylnaphthalene	µg/L	0.1								<0.1		
Benzo(a) pyrene	µg/L	0.01				<0.01	<0.01	<0.01	<0.01	<0.1		
PAHs (Sum of total)	µg/L	0.01				<0.01	<0.01	<0.01	<0.01	<1		

Environmental Standards

DoE, 2000, ANZECC 2000 slightly-moderately disturbed systems

2013, NEPM 2013 Table 1C GILs, Fresh Waters

Statistics

* A Non Detect Multiplier of 0.5 has been applied.

	Unit	Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration *	Median Concentration *	Standard Deviation *	95% UCL (Student's-t) *	% of Detects	% of Non-Detects
BTEX													
Benzene	µg/L	4	0	<1	ND	<1	ND	0.5	0.5	0	0.5	0	100
	%	1	1	95	95	95	95		95			100	0
Toluene	µg/L	4	0	<1	ND	<1	ND	0.5	0.5	0	0.5	0	100
	%	1	1	100	100	100	100		100			100	0
Ethylbenzene	µg/L	4	0	<1	ND	<1	ND	0.5	0.5	0	0.5	0	100
	%	1	1	100	100	100	100		100			100	0
Xylene Total	µg/L	4	0	<3	ND	<3	ND	1.5	1.5	0	1.5	0	100
Xylene Total	%	1	1	110	110	110	110		110			100	0
TRH													
C10-C16 (F2 minus Naphthalene)	µg/L	3	0	<50	ND	<50	ND	25	25	0	25	0	100
C6-C10 (F1 minus BTEX)	µg/L	3	0	<20	ND	<20	ND	10	10	0	10	0	100
C16-C34	µg/L	3	0	<100	ND	<100	ND	50	50	0	50	0	100
C34-C40	µg/L	3	0	<100	ND	<100	ND	50	50	0	50	0	100
Metals													
Arsenic	mg/L	4	3	0.001	0.001	0.001	0.001	0.00088	0.001	0.00025	0.00117	75	25
Arsenic (filtered)	mg/L	1	1	0.001	0.001	0.001	0.001		0.001			100	0
Cadmium	mg/L	4	0	<0.0002	ND	<0.0002	ND	0.0001	0.0001	0	0.0001	0	100
Cadmium (filtered)	mg/L	1	0	<0.0001	ND	<0.0001	ND		0.00005			0	100
Chromium (III+VI)	mg/L	4	0	<0.001	ND	<0.001	ND	0.0005	0.0005	0	0.0005	0	100
Chromium (III+VI) (filtered)	mg/L	1	0	<0.001	ND	<0.001	ND		0.0005			0	100
Copper	mg/L	4	3	<0.001	0.004	0.007	0.007	0.0044	0.005	0.0029	0.00775	75	25
Copper (filtered)	mg/L	1	1	0.001	0.001	0.001	0.001		0.001			100	0
Lead	mg/L	4	0	<0.001	ND	<0.001	ND	0.0005	0.0005	0	0.0005	0	100
Lead (filtered)	mg/L	1	0	<0.001	ND	<0.001	ND		0.0005			0	100
Mercury	mg/L	4	0	<0.0001	ND	<0.0001	ND	0.00005	0.00005	0	0.00005	0	100
Mercury (filtered)	mg/L	1	0	<0.0001	ND	<0.0001	ND		0.00005			0	100
Nickel	mg/L	4	4	0.01	0.01	0.032	0.032	0.017	0.014	0.01	0.0294	100	0
Nickel (filtered)	mg/L	1	1	0.009	0.009	0.009	0.009		0.009			100	0
Zinc	mg/L	4	4	0.024	0.024	0.061	0.061	0.044	0.046	0.017	0.0638	100	0
Zinc (filtered)	mg/L	1	1	0.024	0.024	0.024	0.024		0.024			100	0
PAH													
1-Methylnaphthalene	µg/L	1	0	<0.1	ND	<0.1	ND		0.05			0	100
2-methylnaphthalene	µg/L	1	0	<0.1	ND	<0.1	ND		0.05			0	100
Benzo(a) pyrene	µg/L	5	0	<0.01	ND	<0.1	ND	0.014	0.005	0.02	0.0332	0	100
PAHs (Sum of total)	µg/L	5	0	<0.01	ND	<1	ND	0.1	0.005	0.22	0.315	0	100

Environmental Standards

DoE, 2000, ANZECC 2000 slightly-moderately disturbed sys
2013, NEPM 2013 Table 1C GILs, Fresh Waters

Statistics

* A Non Detect Multiplier of 0.5 has been applied.

Lab Report Number			772260	772260		772260	SE216295		772260	772260		772260	SE216295	
Field ID			BH04-0.3-0.6	QC201		BH04-0.3-0.6	QC202		BH05-MW02-2.5-2.7	QC101		BH05-MW02-2.5-2.7	QC102	
Date			4/02/2021	4/02/2021		4/02/2021	4/02/2021		4/02/2021	4/02/2021		4/02/2021	4/02/2021	
Matrix Type			soil	soil	RPD	soil	soil	RPD	soil	soil	RPD	soil	soil	RPD
	Unit	EQL												
Metals														
Arsenic	mg/kg	1		5.0	86		5	86		6.6	107		3	40
Chromium (III+VI)	mg/kg	0.5	20	25	22	20	11	58	29	45	43	29	13	76
Copper	mg/kg	0.5	8.3	13	44	8.3	6.2	29	18	22	20	18	11	48
Lead	mg/kg	1	17	17	0	17	9	62	28	31	10	28	14	67
Nickel	mg/kg	0.5	5.6	6.7	18	5.6	1.4	120	7.8	8.9	13	7.8	1.9	122
Zinc	mg/kg	2	12	16	29	12	5	82	14	16	13	14	5	95
PAH														
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6			0.6			0.6			0.6		

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL))**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

		Lab Report Number	772571	772571		772571	SE216282		
		Field ID	MW01	QC101		MW01	QC102		
		Date	8/02/2021	8/02/2021		8/02/2021	8/02/2021		
		Matrix Type	water	water	RPD	water	water	RPD	
	Unit	EQL							
BTEX									
Benzene	µg/L	1	<1			<1			
Toluene	µg/L	1	<1			<1			
Ethylbenzene	µg/L	1	<1			<1			
Xylene Total	µg/L	3	<3			<3			
TRH									
C10-C16 (F2 minus Naphthalene)	µg/L	50	<50			<50			
C6-C10 (F1 minus BTEX)	µg/L	20	<20			<20			
C16-C34	µg/L	100	<100			<100			
C34-C40	µg/L	100	<100			<100			
Metals									
Arsenic	mg/L	0.001	0.001	0.001	0	0.001			
Arsenic (filtered)	mg/L	0.001					0.001		
Cadmium	mg/L	0.0002	<0.0002	<0.0002	0	<0.0002			
Cadmium (filtered)	mg/L	0.0001					<0.0001		
Chromium (III+VI)	mg/L	0.001	<0.001	<0.001	0	<0.001			
Chromium (III+VI) (filtered)	mg/L	0.001					<0.001		
Copper	mg/L	0.001	0.006	<0.001	143	0.006			
Copper (filtered)	mg/L	0.001					0.001		
Lead	mg/L	0.001	<0.001	<0.001	0	<0.001			
Lead (filtered)	mg/L	0.001					<0.001		
Mercury	mg/L	0.0001	<0.0001	<0.0001	0	<0.0001			
Mercury (filtered)	mg/L	0.0001					<0.0001		
Nickel	mg/L	0.001	0.011	0.010	10	0.011			
Nickel (filtered)	mg/L	0.001					0.009		
Zinc	mg/L	0.005	0.038	0.024	45	0.038			
Zinc (filtered)	mg/L	0.005					0.024		
PAH									
1-Methylnaphthalene	µg/L	0.1					<0.1		
2-methylnaphthalene	µg/L	0.1					<0.1		
Benzo(a) pyrene	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.1	0	
PAHs (Sum of total)	µg/L	0.01	<0.01	<0.01	0	<0.01	<1	0	

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL))**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

CHAIN OF CUSTODY RECORD

Sydney Laboratory
Unit F3 Bld F 16 Mars Road Lane Cove West NSW 2066
02 9900 8400

Brisbane Laboratory
Unit 1 21 Smallwood Place Murarrie QLD 4172

Perth Laboratory

Melbourne Laboratory

Company	Construction Sciences	Project №	10791EV.P.117	Project Manager	Jessica Brodie	Sampler(s)	Jessica Brodie
Address	31 Anvil Road, Seven Hills NSW 2147	Project Name	DSI Summer Hill	EDD Format (ESdat, EQuIS etc)	Esdat	Handed over by	Jessica Brodie
Contact Name	Jessica Brodie					Email for Invoice	
Phone №	439516172					Email for Results	
Special Directions						Containers Change container type & size if necessary.	Required Turnaround Time (TAT) Default will be 5 days if not ticked.
Purchase Order							
Quote ID №							

Analyses (Where metals are required, please specify "Total" or "Filtered". SUITE codes must be listed to ensure SUITE pricing)

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	Metals (8)	TRH/BTEX	PAH	OCP	PCB	Phenol	CEC	pH	Asbestos ID	Trip Spike/Blank	Asbestos (0.001%)	Hold	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH01-0.0-0.1	4.2.21	S	X	X	X	X	X	X					X										
2	BH01-0.5-0.6	4.2.21				X								X										
3	BH01-1.0-1.2	4.2.21												X										
4	BH01-1.5-1.7	4.2.21		X	X	X																		
5	BH01-2.0-2.2	4.2.21													X									
6	BH02-0.0-0.1	4.2.21		X	X	X								X										
7	BH03-MW01-0.0-0.1	4.2.21			X	X	X	X						X										
8	BH03-MW01-0.3-0.5	4.2.21		X	X	X								X										
9	BH03-MW01-1.0-1.2	4.2.21												X										
10	BH03-MW01-2.5-2.7	4.2.21													X									
11	BH03-MW01-3.7-3.9	4.2.21								X	X													
12	BH04-0.0-0.1	4.2.21			X									X										
13	BH04-0.3-0.6	4.2.21		X		X								X										
14	BH04-2.8-3.0	4.2.21																						
15	BH05-MW02-0.0-0.1	4.2.21			X	X								X										
16	BH05-MW02-1.0-1.2	4.2.21			X									X										
17	BH05-MW02-2.5-2.7	4.2.21		X		X																		
18	BH05-MW02-3.0-3.2	4.2.21								X	X													
19	BH06-0.0-0.1	4.2.21			X									X										
20	BH06-0.5-0.6	4.2.21		X		X								X										
21	BH06-1.0-1.2	4.2.21													X									
22	BH06-2.5-2.7	4.2.21													X									
23	BH06-3.5-3.7	4.2.21		X		X																		Please amend ID on report to BH06-3.7-3.8
24	BH07-0.0-0.1	4.2.21					X	X	X					X										
25	BH07-0.8-1.0	4.2.21		X	X	X								X										
26	BH07-1.5-1.7	4.2.21													X									
27	BH07-1.8-2.0	4.2.21													X									
28	BH07-2.5-2.7	4.2.21		X		X																		
29	BH08-MW03-0.0-0.1	4.2.21		X	X	X								X										
30	BH08-MW03-0.5-0.7	4.2.21				X																		
31	BH08-MW03-1.8-2.0	4.2.21		X	X	X																		
32	QC101	4.2.21		X																				
33	QC102	4.2.21		X																				Please send to SGS
34	QC201	4.2.21		X																				
35	QC202	4.2.21		X																				Please send to SGS
36	Trip Spike/Blank	4.2.21											X											
37	BH02-0.0-PACM	4.2.21										X												
38																								
39																								
40																								
41																								
42																								

MR 5/2/21 12:16 PM Drop-off 2.7°C #772260

#AU04_Enviro_Sample_NSW

From: Jessica Brodie <jessica.brodie@constructionsciences.net>
Sent: Saturday, 6 February 2021 10:34 PM
To: #AU04_Enviro_Sample_NSW
Subject: Re: ATTN: Eurofins Sample Receipt Advice - Report 772260 : Site DSI SUMMER HILL (10791EV.P.117)

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Mikael,

Sorry for the COC issues.
Could you please put BH06-0.0-0.1 on for PAH and Metals (8) if there is no BH06-0.5-0.8?
As 4 asbestos bags are missing, are there any that have not been selected for analysis? If so, could up to 4 of those be analysed? If there are no extra asbestos bags to be analysed, no worries.

I also see on the summary a mention of inappropriate sample containers being used. Can you advise me as to what this was?

Thank you for your time,

Get Outlook for Android

Jessica Brodie
Graduate Environmental Scientist
CONSTRUCTION SCIENCES

Construction Sciences

Direct +61 2 8662 1108 Head Office +61 1300 165 769
Address Unit 2, 4 Kellogg Road, Rooty Hill, NSW 2766
Email jessica.brodie@constructionsciences.net Web www.constructionsciences.net

CONNECT WITH CONSTRUCTION SCIENCES

From: EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>
Sent: Saturday, February 6, 2021 9:03:37 PM
To: Jessica Brodie <jessica.brodie@constructionsciences.net>
Subject: ATTN: Eurofins Sample Receipt Advice - Report 772260 : Site DSI SUMMER HILL (10791EV.P.117)

Dear Valued Client,

Sample BH01-0.5-0.8 received labelled as BH01-0.3-0.6. Sample BH01-0.8-0.1 received as extra (jar only) and logged on hold. Sample BH06-0.5-0.8 not received, analysis cancelled. Asbestos bags not received for samples BH03-MW01-0.3-0.5, BH03-MW01-1.0-1.2, BH04-0.3-0.6, BH07-0.8-1.0, asbestos analysis cancelled. Samples QC102 and QC202 (1 jar each) forwarded to SGS for analysis.

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

Kind regards,
Mickael Ros
Sample Receipt

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

EnviroNote 1108 - Emissions from Stationary Sources
EnviroNote 1103 - NATA Accreditation for Dioxins

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Rolleston, Christchurch 7675
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IANZ # 1290

Sample Receipt Advice

Company name:	Construction Sciences P/L (Seven Hills)
Contact name:	Jessica Brodie
Project name:	DSI SUMMER HILL
Project ID:	10791EV.P.117
Turnaround time:	5 Day
Date/Time received	Feb 5, 2021 12:16 PM
Eurofins reference	772260

Sample Information

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

Notes

Sample BH01-0.5-0.8 received labelled as BH01-0.3-0.6. Sample BH01-0.8-0.1 received as extra (jar only) and logged on hold. Asbestos bags not received for samples BH03-MW01-0.3-0.5, BH03-MW01-1.0-1.2, BH04-0.3-0.6, BH07-0.8-1.0, asbestos analysis cancelled. Samples QC102 and QC202 (1 jar each) forwarded to SGS for analysis.

Contact

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

Ursula Long on phone : or by email: UrsulaLong@eurofins.com

Results will be delivered electronically via email to Jessica Brodie - jessica.brodie@constructionsciences.net.

Note: A copy of these results will also be delivered to the general Construction Sciences P/L (Seven Hills) email address.

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IANZ # 1290

Company Name: Construction Sciences P/L (Seven Hills)
Address: 31 Anvil Road
Seven Hills
NSW 2147

Project Name: DSI SUMMER HILL
Project ID: 10791EV.P.117

Order No.:
Report #: 772260
Phone: 1300 165 769
Fax:

Received: Feb 5, 2021 12:16 PM
Due: Feb 12, 2021
Priority: 5 Day
Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polycyclic Aromatic Hydrocarbons	Metals M8	Phenols (IWRG 621)	Suite B13: OCP/PCB	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B1	Eurofins Suite B4	Eurofins Suite B7A	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																	
1	BH01-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13837	X								X	X					X		
2	BH01-0.5-0.8	Feb 04, 2021		Soil	S21-Fe13838	X					X				X							
3	BH01-1.0-1.2	Feb 04, 2021		Soil	S21-Fe13839	X																
4	BH01-1.5-1.7	Feb 04, 2021		Soil	S21-Fe13840										X		X					
5	BH02-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13841	X									X		X					
6	BH03-MW01-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13842	X								X	X				X			
7	BH03-MW01-0.3-0.5	Feb 04, 2021		Soil	S21-Fe13843										X		X					
8	BH03-MW01-	Feb 04, 2021		Soil	S21-Fe13844				X													

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IANZ # 1290

Company Name: Construction Sciences P/L (Seven Hills)
Address: 31 Anvil Road
Seven Hills
NSW 2147

Project Name: DSI SUMMER HILL
Project ID: 10791EV.P.117

Order No.:
Report #: 772260
Phone: 1300 165 769
Fax:

Received: Feb 5, 2021 12:16 PM
Due: Feb 12, 2021
Priority: 5 Day
Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polycyclic Aromatic Hydrocarbons	Metals M8	Phenols (IWRG 621)	Suite B13: OCP/PCB	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B1	Eurofins Suite B4	Eurofins Suite B7A	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
	1.0-1.2																					
9	BH03-MW01-3.7-3.9	Feb 04, 2021		Soil	S21-Fe13845					X					X	X						
10	BH04-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13846	X									X			X				
11	BH04-0.3-0.6	Feb 04, 2021		Soil	S21-Fe13847						X	X			X							
12	BH05-MW02-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13848	X									X				X			
13	BH05-MW02-1.0-1.2	Feb 04, 2021		Soil	S21-Fe13849	X									X			X				
14	BH05-MW02-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13850						X	X			X							
15	BH05-MW02-	Feb 04, 2021		Soil	S21-Fe13851					X					X	X						

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Company Name: Construction Sciences P/L (Seven Hills)
Address: 31 Anvil Road
Seven Hills
NSW 2147

Project Name: DSI SUMMER HILL
Project ID: 10791EV.P.117

Order No.:
Report #: 772260
Phone: 1300 165 769
Fax:

Received: Feb 5, 2021 12:16 PM
Due: Feb 12, 2021
Priority: 5 Day
Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polycyclic Aromatic Hydrocarbons	Metals M8	Phenols (IWRG 621)	Suite B13: OCP/PCB	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B1	Eurofins Suite B4	Eurofins Suite B7A	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
	3.0-3.2																					
16	BH06-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13852	X					X	X			X			X				
17	BH06-0.5-0.8	Feb 04, 2021		Soil	S21-Fe13853			X														
18	BH06-3.7-3.8	Feb 04, 2021		Soil	S21-Fe13854						X	X			X							
19	BH07-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13855	X							X	X	X							
20	BH07-0.8-1.0	Feb 04, 2021		Soil	S21-Fe13856	X									X		X					
21	BH07-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13857						X	X			X							
22	BH08-MW03-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13858	X									X		X					
23	BH08-MW03-0.5-0.7	Feb 04, 2021		Soil	S21-Fe13859						X				X							

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Project Name: DSI SUMMER HILL
Project ID: 10791EV.P.117

Order No.:
Report #: 772260
Phone: 1300 165 769
Fax:

Received: Feb 5, 2021 12:16 PM
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Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polycyclic Aromatic Hydrocarbons	Metals M8	Phenols (IWRG 621)	Suite B13: OCP/PCB	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B1	Eurofins Suite B4	Eurofins Suite B7A	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
24	BH08-MW03-1.8-2.0	Feb 04, 2021		Soil	S21-Fe13860										X		X					
25	QC101	Feb 04, 2021		Soil	S21-Fe13861							X			X							
26	QC201	Feb 04, 2021		Soil	S21-Fe13862							X			X							
27	TRIP SPIKE	Feb 04, 2021		Soil	S21-Fe13863																	X
28	TRIP SPIKE LAB	Feb 04, 2021		Soil	S21-Fe13864																	X
29	TRIP BLANK	Feb 04, 2021		Soil	S21-Fe13865																X	
30	BH02-0.0-PACM	Feb 04, 2021		Building Materials	S21-Fe13866		X															
31	BH01-2.0-2.2	Feb 04, 2021		Soil	S21-Fe13867				X													
32	BH03-MW01-	Feb 04, 2021		Soil	S21-Fe13868				X													

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Address: 31 Anvil Road
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NSW 2147

Project Name: DSI SUMMER HILL
Project ID: 10791EV.P.117

Order No.:
Report #: 772260
Phone: 1300 165 769
Fax:

Received: Feb 5, 2021 12:16 PM
Due: Feb 12, 2021
Priority: 5 Day
Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polycyclic Aromatic Hydrocarbons	Metals M8	Phenols (IWRG 621)	Suite B13: OCP/PCB	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B1	Eurofins Suite B4	Eurofins Suite B7A	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
32	BH03-MW01-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13868																	
33	BH04-2.8-3.0	Feb 04, 2021		Soil	S21-Fe13869				X													
34	BH06-1.0-1.2	Feb 04, 2021		Soil	S21-Fe13870				X													
35	BH06-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13871				X													
36	BH07-1.5-1.7	Feb 04, 2021		Soil	S21-Fe13872				X													
37	BH07-1.8-2.0	Feb 04, 2021		Soil	S21-Fe13873				X													
38	BH01-0.8-0.1	Feb 04, 2021		Soil	S21-Fe13874				X													
Test Counts						12	1	1	9	2	7	7	1	3	23	2	6	3	2	1	1	2

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Construction Sciences P/L (Seven Hills)
31 Anvil Road
Seven Hills
NSW 2147

Attention:	Jessica Brodie
Report	772260-AID
Project Name	DSI SUMMER HILL
Project ID	10791EV.P.117
Received Date	Feb 05, 2021
Date Reported	Feb 17, 2021

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name DSI SUMMER HILL
Project ID 10791EV.P.117
Date Sampled Feb 04, 2021
Report 772260-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH01-0.0-0.1	21-Fe13837	Feb 04, 2021	Approximate Sample 775g Sample consisted of: Brown coarse-grained soil, corroded metal, glass and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH01-0.5-0.8	21-Fe13838	Feb 04, 2021	Approximate Sample 617g Sample consisted of: Brown coarse-grained soil, glass and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH01-1.0-1.2	21-Fe13839	Feb 04, 2021	Approximate Sample 659g Sample consisted of: Brown coarse-grained soil, brick, glass and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH02-0.0-0.1	21-Fe13841	Feb 04, 2021	Approximate Sample 590g Sample consisted of: Brown coarse-grained soil, brick, glass and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH03-MW01-0.0-0.1	21-Fe13842	Feb 04, 2021	Approximate Sample 627g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH04-0.0-0.1	21-Fe13846	Feb 04, 2021	Approximate Sample 1031g Sample consisted of: Brown fine-grained clayey soil, glass, brick and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH05-MW02-0.0-0.1	21-Fe13848	Feb 04, 2021	Approximate Sample 687g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH05-MW02-1.0-1.2	21-Fe13849	Feb 04, 2021	Approximate Sample 601g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH06-0.0-0.1	21-Fe13852	Feb 04, 2021	Approximate Sample 540g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH07-0.0-0.1	21-Fe13855	Feb 04, 2021	Approximate Sample 1146g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH07-0.8-1.0	21-Fe13856	Feb 04, 2021	Approximate Sample 663g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH08-MW03-0.0-0.1	21-Fe13858	Feb 04, 2021	Approximate Sample 595g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH02-0.0-PACM	21-Fe13866	Feb 04, 2021	Approximate Sample 9g / 50x20x5mm Sample consisted of: Brown fibre plaster cement fragment	No asbestos detected. Organic fibre detected. No trace asbestos detected.

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Feb 06, 2021	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Feb 06, 2021	Indefinite

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Company Name: Construction Sciences P/L (Seven Hills)
Address: 31 Anvil Road
Seven Hills
NSW 2147

Project Name: DSI SUMMER HILL
Project ID: 10791EV.P.117

Order No.:
Report #: 772260
Phone: 1300 165 769
Fax:

Received: Feb 5, 2021 12:16 PM
Due: Feb 12, 2021
Priority: 5 Day
Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polycyclic Aromatic Hydrocarbons	Metals M8	Phenols (IWRG 621)	Suite B13: OCP/PCB	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B1	Eurofins Suite B4	Eurofins Suite B7A	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																	
1	BH01-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13837	X								X	X					X		
2	BH01-0.5-0.8	Feb 04, 2021		Soil	S21-Fe13838	X					X				X							
3	BH01-1.0-1.2	Feb 04, 2021		Soil	S21-Fe13839	X																
4	BH01-1.5-1.7	Feb 04, 2021		Soil	S21-Fe13840										X		X					
5	BH02-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13841	X									X		X					
6	BH03-MW01-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13842	X								X	X				X			
7	BH03-MW01-0.3-0.5	Feb 04, 2021		Soil	S21-Fe13843										X		X					
8	BH03-MW01-	Feb 04, 2021		Soil	S21-Fe13844				X													

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Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
	1.0-1.2																					
9	BH03-MW01-3.7-3.9	Feb 04, 2021		Soil	S21-Fe13845					X					X	X						
10	BH04-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13846	X									X			X				
11	BH04-0.3-0.6	Feb 04, 2021		Soil	S21-Fe13847						X	X			X							
12	BH05-MW02-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13848	X									X				X			
13	BH05-MW02-1.0-1.2	Feb 04, 2021		Soil	S21-Fe13849	X									X			X				
14	BH05-MW02-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13850						X	X			X							
15	BH05-MW02-	Feb 04, 2021		Soil	S21-Fe13851					X					X	X						

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Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
	3.0-3.2																					
16	BH06-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13852	X					X	X			X			X				
17	BH06-0.5-0.8	Feb 04, 2021		Soil	S21-Fe13853			X														
18	BH06-3.7-3.8	Feb 04, 2021		Soil	S21-Fe13854						X	X			X							
19	BH07-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13855	X							X	X	X							
20	BH07-0.8-1.0	Feb 04, 2021		Soil	S21-Fe13856	X									X		X					
21	BH07-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13857						X	X			X							
22	BH08-MW03-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13858	X									X		X					
23	BH08-MW03-0.5-0.7	Feb 04, 2021		Soil	S21-Fe13859						X				X							

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Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
24	BH08-MW03-1.8-2.0	Feb 04, 2021		Soil	S21-Fe13860										X		X					
25	QC101	Feb 04, 2021		Soil	S21-Fe13861							X			X							
26	QC201	Feb 04, 2021		Soil	S21-Fe13862							X			X							
27	TRIP SPIKE	Feb 04, 2021		Soil	S21-Fe13863																	X
28	TRIP BLANK	Feb 04, 2021		Soil	S21-Fe13865																X	
29	BH02-0.0-PACM	Feb 04, 2021		Building Materials	S21-Fe13866		X															
30	BH01-2.0-2.2	Feb 04, 2021		Soil	S21-Fe13867				X													
31	BH03-MW01-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13868				X													
32	BH04-2.8-3.0	Feb 04, 2021		Soil	S21-Fe13869				X													

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Project ID: 10791EV.P.117

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Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polycyclic Aromatic Hydrocarbons	Metals M8	Phenols (IWRG 621)	Suite B13: OCP/PCB	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B1	Eurofins Suite B4	Eurofins Suite B7A	BTEXN and Volatile TRH	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
33	BH06-1.0-1.2	Feb 04, 2021		Soil	S21-Fe13870				X													
34	BH06-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13871				X													
35	BH07-1.5-1.7	Feb 04, 2021		Soil	S21-Fe13872				X													
36	BH07-1.8-2.0	Feb 04, 2021		Soil	S21-Fe13873				X													
37	BH01-0.8-0.1	Feb 04, 2021		Soil	S21-Fe13874				X													
Test Counts						12	1	1	9	2	7	7	1	3	23	2	6	3	2	1	1	1

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to “non-bonded / friable”.
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Chamath JHM Annakkage	Senior Analyst-Asbestos (NSW)

Authorised by:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

Construction Sciences P/L (Seven Hills)
31 Anvil Road
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NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Jessica Brodie**

Report **772260-S**
Project name DSI SUMMER HILL
Project ID 10791EV.P.117
Received Date Feb 05, 2021

Client Sample ID			[G01]BH01-0.0-0.1	BH01-0.5-0.8	BH01-1.5-1.7	BH02-0.0-0.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S21-Fe13837**	**S21-Fe13838**	**S21-Fe13840**	**S21-Fe13841**
Date Sampled			**Feb 04, 2021**	**Feb 04, 2021**	**Feb 04, 2021**	**Feb 04, 2021**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	< 20
TRH C10-C14	20	mg/kg	< 100	-	< 20	< 20
TRH C15-C28	50	mg/kg	< 250	-	270	63
TRH C29-C36	50	mg/kg	< 250	-	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 250	-	270	63
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	56	-	67	INT
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	< 20
TRH >C10-C16	50	mg/kg	< 250	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 250	-	< 50	< 50
TRH >C16-C34	100	mg/kg	< 500	-	330	< 100
TRH >C34-C40	100	mg/kg	< 500	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 500	-	330	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	9.6	1.9
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	9.6	2.1
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	9.6	2.4
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	0.9	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	2.6	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	8.0	1.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	6.2	1.4
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	4.5	1.0
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	4.0	1.1
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	5.7	1.3
Chrysene	0.5	mg/kg	< 0.5	< 0.5	5.6	1.2

Client Sample ID			[G01]BH01-0.0-0.1	BH01-0.5-0.8	BH01-1.5-1.7	BH02-0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13837	S21-Fe13838	S21-Fe13840	S21-Fe13841
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	1.2	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	12	1.9
Fluorene	0.5	mg/kg	< 0.5	< 0.5	1.1	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	3.0	0.7
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	12	1.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	11	2.1
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	77.8	13.7
2-Fluorobiphenyl (surr.)	1	%	72	66	55	73
p-Terphenyl-d14 (surr.)	1	%	83	59	67	74
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 1	-	-	-
4.4'-DDD	0.05	mg/kg	< 0.5	-	-	-
4.4'-DDE	0.05	mg/kg	< 0.5	-	-	-
4.4'-DDT	0.05	mg/kg	< 0.5	-	-	-
a-BHC	0.05	mg/kg	< 0.5	-	-	-
Aldrin	0.05	mg/kg	< 0.5	-	-	-
b-BHC	0.05	mg/kg	< 0.5	-	-	-
d-BHC	0.05	mg/kg	< 0.5	-	-	-
Dieldrin	0.05	mg/kg	< 0.5	-	-	-
Endosulfan I	0.05	mg/kg	< 0.5	-	-	-
Endosulfan II	0.05	mg/kg	< 0.5	-	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.5	-	-	-
Endrin	0.05	mg/kg	< 0.5	-	-	-
Endrin aldehyde	0.05	mg/kg	< 0.5	-	-	-
Endrin ketone	0.05	mg/kg	< 0.5	-	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.5	-	-	-
Heptachlor	0.05	mg/kg	< 0.5	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.5	-	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.5	-	-	-
Methoxychlor	0.2	mg/kg	< 0.5	-	-	-
Toxaphene	0.1	mg/kg	< 1	-	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.5	-	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.5	-	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 1	-	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 1	-	-	-
Dibutylchlorendate (surr.)	1	%	137	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	109	-	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 1	-	-	-
Aroclor-1221	0.1	mg/kg	< 1	-	-	-
Aroclor-1232	0.5	mg/kg	< 1	-	-	-
Aroclor-1242	0.5	mg/kg	< 1	-	-	-
Aroclor-1248	0.5	mg/kg	< 1	-	-	-
Aroclor-1254	0.5	mg/kg	< 1	-	-	-
Aroclor-1260	0.5	mg/kg	< 1	-	-	-
Total PCB*	0.5	mg/kg	< 1	-	-	-
Dibutylchlorendate (surr.)	1	%	137	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	109	-	-	-

Client Sample ID			[G01]BH01-0.0-0.1	BH01-0.5-0.8	BH01-1.5-1.7	BH02-0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13837	S21-Fe13838	S21-Fe13840	S21-Fe13841
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	-
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2.4.5-Trichlorophenol	1	mg/kg	< 1	-	-	-
2.4.6-Trichlorophenol	1	mg/kg	< 1	-	-	-
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	-	-
Pentachlorophenol	1	mg/kg	< 1	-	-	-
Tetrachlorophenols - Total	10	mg/kg	< 10	-	-	-
Total Halogenated Phenol*	1	mg/kg	< 1	-	-	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	-	-	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	-	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-	-
2-Nitrophenol	1	mg/kg	< 1	-	-	-
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-	-
2.4-Dinitrophenol	5	mg/kg	< 5	-	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-	-
4-Nitrophenol	5	mg/kg	< 5	-	-	-
Dinoseb	20	mg/kg	< 20	-	-	-
Phenol	0.5	mg/kg	< 0.5	-	-	-
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	-	-
Phenol-d6 (surr.)	1	%	60	-	-	-
Heavy Metals						
Arsenic	2	mg/kg	2.9	-	4.4	4.4
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	< 0.4
Chromium	5	mg/kg	49	-	10	20
Copper	5	mg/kg	34	-	< 5	71
Lead	5	mg/kg	38	-	14	100
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Nickel	5	mg/kg	58	-	< 5	43
Zinc	5	mg/kg	100	-	11	140
% Moisture	1	%	8.2	7.5	8.8	8.8

Client Sample ID			BH03-MW01-0.0-0.1	BH03-MW01-0.3-0.5	BH03-MW01-3.7-3.9	BH04-0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13842	S21-Fe13843	S21-Fe13845	S21-Fe13846
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	-	< 20
TRH C10-C14	20	mg/kg	24	< 20	-	< 20
TRH C15-C28	50	mg/kg	160	< 50	-	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	-	< 50
TRH C10-C36 (Total)	50	mg/kg	184	< 50	-	< 50

Client Sample ID			BH03-MW01-0.0-0.1	BH03-MW01-0.3-0.5	BH03-MW01-3.7-3.9	BH04-0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13842	S21-Fe13843	S21-Fe13845	S21-Fe13846
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	130	71	-	83
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	< 50
TRH >C16-C34	100	mg/kg	210	< 100	-	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	210	< 100	-	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	6.1	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	6.1	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	6.1	1.2	-	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Anthracene	0.5	mg/kg	0.6	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	4.0	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	4.0	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	2.2	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	3.2	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	3.7	< 0.5	-	-
Chrysene	0.5	mg/kg	3.0	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	0.8	< 0.5	-	-
Fluoranthene	0.5	mg/kg	4.6	< 0.5	-	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	2.1	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	-
Phenanthrene	0.5	mg/kg	3.4	< 0.5	-	-
Pyrene	0.5	mg/kg	4.8	< 0.5	-	-
Total PAH*	0.5	mg/kg	36.4	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	59	62	-	-
p-Terphenyl-d14 (surr.)	1	%	77	107	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-	-

Client Sample ID			BH03-MW01-0.0-0.1	BH03-MW01-0.3-0.5	BH03-MW01-3.7-3.9	BH04-0.0-0.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S21-Fe13842**	**S21-Fe13843**	**S21-Fe13845**	**S21-Fe13846**
Date Sampled			**Feb 04, 2021**	**Feb 04, 2021**	**Feb 04, 2021**	**Feb 04, 2021**
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endosulfan I	0.05	mg/kg	< 0.05	-	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	-
Endrin	0.05	mg/kg	< 0.05	-	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	-
Methoxychlor	0.2	mg/kg	< 0.2	-	-	-
Toxaphene	0.1	mg/kg	< 0.1	-	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	-	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	-	-	-
Dibutylchlorendate (surr.)	1	%	57	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	67	-	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	-	-
Total PCB*	0.5	mg/kg	< 0.5	-	-	-
Dibutylchlorendate (surr.)	1	%	57	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	67	-	-	-
Heavy Metals						
Arsenic	2	mg/kg	-	4.1	-	-
Cadmium	0.4	mg/kg	-	< 0.4	-	-
Chromium	5	mg/kg	-	28	-	-
Copper	5	mg/kg	-	10	-	-
Lead	5	mg/kg	-	22	-	-
Mercury	0.1	mg/kg	-	< 0.1	-	-
Nickel	5	mg/kg	-	6.6	-	-
Zinc	5	mg/kg	-	15	-	-
% Moisture	1	%	9.7	14	16	13
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	-	11	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	-	5.9	-
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	-	-	12	-

Client Sample ID			BH04-0.3-0.6	BH05-MW02-0.0-0.1	BH05-MW02-1.0-1.2	BH05-MW02-2.5-2.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13847	S21-Fe13848	S21-Fe13849	S21-Fe13850
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	-
TRH C10-C14	20	mg/kg	-	< 20	< 20	-
TRH C15-C28	50	mg/kg	-	< 50	< 50	-
TRH C29-C36	50	mg/kg	-	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	-	< 50	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	-
Xylenes - Total*	0.3	mg/kg	-	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	95	86	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	-	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	-
TRH >C10-C16	50	mg/kg	-	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	-
TRH >C16-C34	100	mg/kg	-	< 100	< 100	-
TRH >C34-C40	100	mg/kg	-	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	74	78	-	86
p-Terphenyl-d14 (surr.)	1	%	105	104	-	106

Client Sample ID			BH04-0.3-0.6	BH05-MW02-0.0-0.1	BH05-MW02-1.0-1.2	BH05-MW02-2.5-2.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13847	S21-Fe13848	S21-Fe13849	S21-Fe13850
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	< 2	-	-	< 2
Cadmium	0.4	mg/kg	< 0.4	-	-	< 0.4
Chromium	5	mg/kg	20	-	-	29
Copper	5	mg/kg	8.3	-	-	18
Lead	5	mg/kg	17	-	-	28
Mercury	0.1	mg/kg	< 0.1	-	-	< 0.1
Nickel	5	mg/kg	5.6	-	-	7.8
Zinc	5	mg/kg	12	-	-	14
% Moisture	1	%	14	19	17	19

Client Sample ID			BH05-MW02-3.0-3.2	BH06-0.0-0.1	BH06-3.7-3.8	BH07-0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13851	S21-Fe13852	S21-Fe13854	S21-Fe13855
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	-
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	< 50	-	-
TRH C29-C36	50	mg/kg	-	< 50	-	-
TRH C10-C36 (Total)	50	mg/kg	-	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Xylenes - Total*	0.3	mg/kg	-	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	-	65	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	-	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	< 100	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	-
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-

Client Sample ID			BH05-MW02-3.0-3.2	BH06-0.0-0.1	BH06-3.7-3.8	BH07-0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13851	S21-Fe13852	S21-Fe13854	S21-Fe13855
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	-	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	86	79	-
p-Terphenyl-d14 (surr.)	1	%	-	106	105	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	-	< 0.05
a-BHC	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
b-BHC	0.05	mg/kg	-	-	-	< 0.05
d-BHC	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.2	mg/kg	-	-	-	< 0.2
Toxaphene	0.1	mg/kg	-	-	-	0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	-	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	-	< 0.2
Dibutylchlorendate (surr.)	1	%	-	-	-	INT
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	108
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1242	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1248	0.5	mg/kg	-	-	-	< 0.5

Client Sample ID			BH05-MW02-3.0-3.2	BH06-0.0-0.1	BH06-3.7-3.8	BH07-0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13851	S21-Fe13852	S21-Fe13854	S21-Fe13855
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1254	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	-	< 0.5
Total PCB*	0.5	mg/kg	-	-	-	< 0.5
Dibutylchlorendate (surr.)	1	%	-	-	-	INT
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	108
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	-	-	-	< 1
2.4.6-Trichlorophenol	1	mg/kg	-	-	-	< 1
2.6-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	-	-	< 1
Pentachlorophenol	1	mg/kg	-	-	-	< 1
Tetrachlorophenols - Total	10	mg/kg	-	-	-	< 10
Total Halogenated Phenol*	1	mg/kg	-	-	-	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	-	-	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	-	-	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	-	< 0.2
2-Nitrophenol	1	mg/kg	-	-	-	< 1
2.4-Dimethylphenol	0.5	mg/kg	-	-	-	< 0.5
2.4-Dinitrophenol	5	mg/kg	-	-	-	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	-	< 0.4
4-Nitrophenol	5	mg/kg	-	-	-	< 5
Dinoseb	20	mg/kg	-	-	-	< 20
Phenol	0.5	mg/kg	-	-	-	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	-	-	-	< 20
Phenol-d6 (surr.)	1	%	-	-	-	84
Heavy Metals						
Arsenic	2	mg/kg	-	7.4	26	-
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4	-
Chromium	5	mg/kg	-	25	58	-
Copper	5	mg/kg	-	28	61	-
Lead	5	mg/kg	-	32	56	-
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	-
Nickel	5	mg/kg	-	5.5	16	-
Zinc	5	mg/kg	-	23	42	-
% Moisture	1	%	19	17	17	5.2
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	< 10	-	-	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	7.3	-	-	-
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	5.4	-	-	-

Client Sample ID			BH07-0.8-1.0	BH07-2.5-2.7	BH08-MW03-0.0-0.1	BH08-MW03-0.5-0.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13856	S21-Fe13857	S21-Fe13858	S21-Fe13859
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	< 50	-
TRH C29-C36	50	mg/kg	< 50	-	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 50	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	84	-	105	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	72	101	75
p-Terphenyl-d14 (surr.)	1	%	101	104	103	107

Client Sample ID			BH07-0.8-1.0	BH07-2.5-2.7	BH08-MW03-0.0-0.1	BH08-MW03-0.5-0.7
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S21-Fe13856**	**S21-Fe13857**	**S21-Fe13858**	**S21-Fe13859**
Date Sampled			**Feb 04, 2021**	**Feb 04, 2021**	**Feb 04, 2021**	**Feb 04, 2021**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	15	57	4.7	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	73	57	28	-
Copper	5	mg/kg	20	44	12	-
Lead	5	mg/kg	58	64	29	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	5.6	< 5	5.4	-
Zinc	5	mg/kg	13	19	35	-
% Moisture	1	%	20	11	15	16

Client Sample ID			BH08-MW03-1.8-2.0	QC101	QC201	TRIP SPIKE
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S21-Fe13860**	**S21-Fe13861**	**S21-Fe13862**	**S21-Fe13863**
Date Sampled			**Feb 04, 2021**	**Feb 04, 2021**	**Feb 04, 2021**	**Feb 04, 2021**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	-
TRH C10-C14	20	mg/kg	< 20	-	-	-
TRH C15-C28	50	mg/kg	< 50	-	-	-
TRH C29-C36	50	mg/kg	< 50	-	-	-
TRH C10-C36 (Total)	50	mg/kg	< 50	-	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	-
Toluene	0.1	mg/kg	< 0.1	-	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	-	-
4-Bromofluorobenzene (surr.)	1	%	87	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-	-
TRH C6-C10	20	mg/kg	< 20	-	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-	-
TRH >C10-C16	50	mg/kg	< 50	-	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	-	-
TRH >C16-C34	100	mg/kg	< 100	-	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			BH08-MW03-1.8-2.0	QC101	QC201	TRIP SPIKE
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe13860	S21-Fe13861	S21-Fe13862	S21-Fe13863
Date Sampled			Feb 04, 2021	Feb 04, 2021	Feb 04, 2021	Feb 04, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-	-
Total PAH*	0.5	mg/kg	< 0.5	-	-	-
2-Fluorobiphenyl (surr.)	1	%	94	-	-	-
p-Terphenyl-d14 (surr.)	1	%	98	-	-	-
Heavy Metals						
Arsenic	2	mg/kg	< 2	6.6	5.0	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	8.8	45	25	-
Copper	5	mg/kg	< 5	22	13	-
Lead	5	mg/kg	11	31	17	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	< 5	8.9	6.7	-
Zinc	5	mg/kg	< 5	16	16	-
% Moisture	1	%	14	18	13	-
TRH C6-C10	1	%	-	-	-	98
Total Recoverable Hydrocarbons						
Naphthalene	1	%	-	-	-	87
TRH C6-C9	1	%	-	-	-	99
BTEX						
Benzene	1	%	-	-	-	95
Ethylbenzene	1	%	-	-	-	100
m&p-Xylenes	1	%	-	-	-	99
o-Xylene	1	%	-	-	-	100
Toluene	1	%	-	-	-	93
Xylenes - Total	1	%	-	-	-	100
4-Bromofluorobenzene (surr.)	1	%	-	-	-	111

Client Sample ID			TRIP BLANK
Sample Matrix			**Soil**
Eurofins Sample No.			**S21-Fe13865**
Date Sampled			**Feb 04, 2021**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	101
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Feb 10, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Feb 10, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Feb 10, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Sydney	Feb 10, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Feb 10, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Feb 10, 2021	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (Halogenated)	Sydney	Feb 10, 2021	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Sydney	Feb 10, 2021	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Feb 10, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Organochlorine Pesticides	Sydney	Feb 10, 2021	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Feb 10, 2021	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
% Moisture	Sydney	Feb 06, 2021	14 Days
- Method: LTM-GEN-7080 Moisture			
Conductivity (1:5 aqueous extract at 25°C as rec.)	Sydney	Feb 10, 2021	7 Days
- Method: LTM-INO-4030 Conductivity			
Cation Exchange Capacity	Melbourne	Feb 15, 2021	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage			
pH (1:5 Aqueous extract at 25°C as rec.)	Sydney	Feb 10, 2021	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			

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NSW 2147

Project Name: DSI SUMMER HILL
Project ID: 10791EV.P.117

Order No.:
Report #: 772260
Phone: 1300 165 769
Fax:

Received: Feb 5, 2021 12:16 PM
Due: Feb 12, 2021
Priority: 5 Day
Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

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Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																	
1	BH01-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13837	X								X	X					X		
2	BH01-0.5-0.8	Feb 04, 2021		Soil	S21-Fe13838	X					X				X							
3	BH01-1.0-1.2	Feb 04, 2021		Soil	S21-Fe13839	X																
4	BH01-1.5-1.7	Feb 04, 2021		Soil	S21-Fe13840										X		X					
5	BH02-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13841	X									X		X					
6	BH03-MW01-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13842	X								X	X				X			
7	BH03-MW01-0.3-0.5	Feb 04, 2021		Soil	S21-Fe13843										X		X					
8	BH03-MW01-	Feb 04, 2021		Soil	S21-Fe13844				X													

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Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
	1.0-1.2																					
9	BH03-MW01-3.7-3.9	Feb 04, 2021		Soil	S21-Fe13845					X					X	X						
10	BH04-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13846	X									X			X				
11	BH04-0.3-0.6	Feb 04, 2021		Soil	S21-Fe13847						X	X			X							
12	BH05-MW02-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13848	X									X				X			
13	BH05-MW02-1.0-1.2	Feb 04, 2021		Soil	S21-Fe13849	X									X			X				
14	BH05-MW02-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13850						X	X			X							
15	BH05-MW02-	Feb 04, 2021		Soil	S21-Fe13851					X					X	X						

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Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
	3.0-3.2																					
16	BH06-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13852	X					X	X			X			X				
17	BH06-0.5-0.8	Feb 04, 2021		Soil	S21-Fe13853			X														
18	BH06-3.7-3.8	Feb 04, 2021		Soil	S21-Fe13854						X	X			X							
19	BH07-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13855	X							X	X	X							
20	BH07-0.8-1.0	Feb 04, 2021		Soil	S21-Fe13856	X									X		X					
21	BH07-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13857						X	X			X							
22	BH08-MW03-0.0-0.1	Feb 04, 2021		Soil	S21-Fe13858	X									X		X					
23	BH08-MW03-0.5-0.7	Feb 04, 2021		Soil	S21-Fe13859						X				X							

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Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
24	BH08-MW03-1.8-2.0	Feb 04, 2021		Soil	S21-Fe13860										X		X					
25	QC101	Feb 04, 2021		Soil	S21-Fe13861							X			X							
26	QC201	Feb 04, 2021		Soil	S21-Fe13862							X			X							
27	TRIP SPIKE	Feb 04, 2021		Soil	S21-Fe13863																	X
28	TRIP SPIKE LAB	Feb 04, 2021		Soil	S21-Fe13864																	X
29	TRIP BLANK	Feb 04, 2021		Soil	S21-Fe13865																X	
30	BH02-0.0-PACM	Feb 04, 2021		Building Materials	S21-Fe13866		X															
31	BH01-2.0-2.2	Feb 04, 2021		Soil	S21-Fe13867				X													
32	BH03-MW01-	Feb 04, 2021		Soil	S21-Fe13868				X													

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Melbourne Laboratory - NATA Site # 1254 & 14271																X						
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794																						
Perth Laboratory - NATA Site # 23736																						
Mayfield Laboratory																						
External Laboratory																						
32	BH03-MW01-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13868																	
33	BH04-2.8-3.0	Feb 04, 2021		Soil	S21-Fe13869				X													
34	BH06-1.0-1.2	Feb 04, 2021		Soil	S21-Fe13870				X													
35	BH06-2.5-2.7	Feb 04, 2021		Soil	S21-Fe13871				X													
36	BH07-1.5-1.7	Feb 04, 2021		Soil	S21-Fe13872				X													
37	BH07-1.8-2.0	Feb 04, 2021		Soil	S21-Fe13873				X													
38	BH01-0.8-0.1	Feb 04, 2021		Soil	S21-Fe13874				X													
Test Counts						12	1	1	9	2	7	7	1	3	23	2	6	3	2	1	1	2

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 0.1			0.1	Pass	
Method Blank							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1	Pass	
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Tetrachlorophenols - Total	mg/kg	< 10			10	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Conductivity (1:5 aqueous extract at 25°C as rec.)	uS/cm	< 10			10	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	%	71			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	83			70-130	Pass	
Acenaphthylene	%	77			70-130	Pass	
Anthracene	%	91			70-130	Pass	
Benz(a)anthracene	%	85			70-130	Pass	
Benzo(a)pyrene	%	99			70-130	Pass	
Benzo(b&j)fluoranthene	%	90			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(g.h.i)perylene	%	107			70-130	Pass	
Benzo(k)fluoranthene	%	109			70-130	Pass	
Chrysene	%	100			70-130	Pass	
Dibenz(a.h)anthracene	%	81			70-130	Pass	
Fluoranthene	%	105			70-130	Pass	
Fluorene	%	92			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	81			70-130	Pass	
Naphthalene	%	79			70-130	Pass	
Phenanthrene	%	96			70-130	Pass	
Pyrene	%	84			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	92			70-130	Pass	
4.4'-DDD	%	84			70-130	Pass	
4.4'-DDE	%	70			70-130	Pass	
4.4'-DDT	%	104			70-130	Pass	
a-BHC	%	99			70-130	Pass	
Aldrin	%	104			70-130	Pass	
b-BHC	%	100			70-130	Pass	
d-BHC	%	108			70-130	Pass	
Dieldrin	%	106			70-130	Pass	
Endosulfan I	%	95			70-130	Pass	
Endosulfan II	%	104			70-130	Pass	
Endosulfan sulphate	%	94			70-130	Pass	
Endrin	%	74			70-130	Pass	
Endrin aldehyde	%	93			70-130	Pass	
Endrin ketone	%	80			70-130	Pass	
g-BHC (Lindane)	%	106			70-130	Pass	
Heptachlor	%	120			70-130	Pass	
Heptachlor epoxide	%	103			70-130	Pass	
Hexachlorobenzene	%	105			70-130	Pass	
Methoxychlor	%	98			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	119			70-130	Pass	
Aroclor-1260	%	106			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	83			30-130	Pass	
2.4-Dichlorophenol	%	82			30-130	Pass	
2.4.5-Trichlorophenol	%	85			30-130	Pass	
2.6-Dichlorophenol	%	84			30-130	Pass	
4-Chloro-3-methylphenol	%	86			30-130	Pass	
Pentachlorophenol	%	74			30-130	Pass	
Tetrachlorophenols - Total	%	78			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Methylphenol (o-Cresol)	%	82			30-130	Pass	
2-Nitrophenol	%	74			30-130	Pass	
2.4-Dimethylphenol	%	85			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	86			30-130	Pass	
4-Nitrophenol	%	95			30-130	Pass	
Dinoseb	%	77			30-130	Pass	
Phenol	%	86			30-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Heavy Metals							
Arsenic	%	97			80-120	Pass	
Cadmium	%	98			80-120	Pass	
Chromium	%	97			80-120	Pass	
Copper	%	96			80-120	Pass	
Lead	%	98			80-120	Pass	
Mercury	%	103			80-120	Pass	
Nickel	%	102			80-120	Pass	
Zinc	%	100			80-120	Pass	
LCS - % Recovery							
Conductivity (1:5 aqueous extract at 25°C as rec.)	%	86			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S21-Fe13837	CP	%	104			70-130	Pass	
Acenaphthylene	S21-Fe13837	CP	%	81			70-130	Pass	
Anthracene	S21-Fe13837	CP	%	111			70-130	Pass	
Benz(a)anthracene	S21-Fe13837	CP	%	91			70-130	Pass	
Benzo(b&j)fluoranthene	S21-Fe13837	CP	%	95			70-130	Pass	
Dibenz(a.h)anthracene	S21-Fe13837	CP	%	94			70-130	Pass	
Fluorene	S21-Fe13837	CP	%	92			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe13837	CP	%	115			70-130	Pass	
Naphthalene	S21-Fe13837	CP	%	109			70-130	Pass	
Phenanthrene	S21-Fe13837	CP	%	115			70-130	Pass	
Pyrene	S21-Fe13837	CP	%	82			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	S21-Fe13837	CP	%	123			30-130	Pass	
2.4-Dichlorophenol	S21-Fe13837	CP	%	90			30-130	Pass	
2.4.5-Trichlorophenol	S21-Fe13837	CP	%	91			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Methylphenol (o-Cresol)	S21-Fe13837	CP	%	87			30-130	Pass	
2-Nitrophenol	S21-Fe13837	CP	%	98			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	S21-Fe13837	CP	%	92			30-130	Pass	
Dinoseb	S21-Fe13837	CP	%	95			30-130	Pass	
Phenol	S21-Fe13837	CP	%	72			30-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S21-Fe17230	NCP	%	111			75-125	Pass	
Cadmium	S21-Fe17230	NCP	%	121			75-125	Pass	
Chromium	S21-Fe17230	NCP	%	110			75-125	Pass	
Copper	S21-Fe17230	NCP	%	101			75-125	Pass	
Lead	S21-Fe17230	NCP	%	119			75-125	Pass	
Mercury	S21-Fe12122	NCP	%	121			75-125	Pass	
Nickel	S21-Fe17230	NCP	%	119			75-125	Pass	
Zinc	S21-Fe12122	NCP	%	108			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe17227	NCP	mg/kg	11	8.9	25	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S21-Fe13840	CP	mg/kg	< 20	25	71	30%	Fail	Q15
TRH C15-C28	S21-Fe13840	CP	mg/kg	270	51	140	30%	Fail	Q15
TRH C29-C36	S21-Fe13840	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S21-Fe13840	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Fe13840	CP	mg/kg	330	< 100	140	30%	Fail	Q15
TRH >C34-C40	S21-Fe13840	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe13842	CP	%	9.7	10	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	S21-Fe14271	NCP	uS/cm	11	14	20	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	S21-Fe19133	NCP	pH Units	6.1	6.1	Pass	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S21-Fe13852	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-Fe13852	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-Fe13852	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S21-Fe13852	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Fe13852	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-Fe13852	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S21-Fe13852	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe13854	CP	%	17	17	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S21-Fe13856	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S21-Fe13856	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S21-Fe13856	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S21-Fe13856	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S21-Fe13856	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S21-Fe13856	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S21-Fe13856	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S21-Fe13856	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S21-Fe13856	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium	S21-Fe13856	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Fe13856	CP	mg/kg	73	46	45	30%	Fail	Q15
Copper	S21-Fe13856	CP	mg/kg	20	13	45	30%	Fail	Q15
Lead	S21-Fe13856	CP	mg/kg	58	39	40	30%	Fail	Q15
Mercury	S21-Fe13856	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Fe13856	CP	mg/kg	5.6	< 5	19	30%	Pass	
Zinc	S21-Fe13856	CP	mg/kg	13	9.6	27	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Charl Du Preez	Senior Analyst-Inorganic (NSW)
Emily Rosenberg	Senior Analyst-Metal (VIC)
John Nguyen	Senior Analyst-Metal (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

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

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

Melbourne Laboratory: 6 Monterey Road Dandenong South VIC 3175 | 03 8564 5000 | EnviroSampleVic@eurofins.com

Company	Construction Sciences	Project №	20791EV.p.117
Address	2/4 Kellogg rd, Rooty Hill	Project Name	DSI Sumner Hill
Contact Name	Jessica Brodie	Project Manager	Jessica Brodie
Phone №	0468718810	EDD Format (ESdat, EQuIS etc)	ESdat
Special Directions		Sampler(s)	Jessica Brodie
Purchase Order		Handed over by	" "
Quote ID №		Email for Invoice	Jessica.Brodie@constructionsciences.net
		Email for Results	" "

Analyses (Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing)

Containers (Change container type & size if necessary.)

Required Turnaround Time (TAT) (Default will be 5 days if not ticked.)

- ☐ Overnight (reporting by 9am)◆ ◆Surcharge will apply
- ☐ Same day ◆ ☐ 1 day ◆
- ☐ 2 days ◆ ☐ 3 days ◆
- ☑ 5 days (Standard)
- ☐ Other

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	Metals (8)	PAH (ultra trace)	TRH/BTEX	TP	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	MW01	8/2/21	W	X	X	X										
2	MW02	"	"	X	X	X										
3	MW03	"	"	X	X	X										
4	QC101	"	"	X	X											
5	QC102	"	"	X	X											please send to SUS
6	Trip spike/blank	"	W				X									

GTN 8/2/21 3:52pm

772571

91																																	
92																																	
93																																	
94																																	
95																																	
96																																	
97																																	
98																																	
99																																	
				Total Counts																													

Method of Shipment ☐ Courier (#) ☐ Hand Delivered ☐ Postal Name Signature Date Time

Eurofins | mgt Laboratory Use Only

Received By SYD | BNE | MEL | PER | ADL | NTL | DRW Signature Date Time Temperature

Received By SYD | BNE | MEL | PER | ADL | NTL | DRW Signature Date Time Report №

Eurofins Environment Testing Australia Pty Ltd trading as Eurofins | mgt

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

eurofins | Environment Testing

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IANZ # 1327

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

Sample Receipt Advice

Company name:	Construction Sciences P/L (Glendenning)
Contact name:	Jessica Brodie
Project name:	DSI SUMMER HILL
Project ID:	Z0791EV.P.117
Turnaround time:	5 Day
Date/Time received	Feb 8, 2021 3:52 PM
Eurofins reference	772571

Sample Information

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

Notes

Sample ID QC102 forwarded to SGS.

Contact

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

Ursula Long on phone : or by email: UrsulaLong@eurofins.com

Results will be delivered electronically via email to Jessica Brodie - jessica.brodie@constructionsciences.net.

Note: A copy of these results will also be delivered to the general Construction Sciences P/L (Glendenning) email address.

eurofins | Environment Testing

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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Company Name: Construction Sciences P/L (Glendenning)
Address: 2/4 Kellogg Rd
Glendenning
NSW 2761

Project Name: DSI SUMMER HILL
Project ID: Z0791EV.P.117

Order No.:
Report #: 772571
Phone: 02 9854 1700
Fax:

Received: Feb 8, 2021 3:52 PM
Due: Feb 15, 2021
Priority: 5 Day
Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Metals M8	BTEX	Eurofins Suite B1	BTEX	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
Mayfield Laboratory										
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	MW01	Feb 08, 2021		Water	S21-Fe16145	X		X		X
2	MW02	Feb 08, 2021		Water	S21-Fe16146	X		X		X
3	MW03	Feb 08, 2021		Water	S21-Fe16147	X		X		X
4	QC101	Feb 08, 2021		Water	S21-Fe16148	X				X
5	TRIP SPIKE	Feb 08, 2021		Water	S21-Fe16149				X	
6	TRIP BLANK	Feb 08, 2021		Water	S21-Fe16150		X			
Test Counts						4	1	3	1	4

Construction Sciences P/L (Glendenning)
2/4 Kellogg Rd
Glendenning
NSW 2761

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Jessica Brodie**

Report **772571-W**
Project name DSI SUMMER HILL
Project ID Z0791EV.P.117
Received Date Feb 08, 2021

Client Sample ID			**MW01**	**MW02**	**MW03**	**QC101**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**S21-Fe16145**	**S21-Fe16146**	**S21-Fe16147**	**S21-Fe16148**
Date Sampled			**Feb 08, 2021**	**Feb 08, 2021**	**Feb 08, 2021**	**Feb 08, 2021**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	98	96	97	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
Polycyclic Aromatic Hydrocarbons (Trace level)						
Acenaphthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Acenaphthylene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benz(a)anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(b&j)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chrysene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dibenz(a.h)anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Fluorene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Client Sample ID			MW01	MW02	MW03	QC101
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S21-Fe16145	S21-Fe16146	S21-Fe16147	S21-Fe16148
Date Sampled			Feb 08, 2021	Feb 08, 2021	Feb 08, 2021	Feb 08, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons (Trace level)						
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Naphthalene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Phenanthrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Pyrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Total PAH*	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
2-Fluorobiphenyl (surr.)	1	%	132	84	109	71
p-Terphenyl-d14 (surr.)	1	%	95	63	83	64
Heavy Metals						
Arsenic	0.001	mg/L	0.001	0.001	< 0.001	0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.006	0.004	0.007	< 0.001
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.011	0.032	0.017	0.010
Zinc	0.005	mg/L	0.038	0.061	0.054	0.024

Client Sample ID			TRIP SPIKE	TRIP BLANK
Sample Matrix			Water	Water
Eurofins Sample No.			S21-Fe16149	S21-Fe16150
Date Sampled			Feb 08, 2021	Feb 08, 2021
Test/Reference	LOR	Unit		
BTEX				
Benzene	0.001	mg/L	-	< 0.001
Toluene	0.001	mg/L	-	< 0.001
Ethylbenzene	0.001	mg/L	-	< 0.001
m&p-Xylenes	0.002	mg/L	-	< 0.002
o-Xylene	0.001	mg/L	-	< 0.001
Xylenes - Total*	0.003	mg/L	-	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	102
BTEX				
Benzene	1	%	95	-
Ethylbenzene	1	%	100	-
m&p-Xylenes	1	%	110	-
o-Xylene	1	%	100	-
Toluene	1	%	100	-
Xylenes - Total	1	%	110	-
4-Bromofluorobenzene (surr.)	1	%	106	-

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Feb 09, 2021	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Feb 09, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Feb 09, 2021	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Feb 09, 2021	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons (Trace level)	Melbourne	Feb 10, 2021	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water (trace)			
Metals M8	Sydney	Feb 15, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

eurofins | Environment Testing

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Company Name: Construction Sciences P/L (Glendenning)
Address: 2/4 Kellogg Rd
Glendenning
NSW 2761

Project Name: DSI SUMMER HILL
Project ID: Z0791EV.P.117

Order No.:
Report #: 772571
Phone: 02 9854 1700
Fax:

Received: Feb 8, 2021 3:52 PM
Due: Feb 15, 2021
Priority: 5 Day
Contact Name: Jessica Brodie

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Metals M8	BTEX	Eurofins Suite B1	BTEX	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
Mayfield Laboratory										
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	MW01	Feb 08, 2021		Water	S21-Fe16145	X		X		X
2	MW02	Feb 08, 2021		Water	S21-Fe16146	X		X		X
3	MW03	Feb 08, 2021		Water	S21-Fe16147	X		X		X
4	QC101	Feb 08, 2021		Water	S21-Fe16148	X				X
5	TRIP SPIKE	Feb 08, 2021		Water	S21-Fe16149				X	
6	TRIP BLANK	Feb 08, 2021		Water	S21-Fe16150		X			
Test Counts						4	1	3	1	4

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	mg/L	< 0.00001			0.00001	Pass	
Acenaphthylene	mg/L	< 0.00001			0.00001	Pass	
Anthracene	mg/L	< 0.00001			0.00001	Pass	
Benz(a)anthracene	mg/L	< 0.00001			0.00001	Pass	
Benzo(a)pyrene	mg/L	< 0.00001			0.00001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.00001			0.00001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Chrysene	mg/L	< 0.00001			0.00001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.00001			0.00001	Pass	
Fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Fluorene	mg/L	< 0.00001			0.00001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.00001			0.00001	Pass	
Naphthalene	mg/L	< 0.00001			0.00001	Pass	
Phenanthrene	mg/L	< 0.00001			0.00001	Pass	
Pyrene	mg/L	< 0.00001			0.00001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	85			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	%	100			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	89			70-130	Pass	
Toluene	%	94			70-130	Pass	
Ethylbenzene	%	91			70-130	Pass	
m&p-Xylenes	%	93			70-130	Pass	
o-Xylene	%	93			70-130	Pass	
Xylenes - Total*	%	93			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	84			70-130	Pass	
TRH C6-C10	%	85			70-130	Pass	
TRH >C10-C16	%	101			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	%	127			70-130	Pass	
Acenaphthylene	%	128			70-130	Pass	
Anthracene	%	84			70-130	Pass	
Benz(a)anthracene	%	91			70-130	Pass	
Benzo(a)pyrene	%	72			70-130	Pass	
Benzo(b&j)fluoranthene	%	88			70-130	Pass	
Benzo(g.h.i)perylene	%	105			70-130	Pass	
Benzo(k)fluoranthene	%	95			70-130	Pass	
Chrysene	%	125			70-130	Pass	
Dibenz(a.h)anthracene	%	101			70-130	Pass	
Fluoranthene	%	128			70-130	Pass	
Fluorene	%	125			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	103			70-130	Pass	
Naphthalene	%	102			70-130	Pass	
Phenanthrene	%	129			70-130	Pass	
Pyrene	%	124			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	102			80-120	Pass	
Cadmium	%	103			80-120	Pass	
Chromium	%	102			80-120	Pass	
Copper	%	98			80-120	Pass	
Lead	%	98			80-120	Pass	
Mercury	%	117			80-120	Pass	
Nickel	%	100			80-120	Pass	
Zinc	%	98			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M21-Fe23480	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M21-Fe23480	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons (Trace level)				Result 1					
Acenaphthene	S21-Fe13565	NCP	%	92			70-130	Pass	
Acenaphthylene	S21-Fe13565	NCP	%	88			70-130	Pass	
Anthracene	S21-Fe13565	NCP	%	95			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	S21-Fe13565	NCP	%	99			70-130	Pass	
Benzo(a)pyrene	S21-Fe13565	NCP	%	101			70-130	Pass	
Benzo(b&j)fluoranthene	S21-Fe13565	NCP	%	90			70-130	Pass	
Benzo(g.h.i)perylene	S21-Fe13565	NCP	%	96			70-130	Pass	
Benzo(k)fluoranthene	S21-Fe13565	NCP	%	83			70-130	Pass	
Chrysene	S21-Fe13565	NCP	%	116			70-130	Pass	
Dibenz(a.h)anthracene	S21-Fe13565	NCP	%	100			70-130	Pass	
Fluoranthene	S21-Fe13565	NCP	%	116			70-130	Pass	
Fluorene	S21-Fe13565	NCP	%	87			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe13565	NCP	%	101			70-130	Pass	
Naphthalene	S21-Fe13565	NCP	%	85			70-130	Pass	
Phenanthrene	S21-Fe13565	NCP	%	118			70-130	Pass	
Pyrene	S21-Fe13565	NCP	%	113			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S21-Fe16148	CP	%	104			75-125	Pass	
Cadmium	S21-Fe16148	CP	%	102			75-125	Pass	
Chromium	S21-Fe16148	CP	%	101			75-125	Pass	
Copper	S21-Fe16148	CP	%	98			75-125	Pass	
Lead	S21-Fe16148	CP	%	97			75-125	Pass	
Mercury	S21-Fe16148	CP	%	115			75-125	Pass	
Nickel	S21-Fe16148	CP	%	98			75-125	Pass	
Zinc	S21-Fe16148	CP	%	98			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M21-Fe25455	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M21-Fe25455	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M21-Fe25455	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M21-Fe25455	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M21-Fe25455	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M21-Fe25455	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons (Trace level)				Result 1	Result 2	RPD			
Acenaphthene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Acenaphthylene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Anthracene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benz(a)anthracene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(a)pyrene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(g.h.i)perylene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Chrysene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Dibenz(a.h)anthracene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluoranthene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluorene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Naphthalene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Phenanthrene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Pyrene	S21-Fe13564	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe16145	CP	mg/L	0.001	0.001	3.0	30%	Pass	
Cadmium	S21-Fe16145	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S21-Fe16145	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S21-Fe16145	CP	mg/L	0.006	0.006	2.0	30%	Pass	
Lead	S21-Fe16145	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	S21-Fe16145	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S21-Fe16145	CP	mg/L	0.011	0.011	1.0	30%	Pass	
Zinc	S21-Fe16145	CP	mg/L	0.038	0.040	5.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised by:

Ursula Long	Analytical Services Manager
John Nguyen	Senior Analyst-Metal (NSW)
Joseph Edouard	Senior Analyst-Organic (VIC)
Vivian Wang	Senior Analyst-Volatile (VIC)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Client	CONSTRUCTION SCIENCES PTY LTD
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Project	**10791EV.P.117 DSI Summer Hill**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

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SGS Reference	**SE216295 R0**
Date Received	8/2/2021
Date Reported	15/2/2021

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Dong LIANG
Metals/Inorganics Team Leader

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 11/2/2021

PARAMETER	UOM	LOR	QC102 SOIL - 4/2/2021 SE216295.001	QC202 SOIL - 4/2/2021 SE216295.002
Arsenic, As	mg/kg	1	**3**	**5**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**13**	**11**
Copper, Cu	mg/kg	0.5	**11**	**6.2**
Lead, Pb	mg/kg	1	**14**	**9**
Nickel, Ni	mg/kg	0.5	**1.9**	**1.4**
Zinc, Zn	mg/kg	2	**5**	**5**

Mercury in Soil [AN312] Tested: 11/2/2021

PARAMETER	UOM	LOR	QC102 SOIL - 4/2/2021 SE216295.001	QC202 SOIL - 4/2/2021 SE216295.002
Mercury	mg/kg	0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 9/2/2021

PARAMETER	UOM	LOR	QC102 SOIL - 4/2/2021 SE216295.001	QC202 SOIL - 4/2/2021 SE216295.002
% Moisture	%w/w	1	**18.3**	**15.0**

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
***	Indicates that both * and ** apply.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

STATEMENT OF QA/QC PERFORMANCE

SE216295 R0

CLIENT DETAILS

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Email	jessica.brodie@constructionsciences.net
Project	**10791EV.P.117 DSI Summer Hill**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

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SGS Reference	**SE216295 R0**
Date Received	08 Feb 2021
Date Reported	15 Feb 2021

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Analysis Date	Moisture Content	2 items
Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	Other Lab	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	2 Soil
Date documentation received	8/2/2021	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	20.0°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE216295 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC102	SE216295.001	LB218453	04 Feb 2021	08 Feb 2021	04 Mar 2021	11 Feb 2021	04 Mar 2021	15 Feb 2021
QC202	SE216295.002	LB218453	04 Feb 2021	08 Feb 2021	04 Mar 2021	11 Feb 2021	04 Mar 2021	15 Feb 2021

Moisture Content — Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC102	SE216295.001	LB218246	04 Feb 2021	08 Feb 2021	18 Feb 2021	09 Feb 2021	14 Feb 2021	15 Feb 2021†
QC202	SE216295.002	LB218246	04 Feb 2021	08 Feb 2021	18 Feb 2021	09 Feb 2021	14 Feb 2021	15 Feb 2021†

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC102	SE216295.001	LB218441	04 Feb 2021	08 Feb 2021	03 Aug 2021	11 Feb 2021	03 Aug 2021	15 Feb 2021
QC202	SE216295.002	LB218441	04 Feb 2021	08 Feb 2021	03 Aug 2021	11 Feb 2021	03 Aug 2021	15 Feb 2021

SURROGATES

SE216295 R0

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No surrogates were required for this job.

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB218453.001	Mercury	mg/kg	0.05	<0.05

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB218441.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may give a different calculated RPD.

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE216245.007	LB218453.014	Mercury	mg/kg	0.05	0.09	0.09	85	6
SE216264.006	LB218453.022	Mercury	mg/kg	0.05	<0.05	0.06	131	13

Moisture Content — Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE216218.002	LB218246.011	% Moisture	%w/w	1	7.6	6.6	44	14
SE216218.006	LB218246.016	% Moisture	%w/w	1	7.7	7.6	43	2

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE216245.006	LB218441.014	Arsenic, As	mg/kg	1	1	1	99	1
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	178	0
		Chromium, Cr	mg/kg	0.5	3.1	3.5	45	12
		Copper, Cu	mg/kg	0.5	19	18	33	2
		Nickel, Ni	mg/kg	0.5	1.0	1.0	82	2
		Lead, Pb	mg/kg	1	48	53	32	10
		Zinc, Zn	mg/kg	2	460	140	31	108 ②
SE216264.006	LB218441.023	Arsenic, As	mg/kg	1	5	5	50	4
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	6.8	6.3	38	7
		Copper, Cu	mg/kg	0.5	49	54	31	10
		Nickel, Ni	mg/kg	0.5	24	19	32	22
		Lead, Pb	mg/kg	1	18	18	36	1
		Zinc, Zn	mg/kg	2	84	79	32	7

LABORATORY CONTROL SAMPLES

SE216295 R0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB218453.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	100

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB218441.002	Arsenic, As	mg/kg	1	360	318.22	80 - 120	112
	Cadmium, Cd	mg/kg	0.3	4.9	5.41	80 - 120	90
	Chromium, Cr	mg/kg	0.5	45	38.31	80 - 120	117
	Copper, Cu	mg/kg	0.5	330	290	80 - 120	114
	Nickel, Ni	mg/kg	0.5	200	187	80 - 120	107
	Lead, Pb	mg/kg	1	98	89.9	80 - 120	109
	Zinc, Zn	mg/kg	2	300	273	80 - 120	109

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE216295.001	LB218453.004	Mercury	mg/kg	0.05	0.21	<0.05	0.2	94

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE216295.001	LB218441.004	Arsenic, As	mg/kg	1	51	3	50	96
		Cadmium, Cd	mg/kg	0.3	45	<0.3	50	89
		Chromium, Cr	mg/kg	0.5	62	13	50	99
		Copper, Cu	mg/kg	0.5	65	11	50	107
		Nickel, Ni	mg/kg	0.5	54	1.9	50	103
		Lead, Pb	mg/kg	1	60	14	50	93
		Zinc, Zn	mg/kg	2	56	5	50	102

MATRIX SPIKE DUPLICATES

SE216295 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

☐ Sydney Laboratory — Unit F3 Bld F 16 Mars Road Lane Cove West NSW 2066 — 02 9900 8400 EnviroSampleNSW@eurofins.com
☐ Brisbane Laboratory — Unit 1 21 Smallwood Place Murarrie QLD 4172 — 07 3902 4600 EnviroSampleQLD@eurofins.com
☐ Perth Laboratory — Unit 2 91 Leach Highway Kewdale WA 6105 — 08 9251 9600 EnviroSampleWA@eurofins.com
☐ Melbourne Laboratory — 6 Monterey Road Dandenong South VIC 3175 — 03 8564 5000 EnviroSampleVic@eurofins.com

Company	Construction Sciences
Address	31 Anvil Road, Seven Hills NSW 2147
Contact Name	Jessica Brodie
Phone №	439516172
Special Directions	
Purchase Order	
Quote ID №	
Project №	10791EV.P.117
Project Name	DSI Summer Hill
Project Manager	Jessica Brodie
EDD Format ESdat, EQuIS etc	Esdat
Sampler(s)	Jessica Brodie
Handed over by	Jessica Brodie
Email for Invoice	jessica.brodie@constructionsciences.net
Email for Results	jessica.brodie@constructionsciences.net

Analyses: Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing.

Containers: Change container type & size if necessary.

Required Turnaround Time (TAT): Default will be 5 days if not ticked. ☐ Overnight (reporting by 9am) ☐ Same day ☐ 1 day ☐ 2 days ☐ 3 days ☐ 5 days (Standard) ☐ Other

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	Metals (8)	TRH/BTEX	PAH	OCP	PCB	Phenol	CEC	pH	Asbestos ID	Trip Spike/Blank	Asbestos (0.001%)	Hold	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH01-0.0-0.1	4.2.21	S	x	x	x	x	x	x					x										
2	BH01-0.5-0.8	4.2.21				x								x										
3	BH01-1.0-1.2	4.2.21												x										
4	BH01-1.5-1.7	4.2.21		x	x	x																		
5	BH01-2.0-2.2	4.2.21													x									
6	BH02-0.0-0.1	4.2.21		x	x	x								x										
7	BH03-MW01-0.0-0.1	4.2.21			x	x	x	x						x										
8	BH03-MW01-0.3-0.5	4.2.21		x	x	x								x										
9	BH03-MW01-1.0-1.2	4.2.21												x										
10	BH03-MW01-2.5-2.7	4.2.21													x									
11	BH03-MW01-3.7-3.9	4.2.21								x	x													
12	BH04-0.0-0.1	4.2.21			x									x										
13	BH04-0.3-0.6	4.2.21		x		x								x										
14	BH04-2.8-3.0	4.2.21																						
15	BH05-MW02-0.0-0.1	4.2.21			x	x								x										
16	BH05-MW02-1.0-1.2	4.2.21			x									x										
17	BH05-MW02-2.5-2.7	4.2.21		x		x																		
18	BH05-MW02-3.0-3.2	4.2.21								x	x													
19	BH06-0.0-0.1	4.2.21			x									x										
20	BH06-0.5-0.8	4.2.21		x		x								x										
21	BH06-1.0-1.2	4.2.21													x									
22	BH06-2.5-2.7	4.2.21													x									
23	BH06-3.5-3.7	4.2.21		x		x																		Please amend ID on report to BH06-3.7-3.8
24	BH07-0.0-0.1	4.2.21					x	x	x					x										
25	BH07-0.8-1.0	4.2.21		x	x	x								x										
26	BH07-1.5-1.7	4.2.21													x									
27	BH07-1.8-2.0	4.2.21													x									
28	BH07-2.5-2.7	4.2.21		x		x																		
29	BH08-MW03-0.0-0.1	4.2.21		x	x	x								x										
30	BH08-MW03-0.5-0.7	4.2.21				x																		
31	BH08-MW03-1.8-2.0	4.2.21		x	x	x																		
32	QC101	4.2.21		x																				
33	1 QC102	4.2.21		x																				Please send to SGS
34	QC201	4.2.21		x																				
35	2 QC202	4.2.21		x																				Please send to SGS
36	Trip Spike/Blank	4.2.21											x											
37	BH02-0.0-PACM	4.2.21										x												
38																								
39																								
40																								
41																								
42																								

SGS EHS Sydney COC
SE216295

MR 5/2/21 12:16 PM Drop-off 2.7°C #772260

08/02/21 @ 6:00

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Jessica Brodie
Client	CONSTRUCTION SCIENCES PTY LTD
Address	31 ANVIL ROAD SEVEN HILLS NSW 2147
Telephone	0436 620 611
Facsimile	02 8438 0310
Email	jessica.brodie@constructionsciences.net
Project	**20791EV.P.117 DS1 Summer Hill**
Order Number	(Not specified)
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE216282 R0**
Date Received	9/2/2021
Date Reported	16/2/2021

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Dong LIANG
Metals/Inorganics Team Leader

Kamrul AHSAN
Senior Chemist

Teresa NGUYEN
Organic Chemist

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 15/2/2021

PARAMETER	UOM	LOR	QC102 WATER - 8/2/2021 SE216282.001
Naphthalene	µg/L	0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1
Fluorene	µg/L	0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1
Anthracene	µg/L	0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1
Pyrene	µg/L	0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1
Chrysene	µg/L	0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1
Total PAH (18)	µg/L	1	<1

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 9/2/2021

PARAMETER	UOM	LOR	QC102 WATER - 8/2/2021 SE216282.001
Arsenic, As	µg/L	1	**1**
Cadmium, Cd	µg/L	0.1	<0.1
Copper, Cu	µg/L	1	**1**
Chromium, Cr	µg/L	1	<1
Nickel, Ni	µg/L	1	**9**
Lead, Pb	µg/L	1	<1
Zinc, Zn	µg/L	5	**24**

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 10/2/2021

PARAMETER	UOM	LOR	QC102 WATER - 8/2/2021 SE216282.001
Mercury	mg/L	0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		
***	Indicates that both * and ** apply.				

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

STATEMENT OF QA/QC PERFORMANCE

SE216282 R0

CLIENT DETAILS

Contact	Jessica Brodie
Client	CONSTRUCTION SCIENCES PTY LTD
Address	31 ANVIL ROAD SEVEN HILLS NSW 2147
Telephone	0436 620 611
Facsimile	02 8438 0310
Email	jessica.brodie@constructionsciences.net
Project	**20791EV.P.117 DS1 Summer Hill**
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Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
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Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE216282 R0**
Date Received	09 Feb 2021
Date Reported	16 Feb 2021

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	Other Lab	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	1 Water
Date documentation received	9/2/2021	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	8.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE216282 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC102	SE216282.001	LB218289	08 Feb 2021	09 Feb 2021	08 Mar 2021	10 Feb 2021	08 Mar 2021	10 Feb 2021

PAH (Polynuclear Aromatic Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC102	SE216282.001	LB218582	08 Feb 2021	09 Feb 2021	15 Feb 2021	15 Feb 2021	27 Mar 2021	15 Feb 2021

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC102	SE216282.001	LB218200	08 Feb 2021	09 Feb 2021	07 Aug 2021	09 Feb 2021	07 Aug 2021	10 Feb 2021

SURROGATES

SE216282 R0

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	QC102	SE216282.001	%	40 - 130%	70
d14-p-terphenyl (Surrogate)	QC102	SE216282.001	%	40 - 130%	86
d5-nitrobenzene (Surrogate)	QC102	SE216282.001	%	40 - 130%	64

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311(Perth)AN312

Sample Number	Parameter	Units	LOR	Result
LB218289.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN120

Sample Number		Parameter	Units	LOR	Result
LB218582.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	66
		2-fluorobiphenyl (Surrogate)	%	-	70
		d14-p-terphenyl (Surrogate)	%	-	90

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB218200.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may give a different calculated RPD.

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE216275.007	LB218200.014	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	200	0
SE216282.001	LB218200.016	Arsenic, As	µg/L	1	1	1	84	4
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	192	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	1	1	86	3
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	9	9	26	3
		Zinc, Zn	µg/L	5	24	24	36	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB218582.002		Naphthalene	µg/L	0.1	26	40	60 - 140	65
		Acenaphthylene	µg/L	0.1	29	40	60 - 140	73
		Acenaphthene	µg/L	0.1	35	40	60 - 140	87
		Phenanthrene	µg/L	0.1	37	40	60 - 140	92
		Anthracene	µg/L	0.1	37	40	60 - 140	92
		Fluoranthene	µg/L	0.1	35	40	60 - 140	88
		Pyrene	µg/L	0.1	40	40	60 - 140	101
		Benzo(a)pyrene	µg/L	0.1	40	40	60 - 140	99
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.3	0.5	40 - 130	60
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	70
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	84

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB218200.002	Arsenic, As	µg/L	1	19	20	80 - 120	96
	Cadmium, Cd	µg/L	0.1	21	20	80 - 120	105
	Chromium, Cr	µg/L	1	22	20	80 - 120	109
	Copper, Cu	µg/L	1	23	20	80 - 120	114
	Lead, Pb	µg/L	1	20	20	80 - 120	99
	Nickel, Ni	µg/L	1	22	20	80 - 120	110
	Zinc, Zn	µg/L	5	22	20	80 - 120	108

MATRIX SPIKES

SE216282 R0

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

QC Sample	Sample Number	Parameter	Units	LOR

MATRIX SPIKE DUPLICATES

SE216282 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

Sydney Laboratory: Unit F3 Bld F 16 Mars Road Lane Cove West NSW 2066 | 02 9900 8400 | EnviroSampleNSW@eurofins.com
Brisbane Laboratory: Unit 1 21 Smallwood Place Murarrie QLD 4172 | 07 3902 4600 | EnviroSampleQLD@eurofins.com
Perth Laboratory: Unit 2 91 Leach Highway Kewdale WA 6105 | 08 9251 9600 | EnviroSampleWA@eurofins.com
Melbourne Laboratory: 6 Monterey Road Dandenong South VIC 3175 | 03 8564 5000 | EnviroSampleVic@eurofins.com

Company	Construction Sciences	Project №	20791EV.p.117	Project Manager	Jessica Brodie
Address	2/4 Kellogg rd, Rooty Hill	Project Name	DSI Sumner Hill	EDD Format ESdat, EQuIS etc	ESdat
Contact Name	Jessica Brodie				
Phone №	0468718810				
Special Directions					
Purchase Order					
Quote ID №					

Sampler(s)	Jessica Brodie	
Handed over by	"	"
Email for Invoice	Jessica.Brodie@constructionsciences.net	
Email for Results	"	"

Containers: Change container type & size if necessary.

Required Turnaround Time (TAT): Default will be 5 days if not ticked.

☐ Overnight (reporting by 9am) ☐ Same day ◆ ☐ 1 day ◆ ☐ 2 days ◆ ☐ 3 days ◆ ☒ 5 days (Standard) ☐ Other — ◆ surcharge will apply

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	Analyses: Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to ensure SUITE pricing.				500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
				Metals (8)	PAH (ultra trace)	TRH/BTEX	TP									
1	MW01	8/2/21	W	X	X	X										
2	MW02	"	"	X	X	X										
3	MW03	"	"	X	X	X										
4	QC101	"	"	X	X											
5	QC102	"	"	X	X											please send to SGS
6	Trip spike/blank	"	"				X									

SGS EHS Sydney COC
SE216282

GTN 8/2/21 3:52pm
772571

09/02/21 @ 11.5

APPENDIX G
DATA QUALITY INDICATORS

An assessment of performance against the data quality indicators (DQI) is set out in the tables below.

Completeness DQI

Field Considerations	Target	Actual	Pass / Fail / Comment
Experienced sampling team used	Yes	Yes	Pass
Sampling devices and equipment set out in sampling plan were used	Yes	Yes	Pass
Critical locations in sampling plan, sampled	Yes	Yes	Pass
Critical samples in sampling plan, collected	Yes	Yes	Pass
Completed field logs attached	Yes	Yes	Pass
Completed calibration logs attached.	Yes	Yes	Pass
Completed sample COC attached	Yes	Yes	Pass
Laboratory Considerations	**Target**	**Actual**	**Pass / Fail / Comment**
Complete SRA and COA attached	Yes	Yes	Pass
Critical samples identified in sampling plan, analysed	Yes	Yes	Pass
Analysis undertaken addresses COPC in sampling plan	Yes	Yes	Pass
Analytical methods reported in laboratory documentation and appropriate LOR used	Yes	Yes	Pass
Sample holding times met	Yes	Yes	Pass

The data is considered to be adequately complete.

Comparability DQI

Field Considerations	Target	Actual	Pass / Fail / Comment
Same sampling team used for all work.	Yes	Yes	Pass
Weather conditions suitable for sampling.	Yes	Yes	Pass
Relevant samples stored in insulated containers and chilled.	Yes	Yes	Pass
Laboratory Considerations	**Target**	**Actual**	**Pass / Fail / Comment**
Same laboratory used for all analysis.	Yes	Yes	Pass

Comparable methods if different laboratories used.	N/A	N/A	N/A
Comparable LORs if different laboratories used.	N/A	N/A	N/A
Comparable units of measure if different laboratories used.	N/A	N/A	N/A

The data is considered to be adequately comparable.

Representativeness DQI

Field Considerations	Target	Actual	Pass / Fail / Comment
Media identified in sampling plan, sampled.	Yes	Yes	Pass
Samples required by sampling plan, collected.	Yes	Yes	Pass
Laboratory Considerations	**Target**	**Actual**	**Pass / Fail / Comment**
Samples identified in sampling plan, analysed.	Yes	Yes	Pass

The data is considered to be adequately representative.

Precision DQI

Field Considerations Based on Table 4 of AS 4482.1-2005	Target	Actual	Pass / Fail / Comment
Minimum 5% duplicates collected and analysed.	Yes	Yes	Pass
Minimum 5% triplicates collected and analysed.	Yes	Yes	Pass
Minimum 10% duplicates collected and analysed (where PFAS is a COPC)	N/A	N/A	N/A
RPD unlimited where detected concentrations are <10 times the LOR.	Yes	Comment	Samples were not homogenised prior to splitting, as volatiles were identified as a COPC. The RPD exceedances are considered likely attributable to heterogeneity in each of the discrete soil samples. As a conservative measure, the samples reporting the higher detected concentration of relevant analytes should be used when assessing the classification of the waste. Performance against DQI considered acceptable
RPD within 30% where detected concentrations are 10-20 times the LOR.	Yes	Comment	Samples were not homogenised prior to splitting, as volatiles were identified as a COPC. The RPD exceedances are considered likely attributable to heterogeneity in each of the discrete soil samples. As a conservative measure, the samples reporting the higher detected concentration of relevant

			analytes should be used when assessing the classification of the waste. Performance against DQI considered acceptable
RPD within 50% where detected concentrations are >20 times the LOR.	Yes	Comment	Samples were not homogenised prior to splitting, as volatiles were identified as a COPC. The RPD exceedances are considered likely attributable to heterogeneity in each of the discrete soil samples. As a conservative measure, the samples reporting the higher detected concentration of relevant analytes should be used when assessing the classification of the waste. Performance against DQI considered acceptable
Laboratory Considerations	**Target**	**Actual**	**Pass / Fail / Comment**
All laboratory duplicate RPDs within laboratory acceptance criteria.	Yes	Yes	Pass RPD exceedance was reported to be outside the laboratory acceptance criterion, due to sample heterogeneity. As a conservative measure, the samples reporting the higher detected concentration of relevant analytes should be used when assessing the classification of the waste.

The data is considered to be adequately precise.

Accuracy (bias) DQI

Field Considerations	**Target**	**Actual**	**Pass / Fail / Comment**
Trip blank analyte results less than LOR.	Yes	Yes	Pass
Trip spike analyte results less between 60% and 140%.	Yes	Yes	Pass
Rinsate blank analyte results less than LOR.	Yes	Yes	A rinsate blank was not used for this project. Re-usable sampling equipment was not used. The samples were collected either directly from the base/wall of the test pits, or from the centre of the soils in the excavator bucket, using a fresh pair of nitrile gloves for each sample. On that basis, the risk of cross contamination during sampling is considered negligible.
Field blank analyte results less than LOR (where PFAS is a COPC),	Yes	Yes	Pass
Laboratory Considerations	**Target**	**Actual**	**Pass / Fail / Comment**
Laboratory method blank results within laboratory acceptance limits.	Yes	Yes	Pass
Laboratory control sample results within laboratory acceptance limits.	Yes	Yes	Pass

Laboratory spike sample results within laboratory acceptance limits.	Yes	Yes	Pass

The data is considered to be adequately accurate.

Located across Australia and New Zealand

QLD
Airlie
Beenleigh
Brisbane (Acacia Ridge)
Brisbane (Beenleigh)
Brisbane (Brendale)
Brisbane (Petrie)
Cairns
Emerald
Gladstone
Gold Coast
Mackay
Moranbah
Rockhampton
Petrie
Sunshine Coast
Toowoomba
Townsville

NSW
Ballina
Coffs Harbour
Grafton
Lynwood
Newcastle
Sydney (Glendenning)
Sydney (Seven Hills)
Sydney (St Peters)
Taree
Wollongong

VIC
Ararat
Bendigo
Echuca
Melbourne (Chadstone)
Melbourne (Keysborough)
Melbourne (Pakenham)
Melbourne (Oaklands Junction)
Melbourne (Sunshine West)
Traralgon

WA
Bunbury
Kalgoorlie
Newman
Perth
Port Hedland

SA
Adelaide
Port Augusta

NT
Darwin

ACT
Canberra

NZ
Wellington

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Construction Sciences